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# Improving ERP Requirement Management Process

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Finally, here we are at the end of an interesting and humbling journey. The past 5 years have been full of excitement, curiosity, and empowerment, but also at times information overload, sleepless nights and even despair. This has been a journey of learning about multiple sides of industrial management, but also about prioritization and balancing between all the aspects of life. We have reached the end of this journey to enter a lifelong adventure with a new set of tools.

This day would not be possible without the amazing support from my managers and colleagues. My managers through the years have been the rocks of my journey, always ready to find ways for me to be able to continue the journey combining the work and the studies. My colleagues, around the world, from different business units and support functions, from executing level until multiple levels above, have amazed me with their openness, understanding, with the thrive to create a better future and with the direct and indirect support towards the thesis and the studies. Thank You all.

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And especially I wish to thank my endlessly supporting partner, family, and friends. Ari, my dear partner, is the main reason I even started this journey. He is always by my side believing in my dreams and encouraging me to follow them, as I try my best to be there for his. And my dear parents, are my lifelong inspiration and push towards my dreams. I wish to make You proud.

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<p>The original and overall objective of this Thesis was to propose improvements to the new Customer warranty process in the case company through an exploratory case study. However, during the initial current state analysis (CSA), it became clear that the root cause for the “verbal feedback” received after implementation of the Customer warranty process was the lack of awareness of the process and the related system solution.</p> <p>The revised objective of the Thesis was to propose improvements to the ERP requirement management process used to build the Customer warranty process. If not fixed, the ERP requirement management process has a potential to harm all processes and ERP tools developed with same ERP Requirement management process. The key weaknesses identified from second current analysis – the cross-stream cooperation, information sharing and re-sourcing – became the focus of search for best practice and existing knowledge. The outcome of the study is a process improvement proposal to the ERP Requirement management process.</p> <p>First the proposal includes, to create a basis for the successful and sustainable change through Execution of ONA (organizational network analysis) in each team separately for each functional area. When scoping the ONA including integrated systems brings fuller picture of the full width of the functionality and all necessary entities to communicate and align with. Importantly, the results of ONA are to be used to align between necessary entities, so that to involve the necessary entities to the development activities &amp; to minimize communication only to the necessary entities. This limits the amount of information shared as all information is not shared to everyone.</p> <p>Second, it is critical to enable sustainable change by adding influence diagrams/cause and effect relationships to release information and ensure feature and process level change communication as well, not just in the small separate development increments. The proposal is to communicate towards the mapped necessary entities with change information; these are in case company the team members that work as the highest level of expertise and as support for all specific area topics, they need to know if they are mapped to necessary entities.</p> <p>Enhanced ERP requirement management process will enable the case company continue developments in successful and sustainable manner.</p>	
Keywords	ERP, Warranty, Process, ERP, Requirement Management, Collaboration, Cross-Organizational, ONA

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## Acronyms

CAB	Change Approval Board
CF	Conceptual Framework
COBIT	Control Objectives for Information and Related Technologies
CSA	Current State Analysis
E2E	End to End
EPIC	Enhancement Project
ERP	Enterprise Resource Planning
IT	Information Technology
ITIL	Information Technology Infrastructure Library
KT	Knowledge Transfer
ONA	Organizational Network Analysis
QM	Quality Management
SAFe	Scaled Agile Framework
ST	Sales Tool



# 1 Introduction

Enterprise Resource Planning (ERP) requirement management process exists to manage the process of collecting, evaluating and developing the requirements raised to Information Technology (IT) department related to ERP system. For ERP requirement management process to create change also related release management and IT support processes are required. Release management process controls the releases of changes from ERP environment to another and in the end of the process to production environment to be used by the business users. After release to production environment IT support process steps in to key place to ensure the usability of the system and to support the users with the changed system in case any issues are found.

This study is conducted in the context of change to a new customer warranty process in the case company. The case company has started a transfer from a legacy system to a new ERP (Enterprise Resource Planning) system with a new customer warranty process that allows the company to better serve the customer.

This study focuses on exploring the ERP requirement management process which was used to build the new customer warranty process and related ERP system solution. The case company had a process in the legacy system which followed the organizational structure from the 1980's where all functions from sales to delivery and finances were under the same roof. In the new customer warranty process, the responsibilities were renewed to follow the current organization structure and the main responsibility for customer warranty was transferred to the sales units that are the closest to the customer and tend to be best aware of the customer needs. Since the ERP requirement management process is the key to continuously improve the harmonized processes, like the customer warranty process, this study focuses on improving the ERP requirement management process.

## 1.1 Business Context

The case company of this study is a global equipment producer and service provider with headquarters in the European Union. Currently the case company has substantially more than 10 000 employees working in tens of countries in hundreds of units around the

world. The company is divided to three businesses X, Y and Z according to the three separate fields the company is operating on. The business X produces the equipments for manufacturing and process industries. Business Y has its focus on shipyards, ports and terminals. And business Z focuses on inspections and preventive maintenance programs, repairs and improvements, on-call services, spare parts, modernizations, and consultation services.

The case company of this study has grown to its current dimensions with organic growth and with a large number of strategic acquisitions. The strategic acquisitions and fast organic growth had left the company to fragmented state from process and systems point of view. The case company has been focusing on renewing its core systems and harmonizing the core processes with a large harmonization project. The idea of the harmonization project is to harmonize systems to level of one single common system per purpose, to harmonize processes to level of one single process per sales and distribution variant, to enable transparency throughout the company and to enable global reporting.

This study concerns the ERP application and process development teams within global corporate functions that are in the heart of the harmonization project. ERP application and process development teams work closely with the business units to implement latest developments and to innovate new. The main tasks of the ERP application team are to develop, implement and to continuously improve to find global business benefits, savings, through aligned process and ERP developments. The process development team focuses on training new global processes to the units to be implemented and to work closely with the business units to find targets for process and/or ERP developments.

## 1.2 Business Challenge, Objective and Outcome

Although the customer warranty process is one of the harmonized processes under continuous improvement, it dropped out of the original ERP template in early 2010's during first implementations and therefore developed later. Template in this context means a set of processes and ERP tools that are implemented to the units with scheduled implementations and that are designed, defined, and built to suite certain purpose together. The original template was built together with the whole ERP application and the process development team to ensure smooth implementations for the years to come.

At the time of its development, the customer warranty process was built to serve the whole corporation without any limitations or scoping (Appendix 2: 2). The customer warranty process was not meant to be perfect solution from the start, but a solution that the company can work with and that can be developed further later.

When further developed, all the processes supported by the harmonized ERP tools were thought out carefully when being transferred from legacy to the new harmonized systems. For the customer warranty process this meant a change to the basics of the process. The new, harmonized and developed, customer warranty process saw daylight as a first draft 2012 (Appendix 3: 2), as ready process drawing in 2014 (Appendix 3: 1) and with set of ERP tools in early 2016. The new customer warranty process received positive feedback from the pilot unit and from local quality process owners. The process was also implemented in a larger scale to several units in United States and Canada.

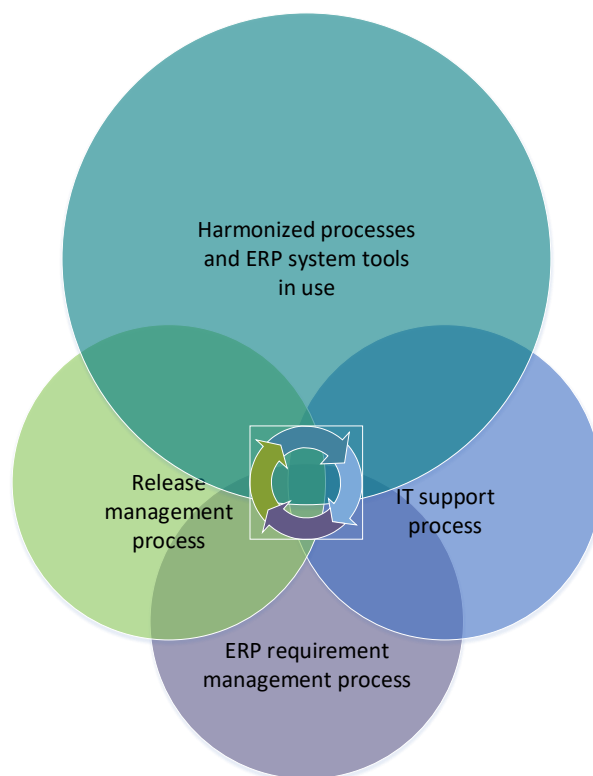
However, the implementation process revealed shortages in the original process and set of ERP tools. The team, operating with scarce resources, needed to fix the process and the set of ERP tools during the implementation process. The awareness of the existence on the new customer warranty process increased considerably during the US and Canada implementation and several smaller (regarding single or couple of units only) implementations executed simultaneously. As a result, this increased awareness produced a wave of “verbal feedback” from the US and Canadian project team, from ERP application team implementing other units and from business Z.

Following the identification of shortages and a wave of feedback on the new customer warranty process, the study was set to explore the current state of the new customer warranty process to understand more about the “verbal feedback” before further implementations. Thus, the original and overall goal was to propose improvements to the new customer warranty process.

However, during the initial current state analysis (CSA), it became clear that the root cause for the “verbal feedback” was the lack of awareness of the process and the related system tools were. The lack of awareness about the new customer warranty process has a potential to harm or slow down any future implementations and developments in the continuously improving environment. The initial CSA revealed multiple other topics as well, but it was seen important to search for the root cause for the lack of awareness to enable success of the further implementations and developments. Due to these identified

findings, the objective and the outcome of the study were changed along the research process as follows:

The objective of the present study is *to propose improvements to the ERP requirement management process from the quality management point of view*. If not fixed, the ERP requirement management process has a potential to harm other quality management processes and ERP system tools, but also potential to harm all other processes and ERP tools developed with same ERP Requirement management process. The relation between the ERP requirement management process and other processes are shown in Figure 1 below.



*Figure 1: Relation between ERP requirement management process, IT support process and Release management process to harmonized processes and ERP system tools is use.*

The outcome of the study is *a process improvement proposal to the ERP Requirement management process*.

### 1.3 Thesis Outline

This study is written in seven (7) sections. Section 1, Introduction, introduces the topic and enlightens the background of the double current state analysis structure. Section 2, Method and material, presents the initial research design with the needed additions due to the change of direction. Section 3, Current state analysis, proceeds to the analysis of the current state of both, the customer warranty and the ERP requirement management process, thus conducted in two stages. Section 4, Existing knowledge, contains a set of suggestions (merged into a conceptual framework) from best practice and literature for improving a requirement management process. This topic is explored with detailed points of view on Cross-Organizational resourcing and Cross-Organizational communication and cooperation. Section 5, Building proposal for the ERP Requirement Management process, combines the suggestions from best practice and literature with findings from the current state analyses and proposes improvements to the ERP Requirement Management process. Section 6, Validation of the proposal, discusses the feedback received from the key stakeholders on the proposal draft and ponders the usability of the proposal in real-life. Finally, the Section 7, Discussion and conclusions, summarizes the results, the next actions needed and the reliability of the study.

## 2 Method and Material

This section presents the research design of this study. First, the section discusses the research approach. Second, the section describes the research design. Third, the data collection and analysis. Last, the section discusses the validity and reliability plan.

### 2.1 Research Approach

The research approach of this study is an exploratory case study. Ghauri and Grønhaug (2010; 109) define a case study as “*a description of a management situation*”. The advantages of the case study research approach for this study are in the flexibility of the approach, in the suitability for small-scale studies and in the holistic view (Denscombe 2014; Case studies). The type of the case study has been chosen to be an exploratory case study due to the nature of trying to understand and to find out rather than to explain or describe (Yin 2009; 8). Denscombe (2014; Strategies for social research) argues that cases aiming to “*understand the complex relationship between factors as they operate within a particular social setting*” should be studied with a case study approach. In addition, Baxter and Jack (2008; 554) state that the case study approach is suitable for cases thriving to understand the phenomenon through multiple lenses and to use variety of data sources.

The disadvantages of the case study research approach lie on the restrictions on generalizing the findings and on defining the boundaries for the case (Denscombe 2014: Case studies). Yin (2009; 14-15) advises that lack of rigor and researcher biases are considered traditionally the prejudices against the case study method and that this should be taken into account in the execution; to report all evidence fairly and to use systematic way of executing the research (Yin 2009; 14).

Ghauri and Grønhaug (2010; 106) argue that qualitative and quantitative methods are suitable for different data collection phases; qualitative methods to learn about the problem and quantitative methods to accept or reject hypotheses. The case study method can be considered to use both qualitative and quantitative data for suitable phases of the study (Ghauri and Grønhaug 2010; 107).

This study is mainly based on qualitative data and the observations of the researcher during the interviews and conducted according the case study approach. Importantly, the

investigation of the current state was conducted in two phases. The results of the first current state analysis changed the research approach in the middle of the study. The study was a pure single case study that needed to be turned towards a single case study with embedded units to compare the requirement management processes between application teams. In addition to the case investigation, the study also offers the proposal how to act upon the findings addressed to the case company, which makes an addition to the case study part.

## 2.2 Research Design

The research design of this study developed in two stages. The main structure of the research design was created in the starting phase of this study. The research design needed to be revised after the first round of current state analysis due to findings described in Section 1.2 and Section 3.1. Figure 2 illustrates the initial research design.

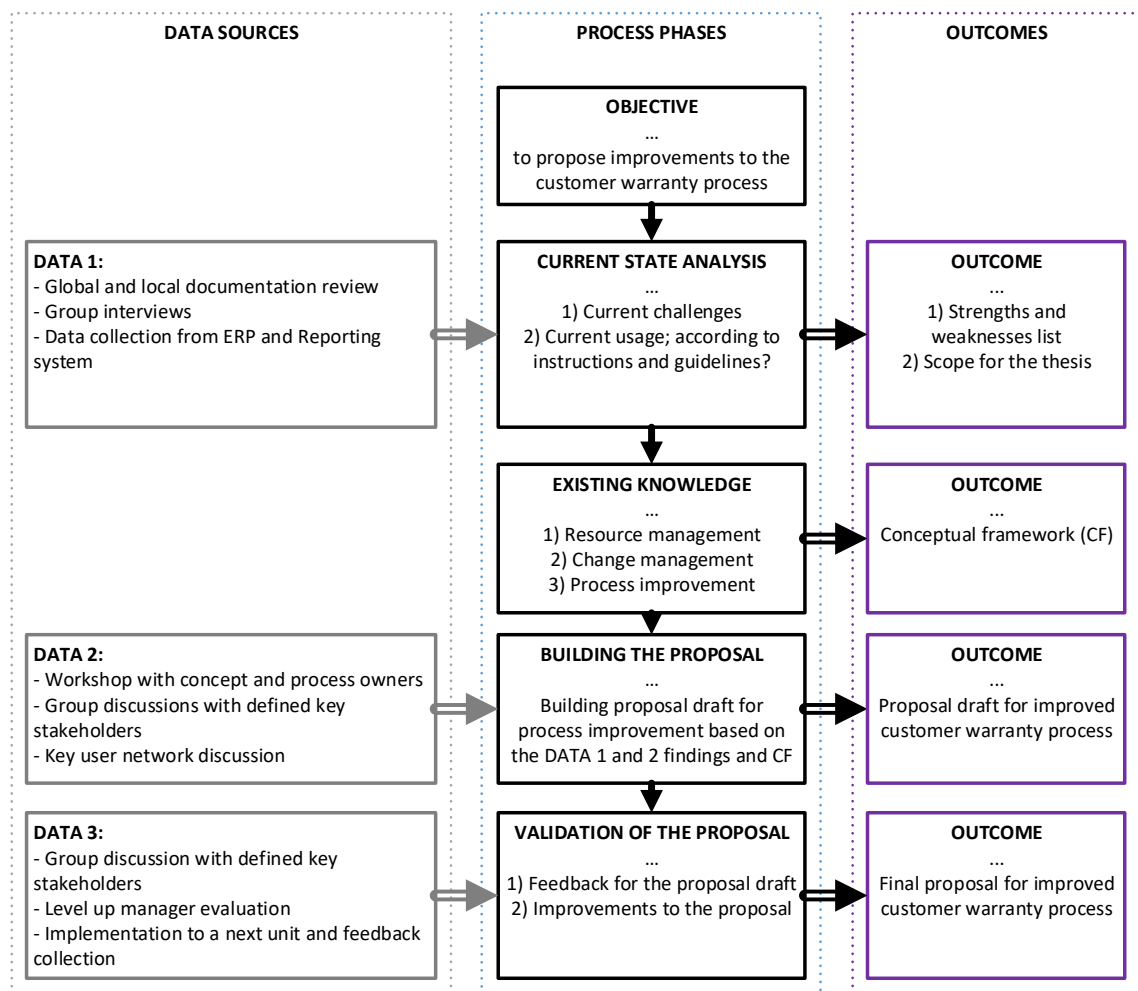


Figure 2: The initial research design.

Figure 2 illustrates the initial research design of the study; objective, current state analysis, producing a conceptual framework from existing knowledge, building the proposal and validation of the proposal. The data sources and the outcomes of each phase are included to Figure 2 as well. As the research design needed to be changed due to the findings in the initial CSA, Figure 3 illustrates the revised research design.

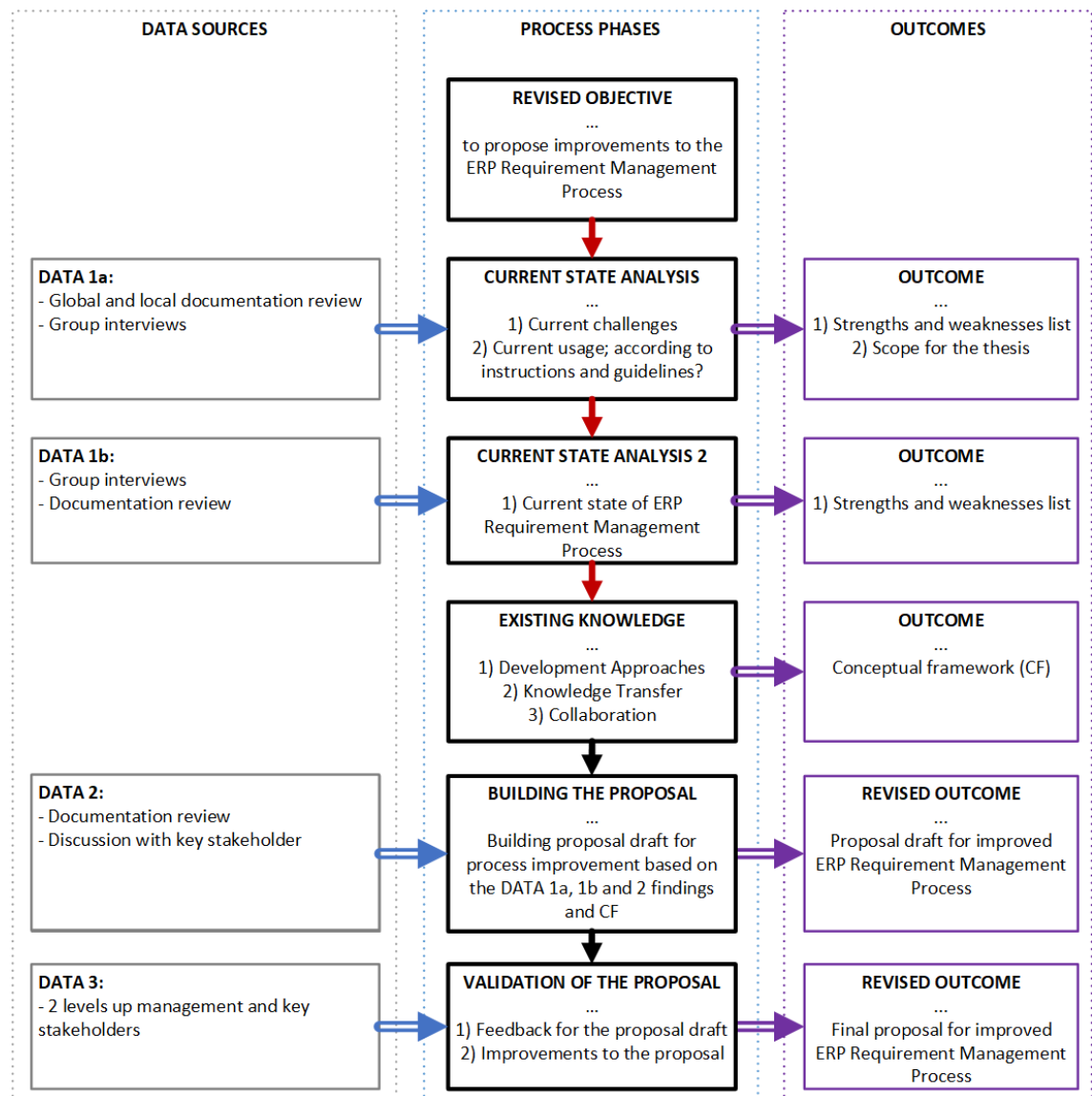


Figure 3: The revised research design.

Figure 3, the revised research design, contains the same main phases as the initial research design and in addition the already executed initial current state analysis (CSA).



This study is performed first, exploring the current state of the customer warranty process through interviews with key stakeholders, deployment team members and key users of the pilot and US and Canada implementation and as well through documentation review including global and local documentation. The key stakeholders were interviewed to explore the root cause for “the verbal feedback” and to gather existing feedback in constructed manner. The deployment team members have had a firsthand experience to implement the solution and therefore it was important to interview them for the current state analysis. The same applies to the key users that have been the key persons on their units to learn and test the system. The outcome of the initial current state analysis is a list of strengths and weaknesses of the current customer warranty process that revealed a critical role of the ERP requirement process. The studied area was wide, and the research design was built to avoid restricting the topic at the start to enable unforeseeable strengths and weaknesses to rise.

As the current state analysis continued, the study explored the current state of the ERP requirement management process through interviews with key stakeholders and through documentation review. The key stakeholders were interviewed to gather their points of view on the current state and explore more closely the cross-stream function in the ERP requirement management process.

The ERP requirement management process will be compared to latest harmonized process applicable for all IT solutions in the case company. The other application teams have used Kanban methodology meant for IT (Information Technology) teams for a longer period of time. The ERP team has been partly changing to the same methodology during the past year at the time of start of the thesis. Kanban in this context means a methodology of visualizing, limiting WIP (Work in Progress) and focusing on to get things done rather than started (Anderson 2010; 9, 15). During the thesis the case company has moved to Scrum methodology applying it from Scaled Agile Framework angle (Scale Agile, Inc. 2019). These process changes will be reviewed at the proposal building stage.

After both current state analysis stages the study will continue to explore existing knowledge to gather ideas. The study summarizes the findings to a conceptual framework for the study to continue to build the proposal on. Next, the study continues to collect additional data for proposal building stage. The proposal draft will be reviewed with key contact to identify any potential gaps on the proposal. And finally, the next step

in the study is to validate the proposal with key stakeholders to improve the proposal. The outcome of this stage is the final improvement proposal.

### 2.3 Data Collection and Analysis

The data collection and analysis of this study used multiple sources of data in four phases. The overview of the data is demonstrated by Table 1 and the details of each data source are elaborated more by related Tables 2, 3, 4, 5, 6, 7 and 8.

*Table 1: Data overview.*

Data phase	Content	Data source	Data type	Purpose
Data 1a Section 3, Current State Analysis	Identifying strengths and weaknesses	Table 2 Company internal documents	Process description, user manuals, local instructions, locally collected improvement ideas and process variant descriptions	The initial current state analysis to identify strengths and weaknesses of Customer Warranty Process: - Verbal feedback - Comparing global documentation to local documentation
		Table 3 Key stakeholders and users	Interviews	
Data 1b Section 3, Current State Analysis	Identifying strengths and weaknesses	Table 4 Key stakeholders	Interviews	The second current state analysis to identify strengths and weaknesses with ERP Requirement Management Process from cross module point of view: - Verbal feedback
		Table 5 Company internal documents	Process descriptions and User instructions	
Data 2 Section 5, Building the proposal	Building the proposal	Table 6 Company internal documents	Process descriptions and handbooks, Release materials	Comparing process to new harmonized process, Additional details to support proposal building
		Table 7 Key stakeholder	Discussion with main contact	
Data 3 Section 6, Validating the proposal	Validating the proposal	Table 8 Key stakeholders	Meeting with key stakeholders	Feedback for the improvement proposal from 2 levels up management and key stakeholders to finalize the final improvement proposal

Table 1 demonstrates the data phases: Data 1a to execute the initial current state analysis on the customer warranty process, Data 1b to execute the second current state analysis on the ERP requirement management process, Data 2 to build the improvement proposal and Data 3 to validate the improvement proposal. Table 1 illustrates in addition the purpose of each data collection type and data source.

All collected data was marked with Data ID's with [Data phase]-[Category: A = Document or B = Interview/Work shop/Meeting][Running number per Category] -format. For example, D1a-A1 is Document 1 related to Data 1a and D1b-B11 for Interview 11 related to Data 1b. All interviewed persons and persons mentioned in the interviews were marked with Person IDs, if not possible easily to describe otherwise, with [Category: P = Person][Running number per Category] -format and described in documentation in addition to Person ID with their generalized titles only. The details of each data source are elaborated more next starting from Data 1a related documents presented by Table 2.

Table 2: Data 1a - Document review for the initial current state analysis.

Data ID	Document description	Document amount	Review date
D1a-A1	Customer Notification Instruction Manual	46 pages (3,84 MB)	January 2017
D1a-A2	Notification User Manual	73 pages (10,9 MB)	January 2017
D1a-A3	Customer Warranty Process Description, Global	33 pages (1,4 MB)	January 2017
D1a-A4	Local additional instruction: Unit 1 -> Unit 2	1 page (15,1 KB)	January 2017
D1a-A5	Local additional instruction: Unit 1 -> Unit 3	1 page (16,2 KB)	February 2017
D1a-A6	Local additional instruction: Unit 2 -> Multiple units	1 page (15,6 KB)	February 2017
D1a-A7	Development ideas	1 page (13,9 KB)	February 2017
D1a-A20	Customer Warranty Process Variants, Business Area Z	3 pages (48,6 KB)	April 2017
D1a-A21	Customer Warranty Process Variants, Business Area X and Y	1 page (53,6 KB)	April 2017

Table 2 illustrates the starting point of the data collection by presenting the documents reviewed for Data 1a. Part of the documents were received later and there for the review dates are later than for the first ones that were used a starting point. Not all documents promised by interviewees were delivered by end of April 2017 as those were still under construction. One target of the interviews held on February and March 2017, presented in Table 3, was to track down local documentation for the analysis purposes. The documents were tracked down to analyze the points that business considered worth of documenting separately, meaning parts that could be missing from global documentation or parts that business considered as working better against global instructions.

Table 3: Data 1a - Interviews for the initial current state analysis.

Data ID	Focus group	Participants	Date and duration	Documentation
D1a-B1-1	Topic Owners	P2: Indirect sourcing manager	14.2.2017 1 h 10 min	<b>Appendix 2</b> Transcribed and translated field notes
D1a-B1-2	Topic Owners	P1: Global Process Owner, Quality Management P3: VP, Quality Development	15.2.2017 2 h 2 min	<b>Appendix 3</b> Transcribed, translated and summarized field notes
D1a-B2	Topic Owners	P10: Service Processes Director P11: Process and Training Owner P12: Process and Training Owner P13: VP, Technology and Quality	15.2.2017 57 min	<b>Appendix 4</b> Transcribed and summarized field notes
D1a-B3	Key users, Pilot	P14: Warranties Claim Manager P15: Quality Engineer	16.2.2017 1 h 10 min	<b>Appendix 5</b> Transcribed field notes
D1a-B4	Key users, US and Canada implementation	P19: Quality Assurance Engineer P20: Return Goods Analyst P21: Assistant Controller P22: Customer Service and Marketing Associate Director P23: Quality Supervisor P24: Inventory analyst P25: Steel Purchaser P26: Quality Manager P27: Quality and Customer Service Manager P28: System Support Manager	16.2.2017 1 h 26 min	<b>Appendix 6</b> Transcribed and summarized field notes
D1a-B5	Deployment members, Wave implementations	P5: Configuration Owner, Quality Management P6: Consultant, ERP Sales and Delivery P7: Concept Owner, Sales and Delivery P8: Consultant, ERP Quality Management P9: Concept Owner, Project System	15.2.2017 52 min	<b>Appendix 7</b> Transcribed and summarized field notes
D1a-B6-1	Key users, Next implementation	P4: Quality Engineer	15.2.2017 50 min	<b>Appendix 8</b> Translated and summarized field notes
D1a-B6-2	End user, Next implementation	P45: Project Engineer	15.2.2017 Answers received by email	<b>Appendix 8</b> Written answers translated, Highlighted with blue
D1a-B6-3	End user, Next implementation	P46: Project Engineer	15.2.2017 Answers received by email	<b>Appendix 8</b> Written answers translated, Highlighted with green
D1a-B7	Concept owners, Cross stream	P16: Concept Owner, Service P17: Concept Owner, Subcontracting P18: Concept Owner, Variant Configuration	16.2.2017 48 min + 5.4.2017 30 min (P18)	<b>Appendix 9</b> Transcribed, translated and summarized field notes
D1a-B8-1	Process owners, Cross stream	P43: Global process owner, Components delivery P44: Global process owner, Cranes delivery	27.2.2017 24 min	<b>Appendix 10</b> Transcribed, translated and summarized field notes
D1a-B8-2	Process owners, Cross stream	P29: Global process owner, Controlling P30: Global process owner, Finance	22.2.2017 48 min	<b>Appendix 11</b> Transcribed, translated and summarized field notes

Table 3 presents interviews executed for Data 1a. All of the interviews were first planned to be group interviews. Due to the tight schedule couple of group interviews were cut to smaller groups, one interview was continued later with person P18 and 2 interview answers were received by email. The extent of the interviews presented by Table 3 was planned to be comprehensive due to complex organizational structure and the complex situation with the customer warranty process without clear idea of what the key issues are.

The interviews included sessions focused on topic owners, key users from different implementations, deployment team members, key and end users for next planned implementation and concept owners and process owners of crossing streams. The list of main questions on each interview is presented by Appendix 14. All interviews were recorded and transcribed to field notes as whole or by summarizing and translated to English when needed. Similar actions were done for interviews in Data 1b (Table 4), for workshop result summary in Data 2 (Table 7) and for the meeting for Data 3 (Table 8).

*Table 4: Data 1b - Interviews for the second current state analysis.*

Data ID	Focus group	Participants	Date and duration	Documentation
D1b-B9	Management, ERP Requirement Management Process	P31: Head of Development P32: Program Director P33: Head of IT	22.3.2017 1 h 1 min	<b>Appendix 14</b> Transcribed, translated and summarized field notes
D1b-B10	Product and Release management, ERP Requirement Management Process	P34: ERP Technology Manager P36: ERP Product Manager P37: ERP Release Manager P41: ERP Development Manager	22.3.2017 53 min + 3.5.2017 38 min (P41)	<b>Appendix 15</b> Transcribed and summarized field notes
D1b-B11	Solution Area Management, ERP Requirement Management Process	P38: Solution Area Manager P39: Solution Area Manager P40: Solution Area Manager	24.3.2017 1 h 7 min + 3.5.2017 33 min (P39)	<b>Appendix 16</b> Transcribed, translated and summarized field notes

Table 4 presents the interviews held for Data 1b, for the second current state analysis. As the findings from the initial current state analysis directed the study to learn more about the ERP requirement management process, similar set of data was collected for the Data 1b as for the Data 1a; document collection (Table 5) and interviews (Table 4). The interviews were executed by interviewing the key management functions related to the ERP requirement management process; level up management, on level management and execution level management.

Table 5: Data 1b - Document review for the second current state analysis.

Data ID	Document description	Document amount	Review date
D1b-A8	Tracker instruction v19	34 pages (2,92 MB)	April 2017
D1b-A9	ERP Product Requirement Process -Intrapage	-	April 2017
D1b-A10	ERP Product Requirements Prioritization Process	4 pages (353 KB)	April 2017
D1b-A11	Tracker instruction v20	35 pages (2,92 MB)	April 2017
D1b-A12	ERP Requirement Management v1	24 pages (531 KB)	April 2017
D1b-A13	EPIC content	11 pages (1,46 MB)	April 2017
D1b-A14	EPIC Brief - template v1	11 pages (438 KB)	April 2017
D1b-A23	Gate Overview	1 page (1,75 MB)	January 2019
D1b-A24	ERP Implementation Methodology -Intrapage	-	January 2019
D1b-A25	ERP Release Management -Intrapage	-	January 2019
D1b-A26	Release Management process -Intrapage	-	January 2019

Table 5 presents the documentation collected for Data 1b, for the second current state analysis. The documents from D1b-A8 to D1b-A12 present the key documentation related to the ERP requirement management process. Documents D1b-A13 and D1b-A14 are related to enhancement process, one variant of the ERP requirement management process with an additional set of rules. The documents D1b-A23 to D1b-A26 elaborate about gate model, implementation methodology and release management process.

Table 6: Data 2 - Document review for the improvement proposal draft building.

Data ID	Document description	Document amount	Review date
D2-A15	IT Agile Handbook	-	May 2021
D2-A16	Release slide	-	May 2021
D2-A17	What's new in SAP Release R21.5 May 2021	14,4 MB	May 2021

Table 6 presents the documentation and data reviewed for the proposal building. For Data 2 the documentation review tackled latest changes to the ERP requirement management process and matched the previous findings with latest information. D2-A16 and D2-A17 strengthens the details on the release communication to support proposal building. By comparing the current state analysis details with latest fixes, the findings can be kept relevant for the case company, especially as the last process model is harmonized between IT solution teams.

The customer warranty process was built with ERP requirement management process. Resources from both teams were needed for the build and implementation. The proposal was built with results from Data 1a, Data 1b and Data 2 in mind. The last phase of the Data 2 was to receive feedback for selected group for the proposal (Table 7).

*Table 7: Data 2 - Workshop for the improvement proposal building.*

Data ID	Focus group	Participants	Date and duration	Documentation
D2-B12	Person focusing on communication	P48: Manager, Communication	06.05.2021	<b>Appendix 18</b> Validation result summary

Table 7 presents the details of the discussion held with selected key contact to receive feedback on for the improvement proposal for the ERP requirement management process. The person was selected on the terms of being the key person on continuously developing the communication aspect of the process.

Table 8 presents the details of the meeting held for the validation of the improvement proposal. The meeting was held with persons key to the topic and with 2 levels up management where the decisions on the process lie in.

*Table 8: Data 3 - Meeting for the improvement proposal validation.*

Data ID	Focus group	Participants	Date and duration	Documentation
D3-B13	2 levels up management and key stakeholders	P49: Solution Area Manager P50: Director, IT Product Development and Supply P41: ERP Development Manager P51: Solution Area Manager P1: Global Process Owner, Quality P52: IT Process Owner, Quality P37: IT Platfor Owner, Manager P48: IT Communi Owner, Manager, Communica	10.05.2021 45 min	<b>Appendix 19</b> Validation result summary

## 2.4 Validity and Reliability Plan

Validity and reliability plan of this study is built on multiple research quality considerations. Yin (2009; 40-41) summarizes validity and reliability evaluation in social science research to four tests; construct validity, internal validity, external validity and reliability tests (Table 9).

Table 9: Case study tactics and four design tests (Yin 2009; 41-42).

TESTS	Test description	Case study tactic	Phase of research in which tactic occurs
<b>Construct validity</b>	Identifying correct operational measures for the concepts being studied	- use multiple sources of evidence	data collection
		- establish chain of evidence	data collection
		- have key informant review draft case study report	composition
<b>Internal validity</b>	Seeking to establish a causal relationship, whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships (valid only for explanatory or causal studies only and not for descriptive or exploratory studies)	- do pattern matching	data analysis
		- do explanation building	data analysis
		- address rival explanations	data analysis
		- use logic models	data analysis
<b>External validity</b>	defining the domain to which a study's findings can be generalized	- use theory in single-case studies	research design
		- use replication logic in multiple-case studies	research design
<b>Reliability</b>	demonstrating that the operations of the a study - such as the data collection procedures - can be repeated, with the same results	- use case study protocol	data collection
		- develop case study database	data collection

As Table 9 presents evaluation tests by Yin (2009; 41-42), the most relevant ones for this study are to encounter construct validity, external validity and reliability tests (Yin 2009; 40-41). The internal validity test is according to Yin (2009; 42) valid only for explanatory and causal case studies and therefore the main plan is aimed for the rest of the validity and reliability tests.

For the construct validity, Yin (2009; 41) suggests to use multiple sources for evidence, to establish a chain of evidence and to have the key informants review a draft of the report. The case study research design includes the theory part after the current state analysis and before the proposal building to encounter the external validity test in this single case study (Yin 2009; 41) The reliability test can be encountered according to Yin (2009; 45) by building the report in the manner that another investigator would be able to repeat the study and end up to same conclusions. All these measures have been included to the research design.

On the other hand, Ghauri and Grønhaug (2010; 210-211) argue that in qualitative studies next four types are emphasized in importance; descriptive validity, interpretative validity, theoretical validity and generalizable validity types. The validity types by Ghauri and Grønhaug (2010) are somewhat similar than what Yin (2009) suggest, but do bring additional features to consider. The main concern by Ghauri and Grønhaug (2010; 210-211) lie in the vast amount of data and in the tedious and time consuming data analysis phase. Ghauri and Grønhaug (2010; 212-213) suggest to use multiple methods and to confirm data from other sources to ensure validity of the research. Ghauri and Grønhaug (2010; 212-213) continue to close into a topic from multiple points of view and to find out if similar topics rise from all or several of those. The study proceeds with these research quality considerations in mind.



### **3 Current State Analysis of the ERP Requirement Management Process and Related Processes**

This section describes how the current state analysis was executed for this study. This section first provides overview of the current state analysis executed. Second, this section describes and analyses the results of stage 1 current state analysis related to customer warranty process. Third, the section describes the stage 2 current state analysis related to ERP requirement management process and the key processes around the ERP requirement management process, Release management process and IT support process. Finally, it summarizes the key findings of the current state analysis and describes the selection of weaknesses for improvement.

#### **3.1 Overview of the Current State Analysis**

In this study, the current state analysis was conducted in two stages. The first stage of the current state analysis was launched from a perspective that the customer warranty process was defined, system tools were built to support it, the process and system solution were implemented to several units and that unclear hearsay, “feedback”, was received from multiple directions through IT stakeholders and business representatives. Thus, the first stage of the current state analysis was set to investigate what was the target for the customer warranty process development, how well the target was met, what are the current challenges, and what are the strengths and weaknesses of the customer warranty process.

In the first stage of CSA, the collected data, interviews, and documents, revealed mainly minor issues with the customer warranty process. These finds are good base for next round of enhancing. Some bigger issues with un-mapped territory, but at the same time concerning issues with information flow within ERP application team. This stage used the help of the ERP application team that is the key team of experts developing, supporting, and implementing the processes and ERP system solutions. The team members act in multiple separate roles within the IT support, development, and implementation processes as well as act as owners of areas within the full ERP application solution. Their knowledge level is the key to keep the continuous improvement in perpetual-motion, to solve issues with the system, to develop the system, to implement the system and processes, to train the users to use the system and processes, and to support the usage of the system.

Due to the findings from the first stage of the CSA (discussed in Section 3.2) the direction of this study turned to focus further on the ERP requirement management process, to understand more about why there is a challenge with the information flow within the ERP application team related to developments. Figures 4 and 5 show the scope and coverage of the two stages of analysis.

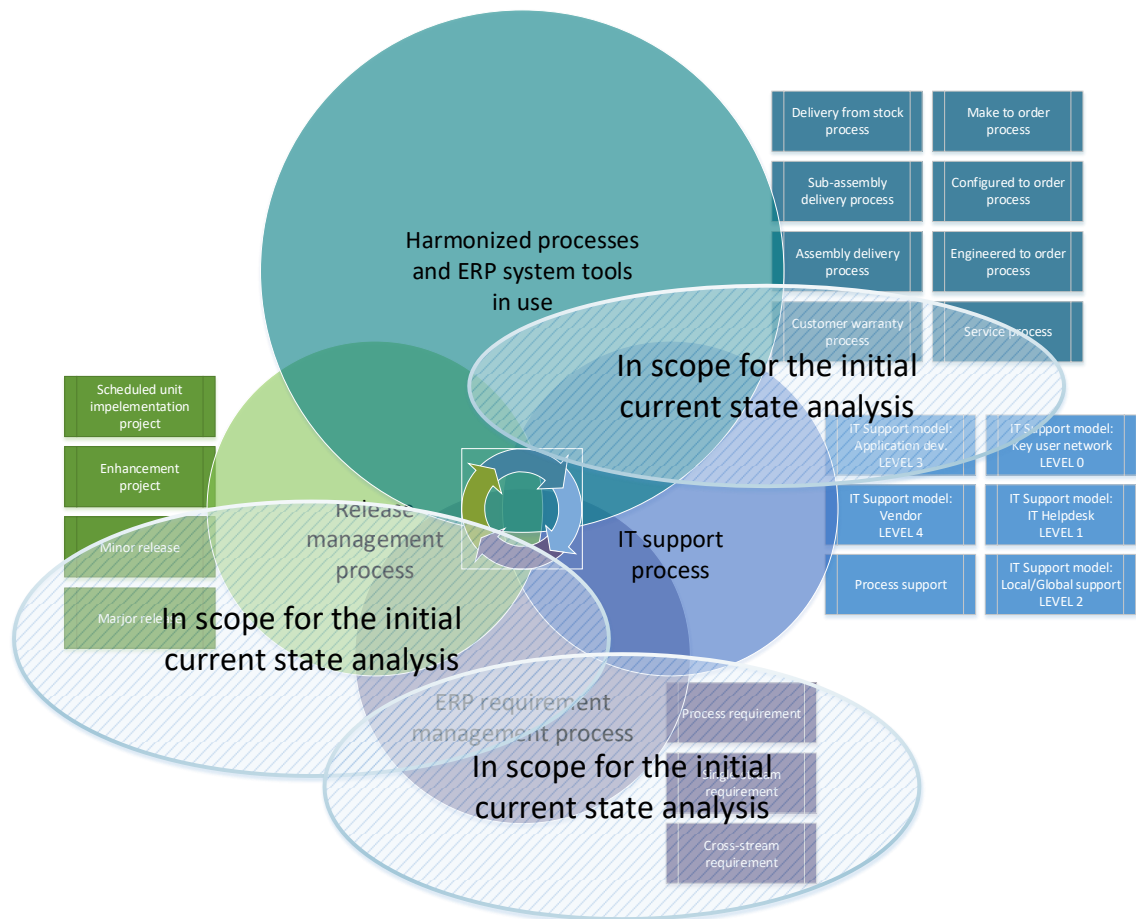


Figure 4: Scope of the initial current state analysis.

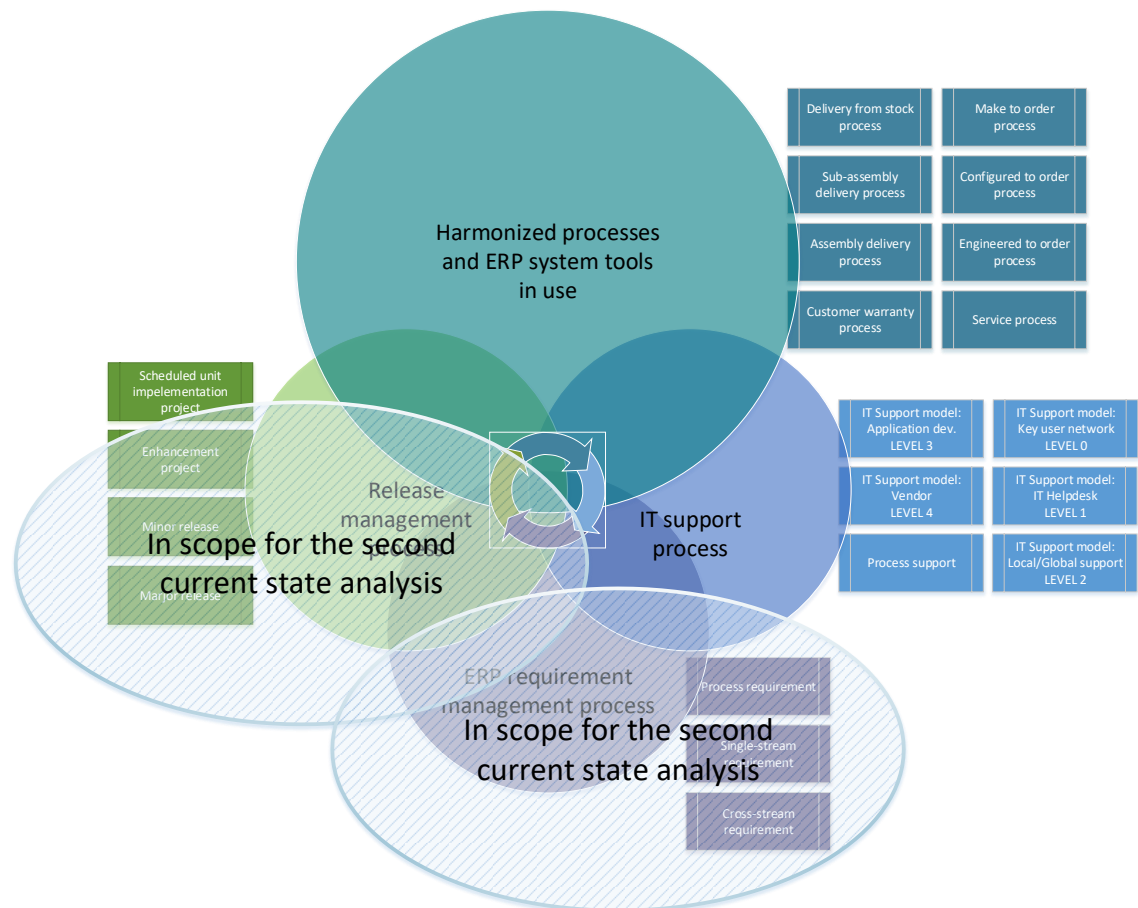


Figure 5: Scope of the second current state analysis.

The second stage of the current state analysis focused on the ERP requirement management process and to the information flow between the key stakeholders of separate focus areas, streams, within the ERP requirement process and related processes (ERP tracker process and IT support process). The ERP requirement management process was used to develop the customer warranty process and therefore is the key process to study more about.

### 3.2 Description and Analysis Results of Customer Warranty Process (Stage 1)

Customer warranty process is one of the key processes in the case company. With customer warranty process the case company ensures quick response and resolution for customer in case of issues with delivered products or service. Customer warranty process and related system tools provide the warranty coordinators tools to work with when resolving cases for the customers. According to Data 1a documentation review, Cus-

customer warranty process is initiated with a claim raised by the customer where the customer states the issue with the product or service and is continued with set of selectable process variants as per customer need (Figure 6, D1a-A3). Process continues as per customer case by first focusing on the replacement materials, service and technical support to resolve the situation as soon as possible. Second focus turns to returns to ensure root cause analysis and compensations from vendors towards the case company. As third phase focus turns to credits and debits where either the case company credits towards the customer, or then invoices costs from customer, if warranty was not valid and customer has agreed to pay the costs. As last step changes to installed base are made, final response is given to customer and a separate notification is created to continue root cause investigation separately from resolution. Root cause analysis is made by the unit responsible of the failure.

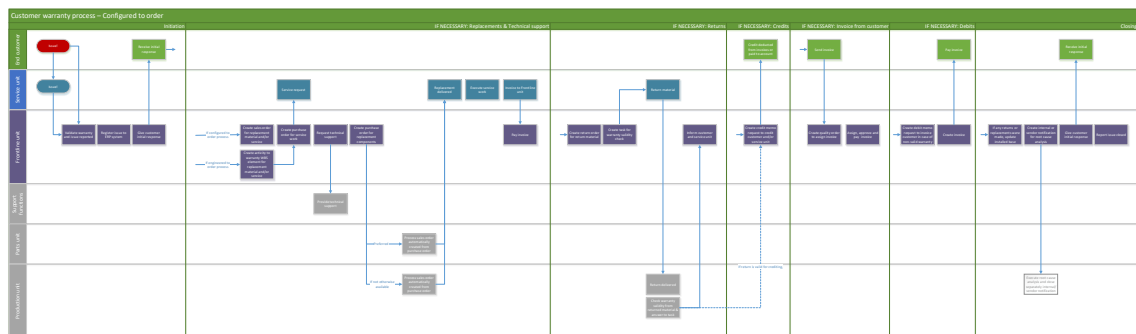


Figure 6: Customer warranty process (Appendix 20)

Interviewees in interviewee B1-2 (Appendix 3) described that the customer warranty process was built to harmonize the warranty supply processes. Tight harmonization brought unique challenges during the development, especially in the finance and controlling areas. The interviewees were raising up the hurry to build, lack of awareness about the ongoing implementations and highlighted a suggest communicating more widely about the ongoing implementations and developments in quality management area.

According to the documentation the customer warranty process was partially supported by the ERP system also before the current process. When the customer warranty process was still managed with legacy warranty system, the orders for component returns and replacements to the customer were already managed with the current ERP system. The development of the customer warranty process included technically new notification types, order creation action box items, new printouts, process conceptualizing, process mapping and instruction manual creation. At the same time, developments were done to

the reporting system to enable reporting of root causes and costs with a relation to other details from notification, warranty orders and original orders.

### 3.3 Description of ERP Requirement Management Process (Stage 2)

According to the Data 1b documentation review and interviews, with the ERP requirement management process, the case company manages the requirements raised for the ERP application. The process is meant for individual and technically separate requirements and suggests separating the requirements to individually manageable entities. When the requirements have a relation to a larger entity, an enhancement project or a process tracker is meant to host the entity and to enable simultaneous scheduling of the individual requirements.

Interviewees elaborated and documentation review showed that currently the ERP requirement management process (Figure 7, Appendix 21) begins forming an idea of enhancing existing ERP application for it to suit the business better. The idea can be as minor as a wording on a document, a button to be hidden, or as major as an implementation of the ERP application and other harmonized systems to a unit or to a set of units on the specific country or multiple countries at a time. Depending on the size of the idea either an individual requirement or a project with multiple requirements is created to the tracker tool. The tracker tool is the host for the ERP requirement management process which visualizes the requirements for the management, for the ERP application team and for the requestors of the requirements. (D1b-A8 – A11, D1b-B9 – B11)

*“If this change needs the resources of the technical team, it is an ERP requirement need.”*

*(Data 1b: Interviewee P33, Head of IT)*

Analysis of the documentation shows, that the tracker tool enables the participants of the process to communicate together on the requirement and to document the actions. There are multiple types of requirements possible in the tracker tool. For the ERP requirement management process project and release trackers, localization tracker and process tracker are most valid ones. Also, the project trackers are used in combination with the mentioned other tracker types with the ERP requirement management process to host larger projects. This description focuses on the ERP requirement management process where individual requirements are followed. For the project trackers there is a separate

process, enhancement process, existing separately from the ERP requirement management process. This enhancement process hosts currently projects from ERP and other systems, but also business projects. Idea of the enhancement process is to visualize the project workload and to host the IT system requirements. (D1b-A8 – A11, D1b-B9 – B11)

Figure 7 (next page and Appendix 21) presents the ERP requirement management process with a swim lane flow chart where on the left can be found the separate functions from single stream perspective, on the top the main phases of the process and on the bottom the statuses through which the tracker moves during the development.

When process is described from a cross-stream perspective all the functions in Figure 7, except change approval board, integration manager and finance and controlling, should be multiplied with all the necessary streams. At the case company the ERP application area is divided into sales and distribution, project management, variant configuration, planning, production engineering, production planning, materials management, warehouse management, quality management, controlling and finance streams and expertise areas. (D1b-A9, D1b-B9 – B11)

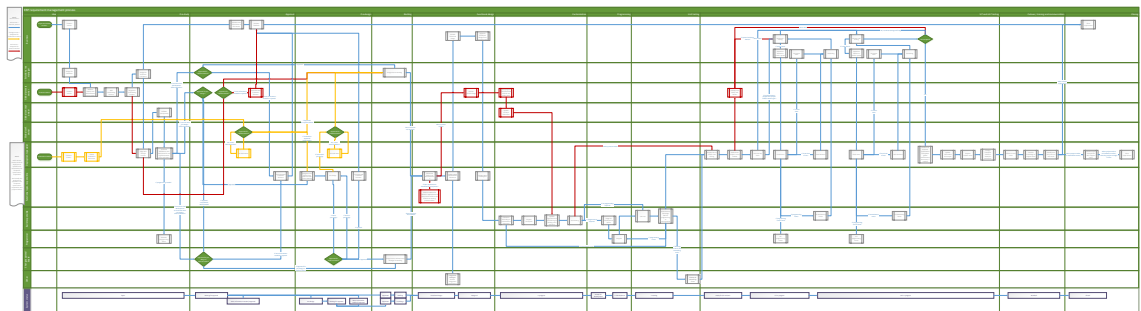


Figure 7: ERP requirement management process (Appendix 21).

*“A year ago we did not do this kind of cross stream work. Kanban has helped the situation a little bit by visualizing the cross stream requirements. We are trying to check the requirements that are clearly signaled as cross stream from the start. Kanban has brought the cross stream work more to the table.”*

*(Data 1b: Interviewee P38, Solution Area Manager)*

The blue lines and boxes in between describe in Figure 7 the flow with project and release trackers which are the main tracker types. The orange lines and boxes describe the flow for the localization trackers and release trackers, and the red lines and boxes the flow valid for the process trackers that host the process changes.

According to the documentation review, the difference between project and release trackers come from scheduling. The release trackers are individual trackers without a relation to a project and can be worked on as per prioritization. Kanban for information technology is used as a working method with the release trackers. Kanban for information technology aims to visualize and focus on finalizing the work, instead of starting the work. The project trackers have the same steps on the overall process, but the trackers are controlled schedule wise through the projects with a gate model to make sure the correct actions are executed before processing further. Each project that implements the ERP application to a new unit will include multiple localization trackers, one for each stream. The localization trackers host the details which are needed to setup new units to the system. The steps with localization trackers vary from the other trackers due to the nature of the requirement. The localization is a must and not a question of if it is needed. (D1b-A8 – A11, D1b-B9 – B11)

According to the interviewees, the process trackers host the process changes, the trackers act as platform not only for communication around the process, but also as a communicator for related technical release trackers. The process trackers are a relic of a former way of handling the projects. The process trackers are halfway between single trackers and implementation projects from process angle. As the work of the ERP application team has turned from focusing on implementing new unit to implement new and enhance existing at the same time, the process trackers are used again purely for process changes and not as much for project management. (D1b-B9 – B11)

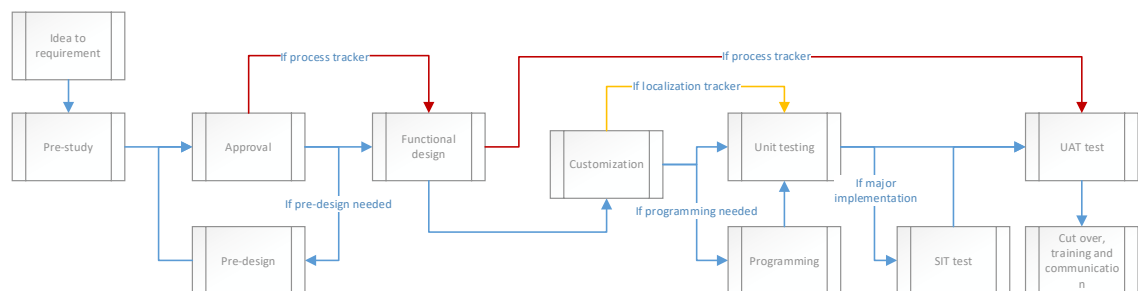


Figure 8: Main steps of ERP requirement management process.

The description of the ERP requirement management process in Figure 7 (Appendix 21) can be simplified to 11 main steps (Figure 8). When the requirement has been created and filled by the business with as much of information as possible, the requirement enters a pre-study phase where an evaluation of the requirement is done. First the requirement is evaluated by a global process owner or several process owners depending on extent

of the requirement. After global process owner evaluation, the tracker is assigned to deployment team member, on project trackers, or to functional specification responsible, on release trackers, to evaluate the tracker technically and conceptually. In the trackers that will need programming work, the tracker is evaluate by a programmer to get a clear view on the options and effort estimation from programming, customization, design, master data and training perspectives. The tracker will be evaluated on the approval phase by comparing the summed effort estimation to the business benefit calculations provided by the business. The details and the benefits will impact also the prioritization of the tracker on later stage. (D1b-A8, D1b-A11, D1b-A10)

According to the interviewees, for other trackers than for process trackers, the requirement may be so large that a pre-design is needed to evaluate the options and the efforts properly. In the ERP application team half a man day maximum is used for normal pre-study effort, all with higher effort estimation need to get an approval. When the pre-study, after approval similar is called pre-design, is more than half a man day, but not more than four man days, the global process owners may give a pre-study approval for the requirement to study it further. All requirements with more than four man day pre-study need will need change approval boards, CAB's, decision on the pre-design. After the evaluation is ready from the pre-design, the tracker will be brought to CAB approval. (D1b-A8, D1b-A11, D1b-A10)

Interviewees and documentation review also reveal, after an approval, the tracker is moved through backlog to functional design where the actual details of the requirement are mapped out and documented. With good practice the functional designs are checked and approved by the concept owners of all crossing streams in detail and by business on higher level. In the real life this does not always happen. After the functional design, the tracker progresses to customization and programming phases where the actual changes to the system are made. When these phases are ready rigorous testing starts. The case company used with ERP application 2-3 levels of testing, depending on system landscape chosen for the purpose. For larger project a 4-level landscape is used to ensure key user learning and stability of business units already implemented. With smaller projects and with release trackers 3-level landscape is used, as there are fewer moving details. On the 4-level landscape three rounds of testing is used. Unit testing is done in the same environment as the development, system integration test (SIT) is done with next layer, and user acceptance test (UAT) with second to last layer. The last layer is the



production environment where the changes are in the end released to. (D1b-A8 – A11, D1b-B9 – B11)

After the UAT, the tracker process focuses on finalizing documentation and communication and training materials. All the ready trackers are communicated to business as release notes with an email. During the customer notification process build in addition to release notes the major trackers were shortly presented on a common call participated by the ERP application team and key users and management of the business units already using the harmonized ERP application. The short introductions were not seen beneficial and the sessions were discontinued. Stream specific key user networks replaced the common call as place for further explanations and further questions on the topic. On the key user networks, the information is now possible to be focused for the audience more specifically. On the last steps of the ERP requirement management process a crucial point is to share the knowledge to the IT support team dedicated to support the users from the first day onwards after release to production environment. (D1b-A8 – A11, D1b-B9 – B11)

In summary, the ERP requirement management process has been visualized and controls the work for requirements raised for the ERP application. The ERP requirement management process is complex process with several layers with roles and streams.

### 3.4 Description of Release Management Process

At the case company, implementations can be split to release management with gate model and to release management with continuous deployment (D1b-A26). Release management with gate model is used in the case company with scheduled unit implementation projects where either fully or partially a system or system solution is implemented to one or multiple units or part of units at a time, or enhancement projects to bring enhancements to existing solutions, or to bring new solutions in use. According to D1b-A23 and D1b-A24 for this kind of implementations, the case company uses Waterfall methodology with six implementation gates and additional two gates related to test cycles; IG0 Business impact, IG1 Plan approval, IG2 Design approval, IG3 Build approval, SIT System integration test, UAT User acceptance test, IG4 Successful go-live and IG5 Closure approval (D1b-A23, D1b-A24). D1b-A26 also describes that the release management with gate model is used where the release management with continuous deployment does not fit to business needs. Documentation used (Table 5) does not define

what are the exact details where a selection is made to use one or the other, or that who does the selection between the two implementation models. On the other hand, the model does describe the differences between the models to help on the selection.

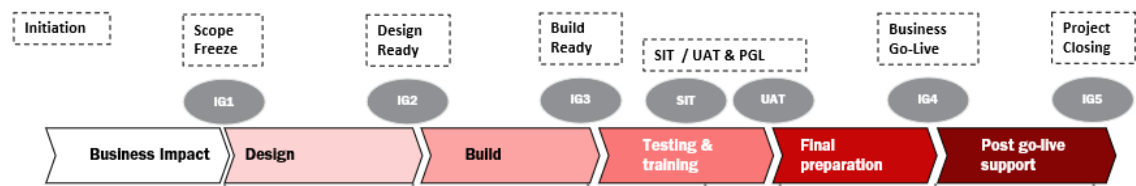


Figure 9: Gate overview (D1b-A23)

Release management with continuous deployment is used for individual developments or groups of few developments working together to enhance existing solutions (D1b-A26). Release management with continuous deployment does not have specific project model with what the implementation is done, but rather a communication model within release management process. Key users, key management and development team members receive information about the upcoming changes through two main channels of information through release notes delivered via email and through area specific key user network sessions where the upcoming changes are covered through the release notes and when necessary with system presentations. Release management with continuous deployment relies on the ability of people to discover and react to information received in timely manner. Key users have a responsibility to adopt the information and to share it further to their end users.

ERP requirement management process (Appendix 21) describes in addition a step to transfer knowledge to the support team to ensure IT support process described in the next section.

### 3.5 Description of IT Support Process

The IT support process in general at the case company is meant for the occasions when something unexpected or undefined happens with applications and tools, when user does not know how to proceed with applications or when user rights are needed. The IT support process at the case company supports all IT applications and all IT tools in use. Figure 10 presents the multilevel IT support process defined to support the users globally.

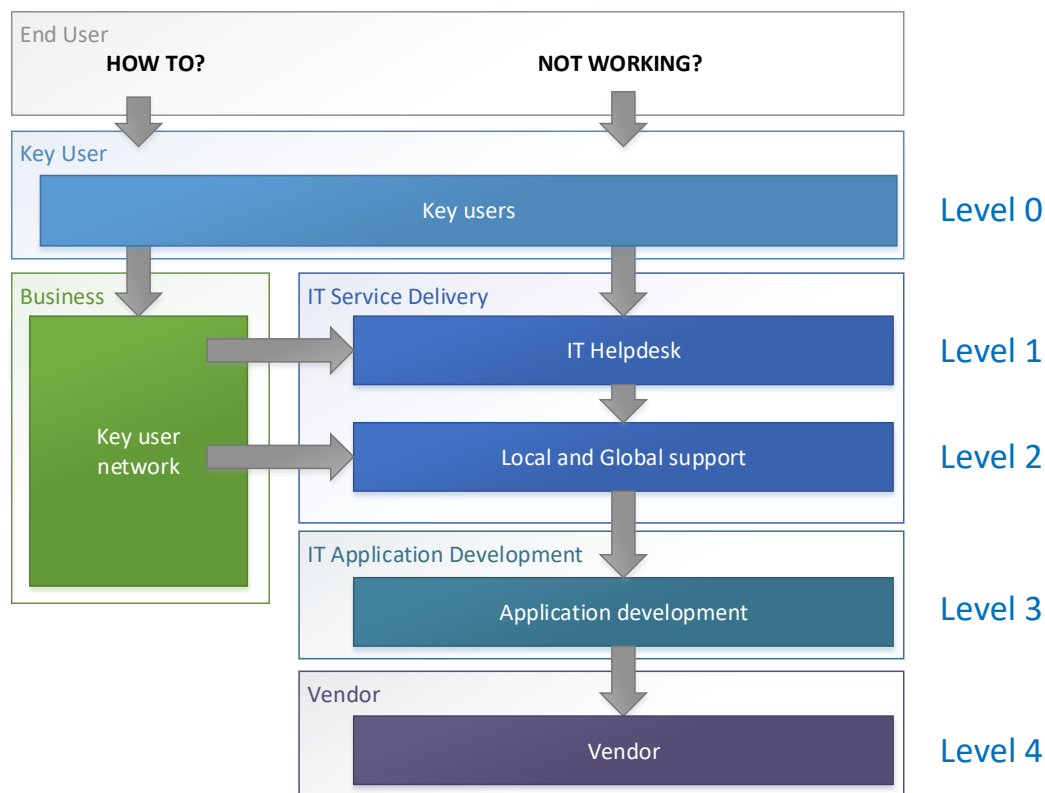


Figure 10: IT support process.

Figure 10 presents the official IT support process of the case company with slight modification. The official IT support process does not define the level 0 to exist in the documentation. In practice, the level 0 does exist with multiple applications, ERP application being one of those applications with key user support at the business units. Some of the applications have smaller teams where service requests and incidents are flown directly to level 3 application development team.

The IT support process can be seen to have five (5) support levels and a key user network (Figure 10). The process starts with an end user, employee, experiencing something unexpected with an application, having a how to questions or a need for user rights. The local key users in the business units are the first contact points for the users to share their problem or a need with a more experienced user. The key users have been trained extensively to use tools and are able to support users with a lot of questions. The key users are able to guide the users and to estimate, if the unexpected is caused by details in the usage or a broken system. The key users of the ERP application are defined per module. For example, quality management module is meant to have one or more key users dedicated to the quality management module in each unit with ERP application in

use. Some smaller units have common key users defined between the units to enable good coverage with enough resources.

For the key users, as the level 0 on the IT support model (Figure 10), there are two separate ways to seek advice either to send a message to a key user network or to contact IT helpdesk. The end users are allowed to use same contact methods, if key users are not available. The key user networks are groups of key users and local process owners of an ERP module gathering together frequently with global process owner, concept owner, global support and others interested on the area. The key user network has a social media to help with faster communication among the key users and other attendees present also in the meetings. The key user networks are led by concept owners or key users.

Level 1 and 2 are managed by IT service delivery team focusing on firsthand support to the end users and key users. The IT helpdesk function team is the lowest level support to support with easiest problems and to guide the incidents and service requests to correct level 2 teams. On the level 2 the case company has multiple different teams. Local teams are general IT teams supporting with computer, phone and other hardware related issues. The global teams are application specific teams supporting users globally and focusing on one or more applications or on ERP application to certain modules.

In the ERP application related level 2, the support team bases its knowhow to knowledge transfer about each implementation, enhancement project, single-stream requirement, cross-stream requirement and process requirement. In the ERP application team, the level 2 team does get knowledge transfer about each of mentioned other than process requirements. The knowledge is executed based on single module on the single-stream requirements and cross-stream requirements. The leading module trains the level 2 team. The training is focusing on technical perspectives more than conceptual or process topics. (D1b-A13 – A14)

Level 3 support is given by IT application development team. In ERP application this means in practice the same team that is developing and implementing the application. Therefore, the level 3 team is ought to be the most experienced and able to support the level 2 team in all challenges and in cases waiting for conceptual or technical decisions to be made. The conceptual and technical ownerships lie in the ERP application team. When level 3 support phases issues with the applications and tools that they're not able

to fix, their last resort is to head to level 4 of the process and to contact the vendor of the application, tool or device. On all levels the customer is constantly involved with the process. More questions might be asked to understand the key issue the customer is facing. For the IT support process the end users and key users are considered to be the customers.

The customer warranty process bases on the IT support process to support the users and to resolve the found issues, and to development process to enhance constantly the customer warranty process and application support. As the level 3 support is done by the same team that develops the applications, the initial current state analysis raised a question; How the quality management module development should be led? The level 3 interviewees (D1a-B7) saw themselves as non-abled to support fully the process nor to implement it to new units. Some of the interviewees (D1a-B5) were more confident on the topic but showed signs that the details and the targets of the new customer warranty process may not be understood to the needed level.

In summary, the IT support process is a multilevel model where higher levels mean more advanced skillset. Level 3 support on the ERP application is the ERP application team concept and configuration owners where their knowledge level is the key.

### 3.6 Summary of Strengths and Weaknesses from the Current State Analysis

The ERP requirement process is meant to control the steps with requirements raised towards the ERP application. As seen from Figure 7 (Appendix 21), the ERP requirement management process is a complex process with several layers of roles and high quantity of sub-process steps. Figure 7 only visualizes the process without the cross-stream point of view and several layers should be added to the picture to visualize that. All the steps with any type of verification, testing or evaluation should have steps of communication and steps for actions at the crossing stream or streams.

Table 10 visualizes the findings from the interviews related to the ERP requirement management process from cross-stream point view. The findings can be divided to four (4) main topic areas; cross-stream cooperation, information sharing, resourcing and to general which includes miscellaneous findings.

Table 10: Findings from interviews on ERP requirement management process.

Valuation	IT Comment	Reported in/b	Finding category
Both	CAB trying to add the contributing streams	B10/P37	Cross-stream cooperation
Both	It is meant that process owners align between them first	B10/P41	Cross-stream cooperation
Strength	Kanban has brought more visibility to cross-stream work	B11/P38	Cross-stream cooperation
Strength	Kanban board has a separate lane for cross-stream to enable cross-stream work visualization	B10/P34&P41	Cross-stream cooperation
Strength	Enough people involved to look at the development from multiple angles	B9/P33	Cross-stream cooperation
Weakness	Mixed message about cross stream tracker leadership: 1) Kanban day-to-day describing that functional specification responsible will lead (B11/P38) 2) Process owner will lead (B9/P31)	1) B11/P38 2) B9/P31	Cross-stream cooperation
Weakness	During pre-analysis it is not always known, if the requirement needs other areas as well	B11/P38	Cross-stream cooperation
Weakness	Documentation does not always get changed/updated, if during testing or development relations to other areas are found	B11/P38	Cross-stream cooperation
Weakness	No re-review for cross stream need existing in the requirement management process	B11/P39	Cross-stream cooperation
Weakness	We need to make sure we do not screw up FICO -> Main cross stream area	B10/P36	Cross-stream cooperation
Weakness	Not all are included to the cross-stream Kanban; low participation past 3 months	B10/P34	Cross-stream cooperation
Weakness	Biggest issue with cross-stream Kanban meeting has been that people are other wise occupied	B10/P34	Cross-stream cooperation
Weakness	Key user networks per ERP module bring a cross-stream risk	B10/P37	Cross-stream cooperation
Weakness	Cross streams are realized to late, if not realized in the start	B11/P38	Cross-stream cooperation
Weakness	No systematic way to change path, if found to be cross stream later in the process	B11/P39	Cross-stream cooperation
Weakness	Process and concept development relation to ERP requirement management process is a grey area	B9/P33	Cross-stream cooperation
Strength	FICO process owners participating CAB often	B10/P36	General
Strength	Demanding better business benefit	B11/P40	General
Strength	Clear and systematic way of working	B9/P32	General
Strength	Kanban enable a change from 3 strong releases to monthly releases	B9/P33	General
Strength	Kanban has helped us to walk through Some certain needed requirements	B9/P33	General
Strength	Process owners are ot by ERP module, but from certain process E2E processes	B10/P41	General
Strength	Roadmaps are gone through with key stakeholders for review, approval and commitment purposes	B9/P31	General
Weakness	Architectural view; What should be done to which system?	B10/P36	General
Weakness	Business case calculation practices	B11/P39	General
Weakness	Requirement related documentation should be harmonized	B11/P38&P39	General
Weakness	Units in Finland supported and followed more that other units	B10/P37	General
Weakness	Incidents to trackers process	B11/P38	General
Weakness	Business ownership and feedback; Business really buying in to the developments the IT does?	B10/P36&P37	General
Weakness	Development is slow	B9/P31	General
Weakness	Lead times for developments are still too long	B9/P31	General
Weakness	Process owners may not always understand the ERP requirement management process when leading enhancement projects	B10/P36	General
Weakness	More heavy prioritization needed to pull correct ones through	B9/P32	General
Weakness	No clear responsibility on implementations to next units	B10/P36	General
Weakness	What to record to the requirement as needs is not fully clear -> If technical team needed as resource, should be recorded. -> If a prestudy, it should not be recorded before the needs are clear	B9/P33	General
Weakness	Still not fully set to what all the Enhancement projects should be used for	B9/P33	General
Weakness	Business ownership and feedback: Business really buying in to the developments the IT does	B10/P36&P37	General
Both	Release info containing only technical changes	B9/P31	Information sharing
Both	Minor release KT is newsletter only for all; helpdesk, business and IT team	B11/P38	Information sharing
Strength	People know who to contact, if they need more information about specific requirements	B10/P37	Information sharing
Strength	KT to helpdesk invites has been asked to be shared for the rest of the module	B11/P40	Information sharing
Strength	We are taking care of the helpdesk and business	B10/P41	Information sharing
Strength	Cross stream Kanban meeting is meant for cross-stream information sharing	B10/P34	Information sharing
Weakness	Worry is the continuum; Requirements are left for business to evaluate and implement	B10/P36&P41	Information sharing
Weakness	Room for improvement: Release tracker information sharing to all units and within IT team	B9/P33	Information sharing
Weakness	No process for implementing feature/developments/process changes to earlier implemented units other than release info	B11/P38	Information sharing
Weakness	Process change information not shared to helpdesk, if no proactive individuals arranging sessions	B11/P38	Information sharing
Both	Same resources used for prestudies and for work recorded in the tracker	B9/P33	Resourcing
Both	Mixed message about cross stream definition: 1) Cross streams are defined by single technical team members by their best knowledge and by SAMs (B9/P33) 2) Process owners as a group are looking after the cross stream point of view and will decide who will check if cross streams will need to defined (B9/P31)	1) B9/P33 2) B9/P31	Resourcing
Neutral	CAB does not take a stand, if we have the resources or not	B9/P33	Resourcing
Strength	Agreed roles and responsibilities, rather good discipline	B10/P37	Resourcing
Strength	Resourcing is not and should not be considered in the CAB; should be considered as separate topic	B9/P32	Resourcing
Weakness	No process for cross stream tracker resourcing	B11/P38	Resourcing
Weakness	Combining Kanban and Waterfall with same resources	B10/P36	Resourcing
Weakness	Development slowness is capacity management related slowness	B9/P32	Resourcing

As the current state analysis was executed in two parts, also the findings from the initial CSA are valid for the analysis. Table 11 summarizes the findings related to the ERP requirement management process found during initial CSA about ERP requirement management process (development process), support process and implementation process where similar topics can be found. From the initial CSA, the questions were directed to the customer warranty process and to its development, implementation and support. In the second CSA, the questions were placed directly towards cross-stream functions as



the feedback suggested issue with it through lack of awareness. A full list of findings related to the customer warranty process can be found from Appendix 22.

Table 11: Findings from interviews on customer warranty process.

Area	Valuation	Comment	Reported in/by	Tool/Process	Finding category
Development process	Weakness	ETO customer warranty cost collection unclear for a concept owner	B5/P9	ERP application	Cross-stream cooperation
Development process	Weakness	Process owners aware only, if issues have occurred -> Not able to support without extra preparation	B8-2/P29	Process, ERP application	Cross-stream cooperation
Development process	Weakness	Solutions should be gone through with all crossing areas before implementation to avoid problems	B8-2/P29	Process, ERP application, Reporting tool, Sales tool	Cross-stream cooperation
Implementation process	Both	Units competing against each other	B7/P16	Process	Customer warranty process
Development process	Strength	Solution was built with business	B3/P14&P15	Process	Customer warranty process
Implementation process	Strength	Adequate seniority in the steering group	B1-2/P3	Process	Customer warranty process
Development process	Weakness	Reports are extremely slow to build and fix	B1-2/P1&P3	Reporting tool	Customer warranty process
Implementation process	Weakness	Reasoning of Z1 notification is seen only when sent to external vendor	B3/P14	Process	Customer warranty process
Implementation process	Weakness	Process is not toolwise yet harmonized or accepted globally	B5/P8	Process	Customer warranty process
Implementation process	Weakness	Central instruction holding place unknown for users	B4/P25	Process	Customer warranty process
Implementation process	Both	External support for units under implementation is crucial for the implementation	B6-3/P46	Process, ERP application	General
Support process	Strength	Support model with key user setup is seen functioning well	B4/P25	Process, ERP application	General
Support process	Weakness	Systematic oversight of usage missing	B4/P27	Process, ERP application	General
Development process	Weakness	Fully integrated ERP system is slower to develop	B1-2/P1	ERP application	General
Development process	Both	Concept owners & deployment team members only partly aware of the solution	B5	Process, ERP application	Information sharing
Implementation process	Both	Hard to train QM users; QM persons need to participate all trainings to be able to push through	B5/P5	ERP application	Information sharing
Implementation process	Strength	Good communication with business during implementation	B4/P27	Process, ERP application, Reporting tool	Information sharing
Implementation process	Strength	Good training by quality management	B4/P27	ERP application	Information sharing
Implementation process	Strength	General training brought better understanding for the other frontline units	B4/P22	ERP application	Information sharing
Implementation process	Strength	Training and tool helping users to understand more widely the process	B5/P6	ERP application	Information sharing
Development process	Weakness	Lack of wider communication within IT	B8-1/P43&P44	Process, ERP application	Information sharing
Development process	Weakness	Cross stream process owners un-aware of the Solution and extend of implementation	B8-1/P43&P44	Process, ERP application	Information sharing
Development process	Weakness	Part of cross-stream concept/configuration owners un-aware of the solution	B7/P16-18	Process, ERP application	Information sharing
Implementation process	Weakness	Key users do not know what to test in the implementation process	B4/P27	ERP application	Information sharing
Implementation process	Weakness	Strong change resistance among end users	B3/P14&P15	Process, ERP application	Information sharing
Development process	Weakness	Limited resource availability in ERP application team	B1-1/P2	ERP application	Resourcing
Development process	Weakness	Business area Z was outscoped due to missing resources during build phase	B1-1/P2	Process, ERP application, Sales tool	Resourcing
Development process	Weakness	Business Z not fully ready yet	B2/P12	Process, ERP application, Sales tool	Resourcing
Development process	Weakness	FICO resources have been difficult to get and keep	B1-2/P1	Process, ERP application	Resourcing
Development process	Weakness	Sales tool part of the process is missing	B1-2/P3	Process, ERP application, Sales tool	Resourcing

Through regrouping done in both cycles of analysis and seeking feedback to the results, the findings were crystallized into major three topics of challenges identified in the current process; (a) cross-stream cooperation, (b) information sharing and (c) resourcing, similar topics were found in both phases of analyses. Below, these main findings are discussed in more detail.

### 3.6.1 Cross-stream cooperation

Table 12 regroups the key cross-stream cooperation related feedback from both stages of the current state analysis.

Table 12: Feedback on cross-stream cooperation.

Cross-Stream cooperation		
Strengths	Visibility through Kanban meetings	D1b
	Allowance to have enough people involved	D1b
Weaknesses	ETO customer warranty cost collection unclear for a concept owner	D1a
	Process owners aware only, if issues have occurred -> Not able to support without extra preparation	D1a
	Solutions should be gone through with all crossing areas before implementation to avoid problems	D1a
	Ensure that the ERP modules sync together	D1a
	Training and testing should be executed as a multiunit function	D1a
	Mixed message from management on who should lead cross-stream requirements	D1b
	During pre-analysis it is not always know, if a requirement is a cross-stream requirement	D1b
	No process for re-reviewing the cross-stream requirement need later in the process	D1b
	Requirements are realized too late to be cross-stream	D1b
	People do not participate cross-stream kanban meetings	D1b
	Key user meetings per stream are a risk for E2E view	D1b
	Mixed message about cross stream definition:	
	1) Cross streams are defined by single technical team members by their best knowledge and by SAMs (B9/P33)	
	2) Process owners as a group are looking after the cross stream point of view and will decide who will check if cross streams will need to defined (B9/P31)	D1b
	Concept and process development relation to requirements is unclear to a manager	D1b

In the category of “Cross-stream cooperation” (Table 12), as identified from the related feedback, it can be seen that the case company has a process to support cross-stream cooperation which is meant to work with early identification of cross-stream need early in the process. For this end, cross-stream requirements have its own lane on Kanban board, which focuses on following cross-stream requirements in cross-stream Kanban meetings and through allowing enough key participants involved with the developments.

*“In solution option step before the CAB (Change Approval Board) the concept owners should be aligned. The idea is that first we have the process owners that should have a look and align between themselves, then comes the CAB and there they can also raise others up, if not seen/heard before, then it comes to team work and to common Kanban board and there should be the one who is the leader and keeps all the others aligned.”*

*(Data 1b: Interviewee P41, ERP Development Manager)*

As can be also seen from this feedback, the definitions how the cross-stream requirement definitions are made variate.

*“Earlier we did not control the cross-stream work, but now it is a little bit better. In real life Kanban is really not a part of ERP requirement management process and therefore the cross-stream work starting at Kanban board is a little bit too late. Voice vote is the method how we define, if the requirement is cross stream or not.”*

*(Data 1b: Interviewee P39, Solution Area Manager)*

On the contrary, this feedback shows that the current process does not support the cross-stream cooperation fully, and this leads to issues both during testing and during usage in production environment.



*“...most of the times we realize the cross stream too late, if not described in the start correctly. We end up to the situation that either in the user acceptance test or in the live system we need to do fixes to the system to get all sides to work.”*

*(Data 1b: Interviewee P38, Solution Area Manager)*

Also, from the customer warranty process interviews in the first stage of the current state analysis, there were issues visible through the feedback, and these issues were needed to be fixed on a ready model during the implementation to US and Canada units. The key persons in the ERP requirement management process as well as the concept and configuration owners raised up the lack of awareness of the already built process and system solution. (D1a-B7, D1a-B5)

Reverting to Figure 7 (Appendix 21), a requirement is meant to be identified as cross-stream requirement in the first steps of the ERP requirement management process during the initial analysis *before* the CAB (Change Approval Board) decides on the requirement and - *at the latest* - during the CAB meeting where representatives of multiple area are hearing about the topic. According to the feedback, this definition is not always possible or not always made at the first steps. On the contrary, it can be found during the user acceptance test (UAT), during implementation, or even during the usage in production environment through issues raised by the end users.

*“Solutions should be gone through with all crossing areas before implementation to avoid problems”*

*(Data 1a: Interviewee P29, Global Process Owner)*

In other words, when the requirement is identified as a cross-stream requirement at later stages of the development process or as late as during the usage, there is no process to divert backwards. It is up to the development team to identify and correct, if noticed. When the requirement has already reached production environment, it is fixed or patched as well through IT Support process. As the last option, the development can be pulled back from production environment in most of the situations, but it does causes disturbance to Business activities in the units. The developments are done for a good reason and, due to faulty evaluation, a development can break functionalities of the same or different functional areas within same system or in connected systems.

### 3.6.2 Information sharing

Table 12 regroups the information sharing related feedback from both stages of the current state analysis.

Table 13: Feedback on information sharing.

Information sharing		
Strengths	People know who to contact when they wish for more information	D1b
	Cross-stream kanban meant for cross-stream information sharing	D1b
	Information sharing to business and to IT support team is ensured	D1b
	Good communication with business during implementation	D1a
	Good training by quality management	D1a
	General training brought better understanding for the other frontline units	D1a
	Training and tool helping users to understand more widely the process	D1a
Weaknesses	Concept owners & deployment team members only partly aware of the solution	D1a
	Hard to train QM users; QM persons need to participate all trainings to be able to push through	D1a
	Lack of wider communication within IT	D1a
	Cross stream process owners un-aware of the solution and extend of implementation	D1a
	Part of cross-stream concept/configuration owners un-aware of the solution	D1a
	Key users do not know what to test in the implementation process	D1a
	Strong change resistance among end users	D1a
	Continuum; Requirements are left for business to evaluate and implement	D1b
	No process for implementing feature/developments/process changes to earlier implemented units other than release info	D1b
	Process change information not shared to helpdesk, if no proactive individuals arranging sessions	D1b

In the category of “Information sharing” (Table 12), as identified from the related feedback, it can be seen that the case company has a process to share information *with the personnel working with IT support process and with the business users on developments*. On the other hand, information sharing *with the team members within the development* does not seem to have a process. Neither does the information sharing *for the already implemented units* about the newly implemented or upcoming implementations of new units.

*“We are taking care of helpdesk and Business better than our own team. All have received the information about the release briefing and what requirements there are. Main thing is that You should get some kind of idea that on what points in the process there have been changes so that You can contact certain colleague in the same office to get more information when needed. For the support topics there should not be need for a knowledge transfer.”*

*(Data 1b: Interviewee P41, ERP Development Manager)*

Based on the interviews on the customer warranty process, the team members of the development team, the concept, configuration owners and the related process owners are not sufficiently aware of the solution. According to the interviews, the team members wish to be better informed to be able to implement the solution to new units, as this is

part of their daily work. Management related to the ERP requirement management process admit that they are not aware of a process existing on information sharing among the teams to ensure the knowledge level of the development team members. The number of people working on specific ERP module variate, from two persons in the variant configuration module to several persons in sales and distribution. As the team sizes variate, the needs for the information sharing variate as well.

*“From the other perspective, is it beneficial in this information overload to inform more?”*

*(Data 1b: Interviewee P31, Head of Development)*

At the same time, the management questions if it is beneficial to inform more as teams already suffer from the information overload. The key question seems to be: what is correct level of information and how to know what types of information should be shared?

### 3.6.3 Resourcing

As the case company uses several IT methods on driving the teams, the needs of the processes sometimes clash. The development teams are working with both, Waterfall method with implementation projects and with Kanban on other developments and projects. The projects with Waterfall method have 2-week to 5-week long project phases that consume fully the time of the development team. At the same time, the team is expected to work in Kanban method on the other developments. As this informant pointed out,

*“Waterfall and Kanban doesn’t work together very well. It could with separate resources, but not with same resources on both.”*

*(Data 1b: Interviewee P36, ERP Product Manager)*

As a result, the throughput times of the developments variate depending on the availability of the development team. To ensure the major implementation projects to progress with the given schedule, the management has prioritized the implementation project related work.

Table 13 (on the next page) regroups the resourcing related feedback from both stages of the current state analysis. The feedback visualizes the difficulty to combine Waterfall and Kanban with same people working with both methods.

Table 14: Feedback on resourcing.

Resourcing		
Strengths	Agreed roles and responsibilities, rather good discipline	D1b
	Allowance to have enough people involved	D1b
	Resourcing is not and should not be considered in the CAB; should be considered as separate topic	D1b
Weaknesses	Business project managers should be trained to manage software implementation	D1a
	Limited resource availability in ERP application team	D1a
	Business area Z was outscoped due to missing resources during build phase	D1a
	Business Z not fully ready yet	D1a
	FICO resources have been difficult to get and keep	D1a
	Sales tool part of the process is missing	D1a
	No process for cross stream tracker resourcing	D1b
	Combining Kanban and Waterfall with same resources	D1b
	Development slowness is capacity management related slowness	D1b
	Same resources used for prestudies and for work recorded in the tracker	D1b

In the category “Resourcing”, the analysis results show that the development team is using time for pre-studies of topics to ensure that the correct type of solution is built. As the interviews revealed, all the new requirements have an urgency to be recognized and pre-studied due to prioritization, but only approved trackers can be prioritized under work. As a result, the resources of the development team are stretched to multiple directions in the priority order; IT support process to help units on Level 3 issues, Implementation projects, Developments and to development pre-studies. All these four are working with different methods; IT support process with its own process including Support Level Agreements (SLAs) for each issue type as per defined matrix, Implementation projects with Waterfall, and Developments with Kanban.

In practice, according to the interviewees, this results in; difficulties to get and keep resources when assigned to a topic, difficulty to get needed resources to work on topics, slowness in development process and results to out scoping areas due to missing resources.

### 3.7 Selection of the Weaknesses for Improvement

After discussing the above findings with the study steering group, the findings were summarized in Table 15 as the key findings of the ERP requirement management process. The steering group agreed that the ERP requirement process has its main weaknesses related to (a) cross-stream point of view on the cross-stream cooperation, (b) cross-stream information sharing and (c) cross-stream resourcing. Table 15 summarizes the main strengths and weaknesses.

Table 15: Key strengths and weaknesses of ERP requirement management process.

Cross-Stream cooperation	
Strengths	Visibility through Kanban meetings and tracker tool Allowance to have enough people
Weaknesses	Mixed message from management on who should lead cross-stream requirements Mixed message about cross stream definition: 1) Cross streams are defined by single technical team members by their best knowledge and by SAMs (B9/P33) 2) Process owners as a group are looking after the cross stream point of view and will decide who will check if cross streams will need to defined (B9/P31) People do not participate cross-stream kanban meetings
Information sharing	
Strengths	Good communication with business during implementation when done through implementation project Processes existing for sharing information towards business units and to IT support team
Weaknesses	Lack of wider communication within IT Information sharing models have not worked on the customer warranty process and ERP system solution build Continuum; Requirements are left for business to evaluate and implement
Resourcing	
Strengths	Agreed roles and responsibilities, rather good discipline Allowance to have enough people
Weaknesses	Combining Kanban and Waterfall with same resources Same resources used for pre-studies and developments Development slowness is capacity management related slowness

As seen from Table 15, on the *Cross-stream cooperation* the process has been built to start with the realization of cross-stream requirement and is not flexible enough nor does it have a method on how to change course in the middle of development. On the cross-stream cooperation, the weakness of not all the stakeholders realizing the relation of concept and process developments to the requirements is extremely worrying. The key-way for the case company to document and keep up this way of working is to have definitions of coherent concepts and processes. When the relation between requirements and these key documents are not understood, coherent harmonized concepts and processes lose their ground.

Next, the key findings on the *Information sharing* shows the picture of a business model where on all units the changes happen immediately when communicated no matter what size those are. Unfortunately, this is not the actual situation in the case company. Certain smaller changes are possible to change by simply informing the units, but the larger changes need more actions and more time. With a model where the company simply informs units to take developments in use, it seems unlikely to work in practice as the interviewees share their view. Information sharing towards the development team seems non-existent in a coherent way. The team struggles between the information overflow

and not having enough information to be able implement units in the correct manner, with the latest changes to global ways.

Finally, the *Resourcing* topic was raised from multiple sources as one of the key finding areas. The message from the interviewees emphasized that the ERP requirement management process with combination of large implementation and other projects and developments feel impossible for the team to accomplish up to the level of company expectations. It was suggested that there are not enough resources, that the ways to manage resources does not support efficient development, and many other points of view. The full picture from the interviewees, on the other hand, suggest that the issue penetrates to the multilevel resourcing, rather than on the ERP requirement management process using the resources. The case company struggles on combining Waterfall and Kanban mainly, but also IT support process, with the same resources.

Next, the key weaknesses identified from the current analysis – the *cross-stream cooperation, information sharing and resourcing* – become the focus of search for best practice and existing knowledge in the next section of this study.

## 4 Conceptual Framework

This section searches for ideas from existing knowledge to build a suggestion how to treat the weaknesses identified in the current state analysis. Key weaknesses identified in the current analysis – the *cross-stream cooperation, information sharing and resourcing* – became the focus of search for best practice and existing knowledge in Section 4. IT best practice, cross-organizational resourcing and cross-organizational communication and cooperation were studied to build the conceptual framework. Firstly, the section discusses the frameworks used by the case company, from management and team perspectives. Secondly, the section discusses the Cross-Organization Resourcing, Cooperation and Information Sharing topics to find guidance on the issues identified. Thirdly, the section compiles the conceptual framework of this study from the main topics. Finally, the section summarizes the selected tools and practices into the conceptual framework of this study.

### 4.1 Information Technology Best Practices

The case company lists as best practises COBIT (Control Objectives for Information and Related Technologies), SAFe (Scaled Agile Framework) and ITIL (Information Technology Infrastructure Library) to manage its IT functions. Main parts of the Requirement Management Process followed by the case company are from these frameworks and IT service management tools. (Interviewee P33, Head of IT.)

*We do have 3 best practices; COBIT (IT Governance Framework), SAFe (Scaled Agile Framework) and ITIL (Information Technology Infrastructure Library). These our CABs and requirement management process are visual there.*

*(Data 1b: Interviewee P33, Head of IT)*

The Information Technology Infrastructure Library (ITIL) is a set of tools for IT service management (ITSM) and a trademark owned by Axelos Limited (AXELOS 2019, Wikipedia 2019, Anthes 2005). According to Anthes (2005) ITIL originates from late 1980s by the British government. Latest update, ITIL Foundation 4, was published in February 2019. Main parts of ITIL include service strategy, service design, service transition, service operation and continual service improvement (AXELOS 2019). ITIL guides the company on infrastructure, IT service management and works as a quality framework (AX-

ELOS 2019, Anthes 2005). According to Wakaru (2011), training materials on ITIL foundation for example includes frames for service design to include design coordination, service level management, service catalogue management, availability management, capacity management, IT service continuity or recovery management, supplier management and information security management. ITIL also covers main frameworks for change management, release management and knowledge management. Wakaru ITIL foundation training material elaborates the knowledge management objective as “to gather, analyze, store, share, use and maintain knowledge, information and data throughout the service provider organization.” Information is meant to be available and service knowledge management is meant to be in the core according to ITIL. As a solution for information sharing, ITIL suggests according to Wakaru (2011) training material service desk operations as it is meant to be team work to solve topics. At the case company, this support function similar to a service desk is a separate team from the development functions.

The Control Objectives for Information and Related Technologies (COBIT) framework is an IT governance framework created by ISACA (Information Systems Audit & Control Association) back in 1996 (ISACA 2019). COBIT has been developed through the years since 1995 until latest changes from 2019 (Figure 11) to accommodate new process areas and IT regulatory requirements coming from Sarbanes-Oxley Act (SOX), and to integrate to other IT frameworks and to apply (ISACA 2018). COBIT guides the company on management level how to organize and govern the IT functions.



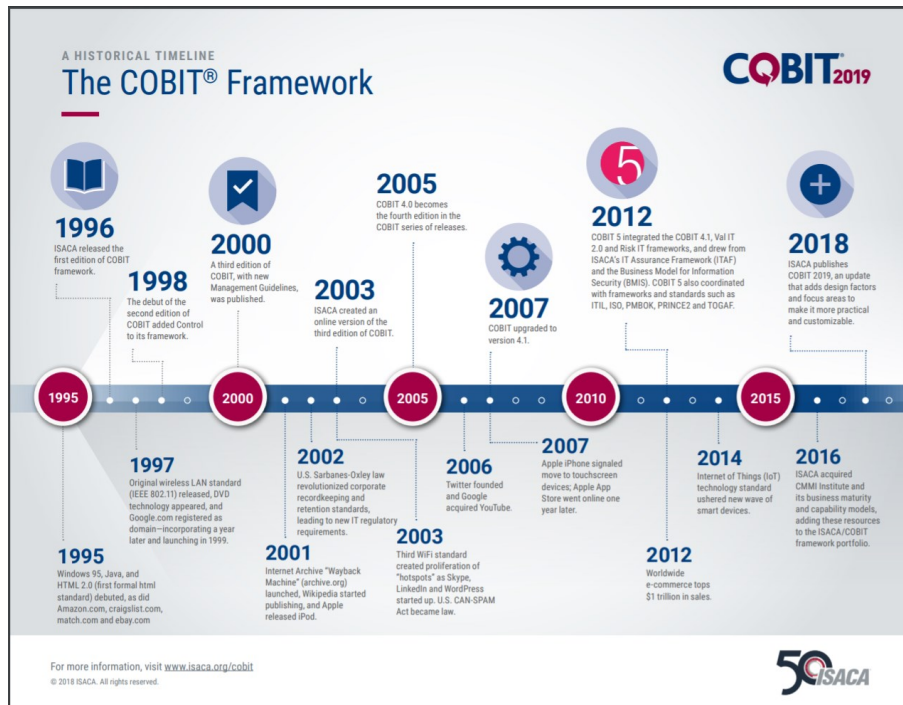


Figure 11: A historical timeline (ISACA 2018)

The Scaled Agile Framework (SAFe) created by Dean Leffingwell in 2011 is relatively new framework compare to COBIT from 1990s and ITIL from 1980s (Scale Agile, Inc. 2019, ISACA 2019, AXELOS 2019). Alexander (2019) summarizes SAFe as “a set of principles, processes and best practices that helps larger organizations adopt agile methodologies, such as Lean and Scrum, to develop and deliver high-quality products and services faster” (Figure 12).

### Field Experience at Enterprise Scale

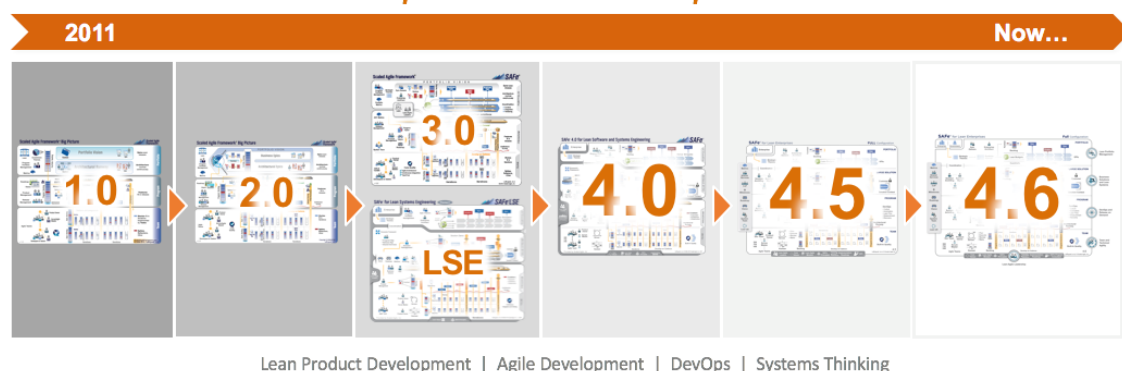


Figure 12: Evolution of SAFe (Scale Agile, Inc. 2019)

SAFe has four configurations available Full SAFe, Portfolio SAFe, Large Solution SAFe and Essential SAFe (Scale Agile, Inc. 2019). All four configurations combine multiple common IT ways of working together. The level of needed management activities varies

in the different configuration. As seen from Figure 13, for teams' SAFe combines XP (experimental programming), Kanban and Scrum.

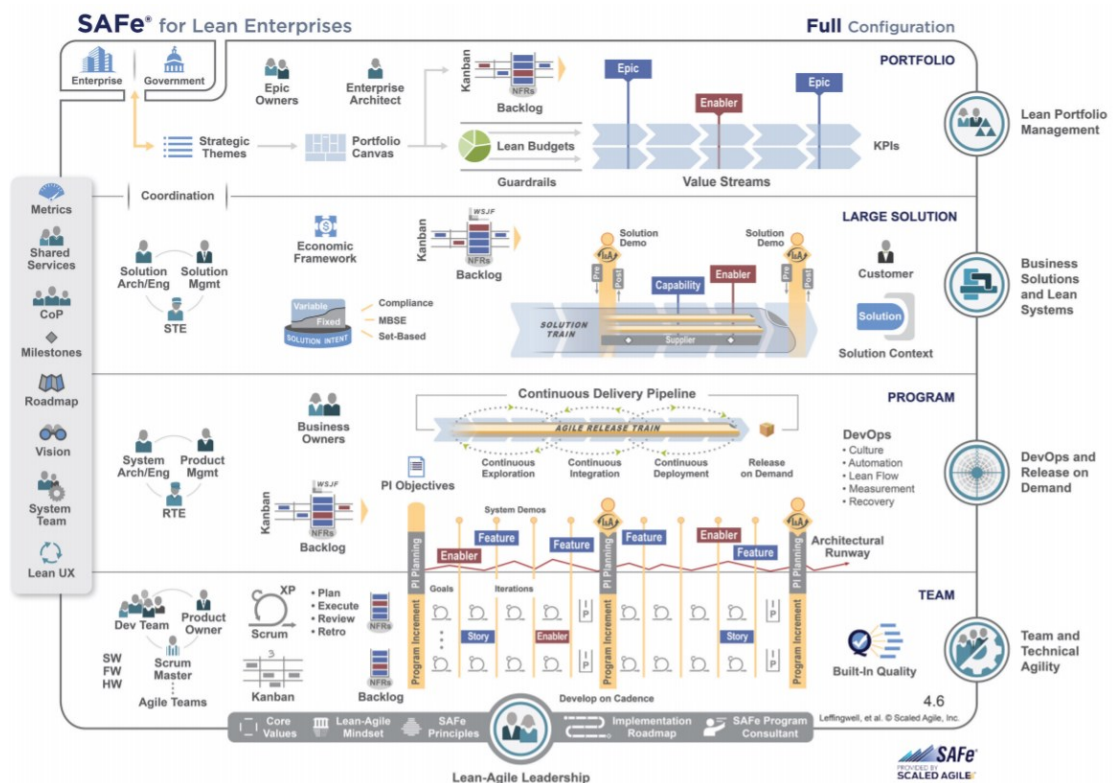


Figure 13: SAFe full configuration (Scale Agile, Inc. 2019)

Experimental programming (XP) is a way of working for developers to work in pairs. Pair work is seen to enable better quality and speed in coding activities (Qureshi and Ikram 2015). Kanban and Scrum are slightly different ways of working for the development teams.

In Kanban, the focus is mostly placed on 'getting things done' instead of starting, in limiting work in progress (WIP) and through this creating space for 'getting things done'. (Anderson (2010).) Scrum takes the agility to next level. In scrum teams include business representatives, development and solution designers working together within timeboxed sessions and cycles. Scrum is meant to be used in two weeks sprints which accommodates change and trial culture where developments are done in small increments to build a new functionality as the developments progress. When compared to the Kanban the focus in scrum is to accommodate change instead of locking the development to one shape. Idea is to learn as progress happens. (Schwaber and Sutherland (2020), Anderson (2010).) According to Schwaber and Sutherland (2020) the scrum methodology is

meant to connect the Business representatives and IT to work together, but it does not give direct answers on the implementation of the developments done. Scrum methodology consist a review session for the team to present what was done during the sprint to get feedback on the developments made. This session is meant to accommodate the information sharing. Scrum suggests daily releases and fast paced developments but does not provide answers how to make sure that the key contacts are informed and notified on the changes. In large companies not all users can be involved directly with development activities. (Schwaber and Sutherland (2020).) Where ITIL discusses the information through terms like gather, use and maintain, scrum has directed the teams to minimize the documentation to enable teams to work in fast pace and in flexible manner. Thus, a balance between flexibility, communication, and documentation, would need to be found.

This study continues to study the communication perspective from two angles; first, finding the solutions for cross-organizational resourcing and, second, through the communication and cooperation perspective. Managers interviewed in the current state analysis stated that there is too much information that is getting shared, and therefore, the focus for the next topics is to find solutions how to have all the necessary stakeholders involved without overloading the personnel with information.

#### 4.2 Cross-Organizational Resourcing

Cross-Organizational Resourcing at the case company leads to people working simultaneously with several IT models and ways of working. In this section the study ponders on cross-organizational resourcing and on combining IT models for teams to work efficiently from Business perspective (customer), from IT management perspective (management) and from individual's perspective. To discuss the cross-organization resourcing, one more model needs to be presented. Case company uses Waterfall for project management within IT.

Grech (2015) describes *“Waterfall project management is essentially a linear way of structuring the project schedule, with separate (also linear) plans for risk mitigation, resourcing, budget and various other critical project functions.”* Royce (1970) elaborated on the large implementation projects and the necessity (Figure 14) of back and forth movement between project phases. Royce (1970) described especially the testing phase as where new requirements are raised. In the Figure 14, Royce elaborates the project

phases, six necessary documents and the relation to development activities. Royce suggests to run at least two development to test cycles to ensure success of the project.

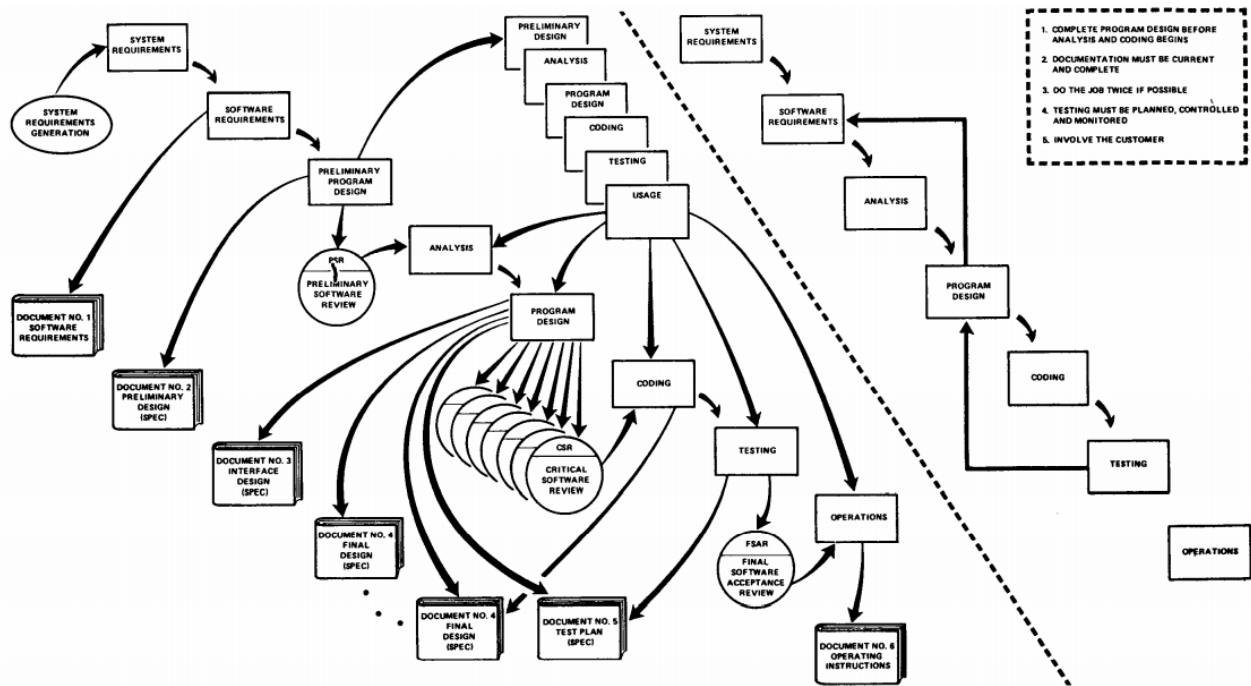


Figure 14: Waterfall Project Management (Royce 1970)

Grech (2015) discusses the intersection of Agile and Waterfall methodologies as the two models often need to co-exist due to large projects where teams work in different ways around the globe. Agile breaks down the requirements to small increments that are prioritized in order and there is no clear end date when the new functionality is fully done and ready. On the contrary in projects typically main elements scope, cost and schedule are fixed. (Grech 2015).

According to Grech (2015), there are several ways how to bring both methodologies closer to each other (Figure 15). For Waterfall, this requires especially the collected requirements to be split into end to end features to enable Agile incremental developments. For Agile, it requires to keep the increments in the backlog in well-groomed manner to give visibility for the project management to evaluate the progress. The key is also for Agile to keep the ideology to start from the most important topics and to take the development in minimum viable product level to prevent extra time and cost for the project. (Grech 2015).



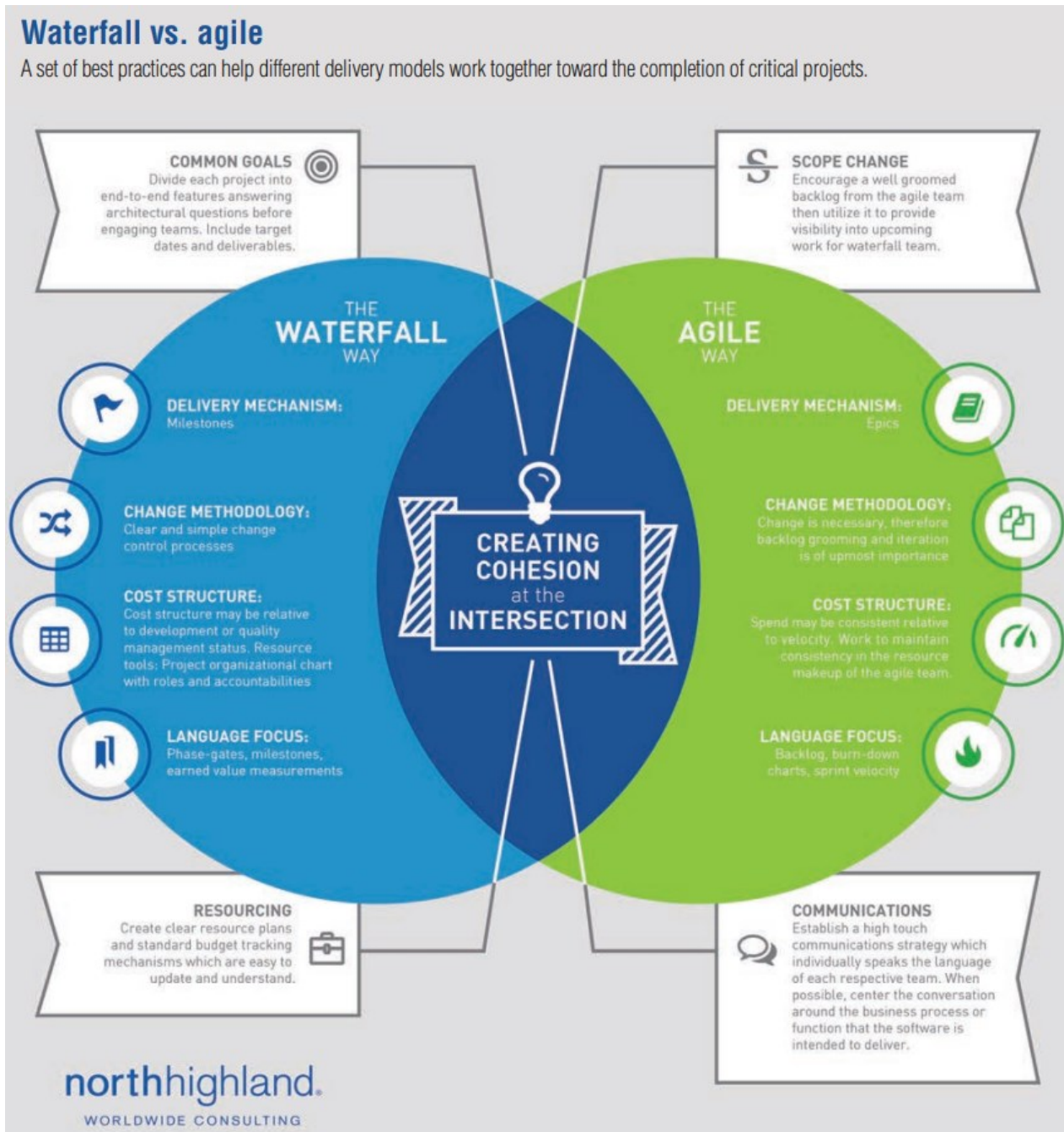


Figure 15: Intersection of Waterfall and Agile methodologies (Grech 2015)

Where there is co-existence and co-operation between teams operating with different methodologies, there is also other kind of complexity in the organizations. Novak et al. (2011) elaborates that “Organizational performance today is primarily a result of effectiveness of cross-functional processes”. These cross-functional processes tend to mean people working together from different teams which bring evidently complexity. Morieux (2011, p.84) discusses the growing complexity and complicatedness in organizations. According to BCG analysis elaborated by Morieux (2011, p.84) between 1955 and 2010

complexity in business through corporate requirement has risen to six times the size back in 1955. At the same time, complicatedness has risen 35 times the size compared to 1955. According to Morieux (2011, p.80) the complexity brings both opportunities and challenges. Kotter (1990, p.90) sees this interdependence of the organizations a challenge when organizations attempt to change. Kotter (1990) challenges the organizing people to necessary teams to achieve results with ideology of alignment where it is a communications challenge to make sure all necessary parties are on board with the vision and strategy to achieve the change. In alignment “anyone who can help implement the vision or who can block implementation is relevant.” (Kotter 1990). Novak et al. (2011) further elaborates the thoughts of Charan (1999), Cross and Parker (2004) and Nohria (2006) that human need for certainty, routine and predictability is a contrary for adaptable and flexible ways that knowledge-intensive organizations require. Kotter (1990, p.90) suggests that “alignment helps overcome this problem by empowering people at least two ways. First, when a clear sense of direction has been communicated throughout an organization, lower-level employees can initiate actions without the same degree of vulnerability. ... Second, because everyone is aiming at the same target, the probability is less that one person’s initiative will be stalled when it comes into conflict with someone else’s.” (Kotter 1990, p.90)

As a solution, Morieux (2011, p.80-86) suggest six rules to apply to transform the company to more streamlined organization:

- “Rule 1: Improve Understanding What Co-workers Do
- Rule 2: Reinforce the People Who Are Integrators
- Rule 3: Expand the Amount of Power Available
- Rule 4: Increase the Need for Reciprocity
- Rule 5: Make Employees Feel the Shadow of the future
- Rule 6: Put the Blame on the Uncooperative” (Morieux 2011)

Through these rules, Morieux (2011, p.80) suggests that a context is created within which optimal behaviours occurs and cooperation breeds customized solutions to problems.

Morieux (2011, p.82) continues the rules with a list of what not to do;

- “Never add process or a layer unless absolutely have to
- Never blame a problem on someone’s mentality or mind-set
- Don’t let decisions be escalated to you (as a manager)
- Don’t rely on financial incentives
- Don’t try to measure specific behaviours.” (Morieux 2011, p.82)

### 4.3 Cross-Organizational Communication and Cooperation

Cross-organizational cooperation in this context is communication and cooperation between IT department and business functions, but also as communication and cooperation between teams within IT department. In this section, the study focuses on the communication between stakeholders within IT with the expectation that if all key stakeholders within IT have the latest and accurate information this is bound to impact the cooperation with Business representatives. This focus is taken especially as the current state analysis of the ERP requirement process showcased that there are methods existing for communication towards Business representatives, but not towards the other teams other than involving all necessary areas to the development activities.

The New Oxford Dictionary of English (1998) defines communication as “the imparting or exchanging of information by speaking, writing, or by using some other medium” and as “the successful conveying or sharing of ideas and feelings”. Both definitions state that a piece of information has been shared and has arrived at its destination. On the contrary Literature Nobel Prize winner George Bernard Shaw has stated,

*“The single biggest problem in communication, is the illusion that it has taken place”*

*George Bernard Shaw*

Novak et al (2011) elaborate the limited abilities of humans to view, absorb and process information. Only limited amount of information is possible to absorb from the high numbers received in typical organization.

Novak et al. (2011) suggest as a solution an Organizational Network Analysis (ONA) that would help to focus the communication and alignment activities to the right contacts. According to Novak et al. (2011, p.33) Organizational Network Analysis (ONA) is an approach to study organizational relationships and patterns. When only networks and patterns are studied it is called Social Network Analysis (SNA). ONA reveals according to Novak et al. (2011, p.33) “the acknowledged or perceived relationships among individuals, teams, departments, divisions, organizations, as compared to the expected relationships prescribed or predicted by strategic intent, organizational charts, job roles, workflow interdependencies, clients, demographics, time, place, process or functional boundaries”. ONA is meant, for example, for finding gaps in communication and collaboration.

ONA is contacted by visualizing the relationships and interdependencies that wish to be studied, and then the value of the connections is valued. (Novak et al. 2011).

Novak et al. (2011) say that: “Leadership effectiveness in many organizations now hinges upon the leader’s ability to operate and lead within a networked context”. Novak et al. (2011) elaborate their finding that leaders tend to reproduce what they are and therefore it is up most important that cross-silo, across boundaries and across organizations thinking is enforced. As a solution, Senge (1996) and Morieux (2011) point to internal networkers as the people that have tendency to integrate people together. These integrators are seen as a positive and need to be supported.

Communication towards the network in this context is mostly change communication, either while planning for a development, during development or as a change message for a development done that changes details or bigger entities. Change management model by Kotter (1995) is summarized by Viitala and Jylhä (2019, p.285-286) to eight steps;

- Create necessity for the change
- Form a team for the change
- Clarify the vision for the change
- Communicate the vision
- Remove obstacles
- Enable short term success
- Establish change
- Root change to organizational culture.

When communicating the change, Kotter (1990, p.90) stresses that information delivered and understood does not automatically mean that it is accepted. Kotter raised credibility of the person communicating as a factor for the acceptance, but also raises importance of alignment as it is seen to lead to greater empowerment than organizing.

According to Viitala and Jylhä (2019, p.286-287), Argyris and Schön theorized back in 1978 that change is always a *learning process*. Viitala and Jylhä (2019) adapt the change learning model by Argysin and Schön (1978) to three loops of learning (Figure 16). First, as single loop learning that renews the current operation models. Single loop learning is also described as surface learning as it only scratches the surface. Second, as double loop learning that renews the background expectations. Deep learning occurs as people



are able to reason *why* to change. Third, in the deutero loop, it is learning where people learn to learn. In other words, meta-learning occurs. Argyris (1991) argues that "teaching people how to reason about their behaviour in the new and more effective ways breaks down the defences that block learning". Viitala and Jylhä (2019, p.286-287) continue by pointing that, in fast pace organizations, surface learning may result into changes that focus only on minor surface level developments which may have only minor impact, but with major effort.

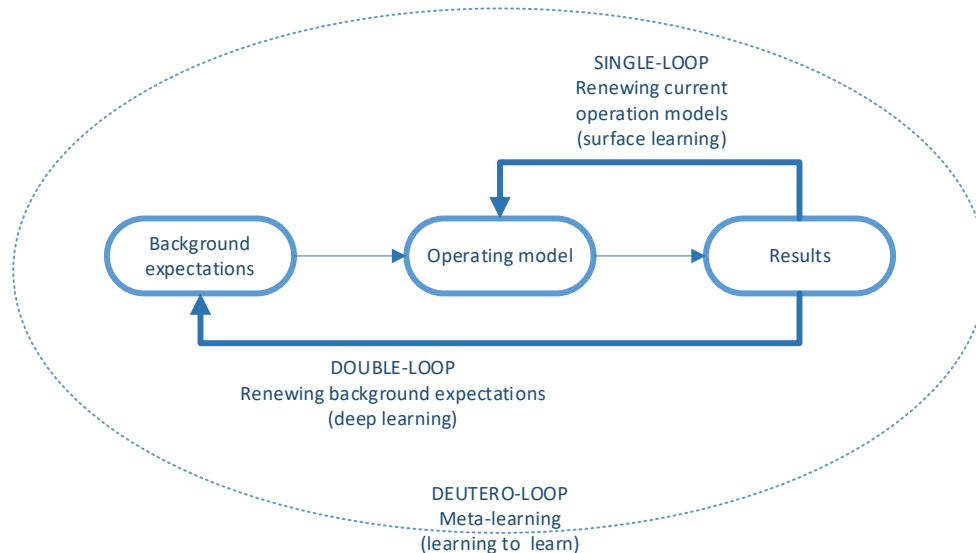


Figure 16: Single- and double-loop learning (Viitala and Jylhä (2019, p.287), Argyris and Schön (1978))

On the other hand, Govindarajan and Trimble (2004, p.71) studied innovations with 10 corporations in the beginning of 2000. Their study offers six changes to the theory-focused planning work. One of the suggested changes focuses on communication of expectations. Govindarajan and Trimble (2004, p.71) explain that "managers will not come to the same conclusions as new information is revealed". As a tool for communicating the assumptions Govindarajan and Trimble (2004, p.71,74) suggest using *influence diagrams* where expected causal relationships and linkages can be visualized instead of written texts or prediction calculations. Influence diagrams are seen as easier method to go back to when the results are in. Govindarajan and Trimble (2004, p.71) suggest two kinds of influence diagrams (Figure 17), the simple cause-effect relationships and the influence diagrams that showcase the causal linkages.

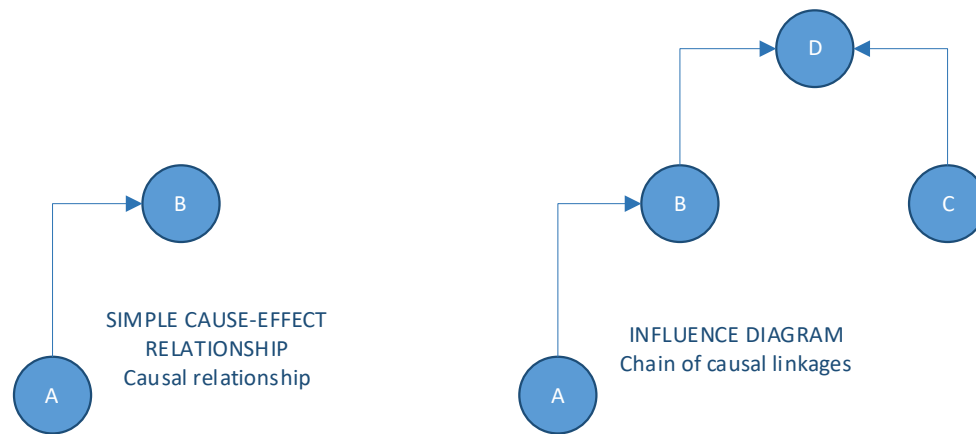


Figure 17: Simple cause-effect relationship and influence diagram (Govindarajan and Trimble (2004, p.71))

In his theory on learning, Senge (1990, p.7-9) discusses about adaptive and generative learning. Senge theorizes that *adaptive learning* is a way to cope with a current situation and generative learning is where the leading corporations wish to be in. Generative learning in this context meaning learning where new is created, leaps of imagination. Senge (1990, p.8) continues to similar topic as the previous experts, discussing about underlying reasons.

*“Generative learning requires seeing the systems that control events. When we fail to grasp the systemic source of problems, we are left to “push on” symptoms rather than eliminating underlying causes.”*

*Senge (1990, p.8)*

All three approaches discussed above argue that the key is to foster *deep and generative learning* where *underlying reasons are the key message* to share. Without communicating the underlying assumptions, theories or reasons, deep learning will not occur. Without the deep learning expectations will not change and therefore operating models or results will not majorly change when necessary.

#### 4.4 Conceptual Framework of This Study

Conceptual framework of this study discussed above is summarised to Figure 18 on the next page. The conceptual framework selects and gathers ideas from the literature that will serve as a basis for the improvement proposal for improving the ERP requirement management process.



Figure 18: Conceptual Framework for improving the communication in ERP requirement management process

As Figure 18 illustrates, the IT Best Practices - *COBIT (Control Objectives for Information and Related Technologies)*, *SAFe (Scaled Agile Framework)* and *ITIL (Information Technology Infrastructure Library)*, separately - give their answers to how to manage entire IT structures and to ensure customer being served. But they do not give direct answers for the communication dilemma at hand in this study. Kanban, Scrum and Waterfall give answers to how to push or pull development and project forward, without tackling the more detailed issues, such as the ones to solve in this study, the *cross-stream cooperation, information sharing and resourcing*. Although each of the IT best practices - ITIL, COBIT and SAFe - bring tools when and where the communication is expected, they do not relate it to the content, nor how to communicate in the manner that the message will be received. Neither do these approaches give answers to what are the right contacts for each team, nor the tools to learn this.

Based on the information gathered from available knowledge, as illustrated in Figure 18, *the Cross-organizational resourcing and Cross-organizational communication and cooperation* are heavily tied together. With sufficient communication and alignment practicalities, cross-organizational resourcing can be avoided. *Alignment* in this context accommodates all the necessary parties to be contacted, but only the necessary parties to be heavily involved. Alignment also fosters accountability and empowerment of individuals, which is needed to acknowledge and address the ever-growing *Complexity*.

Finally, relevant ideas for *cross-organizational communication and collaboration* need to be stressed. Communication can be best described as *being communicating the right topic the right way to the right entities to foster deep and generative learning*, at the same time, making sure to aim the message only *to necessary entities*. As illustrated in Figure 18, the organizational network analysis, influence diagrams and deep learning practicalities can be used to improve focused cross-organizational communication and collaboration.

In summary, *information gathered from available knowledge points to the topics of co-existence of waterfall and agile methodologies, alignment instead of organizing, organizational network analysis* and to relying on *influence diagrams and deep learning practicalities* for effective communication. These ideas will serve as a basis for the initial improvement proposal for communication in ERP requirement management process in the next Section.

## 5 Building a Proposal to Improve ERP Requirement Management Process

In this section, key findings from the current state analysis and key suggestions from existing knowledge are combined as a basis for building the improvement proposal for improved communication in ERP requirement management process.

### 5.1 Overview of Building the Proposal

The improvement proposal was built in two steps. First, Data 2 collection was gathered and analyzed to identify the proposals raised during the initial and final current state analysis. Second, these proposals were structured, thought through and matched with the ideas gathered from the existing knowledge to build the proposal to improve the ERP requirement management process.

The improvement proposal was built by relying on the data gathered during the two stages of the current state analysis as these interviews and discussions followed the process development logic and touched the improvement proposals immediately during the discussions. The improvement proposals were identified, first, by studying the Customer Warranty Process and its implementation and, second, by studying the ERP requirement management process. To remind the reader, the focus changed since the study was re-directed during the course of the CSA to focus more on the reasons why the technical team in surrounding areas were not familiar enough with the customer warranty process.

Second, new data was gathered during the proposal building stage to elaborate on the relevant changes in the organization, to gather more insights and proposals for the information sharing, and to verify the accuracy of the findings related to improvements. Interviews were executed to ensure that there are no additional data sources surfaced relevant to the topic of the study.

Third, the information gathered from the existing knowledge, insights from the current state analyses, and new data from the proposal building stage were used to build the improvement proposal for the ERP requirement management process focusing on eliminating the weaknesses of the process and minimizing the information overflow.

## 5.2 Improving Cross-Organizational Resourcing and Cooperation

In the data 2 collection, for the thesis, the case company IT agile handbook (D2-A15), release info slide (D2-A16) and release info slide set sent to users in May 2021 (D2-A17) were reviewed.

During the course of the thesis, the case company has moved all the IT teams into scrum methodology to harmonize the processes between the teams and between the applications. The structures and overall processes described in the initial and revised CSA phase are still applied in the case company, although the teams are using more incremental way of delivering the developments. With *the scrum methodology* (D2-A15), the teams are meant to be as autonomous as possible and include wider expertise to push the increments through the development pipeline with one sprint minimum viable product size increments. With a minimum viable product being a small functionally working, testable and deliverable piece of a full functionality.

The scrum in the case company is coupled with *SAFe (Scaled Agile Framework)* related tribe structure. According to the *IT agile handbook*, the scrum teams (development teams) are divided to tribes that serve an area of interest. In the case company, the scrum teams are divided functionally and or per management structures so that the scrum teams in a tribe have common goals. Each scrum team and tribe plan the quarterly activities for the next quarter. A quarterly planning cycle includes the case company pre-planning, cross tribe planning and planning activities. These activities are meant to create a plan for each scrum team, but also to align within the scrum team and between the scrum teams and tribes. The small increments and expected autonomy within development teams, combined with wide solutions such as ERP systems with multiple integrated systems, increase the importance of the finding solutions for the topics highlighted in this thesis. On the other hand, the alignment activities between scrum teams and tribes have helped on some level on the alignment problems. Still it is visible that the connectivity between the scrum teams (development teams) and solutions are underestimated by the scrum teams, and there is still a need for better understanding the connections so that to involve the right parties.

*Release info slide (Figure 19)* used by the ERP development teams is the main source for ERP change information for the users in the case company. The development team members create a release info slide for each change, and the slides are shared to the end users with an email before the release. In some of the areas, the teams have key

user networks where the slides are elaborated and there is a chance to ask questions. In the release info slides, the information sharing majorly focuses on *what* has been changed and shortly on *why*. A *release info slide set sent to users in May 2021 (D2-A17)* included general information on the process, how to report problems, implementation project related changes split from other changes. This slide set included 14 slides related to implementation projects and 83 slides related to other changes. A few of the changes were elaborated on several slides, with the majority of the topics with one slide information. Examples of where the shared information could be enhanced:

- “ERP standard setup didn’t work” (D2-A17 slide 21)
- “New interface to bring Sales Order Data from system 1 to system 2” (D2-A17 slide 43)
- “-“ (D2-A17 slide 65)
- “Support business process” (D2-A17 slide 71)
- “XX business want to have possibility...” (D2-A17 slide 77)



[DESCRIPTION]	[TRACKER NUMBER]	1
<p><b>WHAT?</b></p> <ul style="list-style-type: none"> <li>- [add here an explanation of what is going to change]</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Benefits / Improvement Achieved</b></li> <li>- x</li> <li>• <b>Affected areas &amp; processes</b></li> <li>- ERP Module: x</li> <li>• <b>Organizational impact – Affected units</b></li> <li>- x</li> <li>• <b>Interface &amp; Data</b></li> <li>- x</li> </ul>	
<p><b>WHY?</b></p> <ul style="list-style-type: none"> <li>- [add here explanation of why the change is done]</li> </ul> <p> MORE INFO: [add relevant names]</p> <p>May 6, 2021</p>	<ul style="list-style-type: none"> <li>• <b>Link to training material</b></li> <li>- x</li> </ul>	

Figure 19: Release info slide from May 2021 (Appendix 23).

The findings and assumptions made from the data available were discussed with key person that focuses on ensuring that the shared information reached the key users (D2-B12). The assumptions and key findings were found to be correct, although no new ideas how to improve were raised in the short discussion. During the interviews for the initial and second current state analyses, the interviewees raised improvement ideas for the customer warranty process and ERP requirement process visualized in Table 16, Table

17 below. In these tables, the ideas are divided by finding category. Reported in/by resembles the source of the information. The improvement ideas listed below do not directly provide ideas how to solve the cross-organizational resourcing, cooperation or communication.

Table 16: Data 1a Improvement ideas for Customer warranty process.

Area	Valuation	Comment	Reported in/by	Tool/Process	Finding category
Development process	Improvement idea	Ensure that the ERP modules sync together	B1-2/P3	Process, ERP application	Cross-stream cooperation
Implementation process	Improvement idea	Training and testing should be executed as a multiunit function	B4/P19&P26	ERP application	Cross-stream cooperation
Customer warranty process	Improvement idea	Platform should be included to parameter discussions	B4/P27	Process, ERP application, Reporting tool	Customer warranty process
Customer warranty process	Improvement idea	Cost of Quality report on vendor compensations could be build based on credits	B8-2/P30	ERP application, Reporting tool	Customer warranty process
Customer warranty process	Improvement idea	Level of autofilling could be increased	B4/P19	ERP application	Customer warranty process
Customer warranty process	Improvement idea	Solution could be simpler in the SO's	B5/P5&P6	ERP application	Customer warranty process
Customer warranty process	Improvement idea	Credits could go through separate order always	B5/P7	ERP application	Customer warranty process
Customer warranty process	Improvement idea	Return could go straight to correct unit	B5/P7	ERP application	Customer warranty process
Customer warranty process	Improvement idea	Frontline resourcing after process change	B6-3/P46	Process	Customer warranty process
Customer warranty process	Improvement idea	Create a feedback loop from customer towards claim handlers to get feedback how we managed to handle their quality issue	B4/P25	Process	Customer warranty process
Implementation process	Improvement idea	Ensure understanding of extra steps during implementation	B5/P9	Process	Customer warranty process
Implementation process	Improvement idea	Set up the roles and responsibilities before implementation to practice beforehand	B4/P22	Process	Customer warranty process
Implementation process	Improvement idea	Customer notification process implementation model should be used with other technical implementations as well	B4/P26	ERP application	General
Implementation process	Improvement idea	Create one central place for instructions	B4/P25	ERP application	Information sharing
Implementation process	Improvement idea	Training should be coupled with homework and second round of training	B4/P22	ERP application	Information sharing
Implementation process	Improvement idea	Train quality management as a package to existing ERP units	B8-2/P29 & B6-3/P45	Process, ERP application	Information sharing
Implementation process	Improvement idea	Business project managers should be trained to manage software implementation	B4/P27	ERP application	Resourcing

Table 17: Data 1b Improvement ideas for ERP Requirement management process.

Valuation	Comment	Reported in/by	Finding category
Improvement idea	Mini project method to be taken in use: Leader would define needed resourcing	B11/P38	Cross-stream cooperation
Improvement idea	Enhance business case calculations	B9/P31	General
Improvement idea	There should be one single CAB containing all applications	B11/P39	General
Improvement idea	Save time through better preparation before CAB meeting	B9/P33	General
Improvement idea	Follow the set rules better	B9/P33	General
Improvement idea	Define the way of working before requirement are brought to the CAB meeting	B9/P33	General
Improvement idea	Identify the developments that would need extensive training	B10/P36	Information sharing
Improvement idea	Enhance communication of what is coming from development	B9/P31	Information sharing
Improvement idea	End user training for new and earlier implemented units	B11/P38	Information sharing

In the current ERP requirement management process in the case company, the teams work independently and separately, if not otherwise agreed by the people working on the topic. Scrum methodology brought to the teams, has enforced the autonomy expectations in the teams, so that the developments are made within teams independently. Each team takes care of their backlog and their developments. Autonomy and independence expectations have driven the teams to cope on their own which jeopardizes the system coherency due to the integrated nature of the system that clashes with current expertise in the teams. Scrum methodology is meant to be coupled with automated testing running before each release to spot the E2E problematics before the release into the production environment.



Since the case company has only just started their test automation journey, not all the tests are possible to run with automated testing. This brings importance to the manual testing executed as a cooperation between the teams. For this to be possible, it is vital that the surrounding areas are known and the implications of each development are understood. Existing knowledge suggests the Organizational Network Analysis to map the surrounding areas and contact points to the other functionalities, teams, experts, integrated systems and so forth. For *improving Cross-Organizational Resourcing and Cooperation* in the case company, the existing knowledge also suggested alignment with all the necessary parties that need to be involved, onboard or able to stop the change happening, and the execution of organizational network analysis to identify the entities necessary to be involved.

### 5.3 Improving Cross-Organizational Communication and Cooperation

In the current ERP requirement management process in the case company, the change information is shared on a development increment level one time per change. These developments increments are small pieces of a bigger puzzle. In Scrum, that the case company has taken in use, the requirements are split into small pieces, i.e. to minimum viable products, that are small changes of a bigger entity viable on their own where the bigger entity is enhanced during the time through these small increments, one or more at a time. The expectation in the case company is that the experts learn the content of the changes and the connection of the change to bigger puzzle from single share of the information.

Agile handbook which is guiding the teams in the ways of working, in the case company, elaborates that communication should be done as per requirement, which in practice means a minimum that is mandatory. Mandatory at the moment are;

1. Updated technical document that will be updated again when next iteration is done. The link to the technical document is expected to be added to the requirement. Documents are available in the system where IT personnel have access.
2. Updated user manual that will be updated again when the next iteration is done. The link to the user manual is expected to be added to the requirement. Documents are available in the system where all the users have access.
3. Release information slide that is shared through email to the users during the week before a monthly release. The release slide or a set of slides is meant to be added to the requirement as an attached file. The release slides include a

short elaboration of which process is affected, which area the change is affecting, why the change is made, and what is the change. In areas where there is a user network up and running, the release slides are elaborated to users verbally in a common call.

4. Technical knowledge transfer is given for the support team. Part of the areas also include the concept and configuration owners to the technical knowledge transfer. These sessions include the technical perspective and are not expected to share conceptual or process details.

However, existing knowledge suggest that deep learning supports organization to sustain and maintain the activities. Single loop learning is only scratching the surface and therefore is short-sighted for the organization. Deep learning enables understanding whys behind the topic and enables the person to utilize the information also for other purposes. In addition, there is always movement in employees between positions, between companies, into and out of the company. In all these movements, it is crucially important to enable deep learning to occur. At the moment, the case company processes split the information into small particles that are communicated in small increments. As per existing knowledge, it is important to include to the information influence diagram where the reasons for the created solutions are elaborated. This is expected to fortify the communication.

#### 5.4 Summary of the Proposal

The proposal for improving the ERP requirement management process includes suggestions for improving the Cross-organizational resourcing and Cross-organizational communication and cooperation within the ERP requirement management process.

First the proposal includes, to create a basis for the successful and sustainable change through *Execution of ONA (organizational network analysis) in each team separately for each functional area*, i.e. execute ONA in QM area for customer warranty and traceability functionalities separately as those are functionally separate topics and will include at least partially different entities to communicate and align with. When scoping the ONA to include integrated systems, ONA supports teams to create more comprehensive picture of the extent of the functionality and all necessary entities for communication and alignment.

Importantly, the *results of ONA are to be used to align between necessary entities*, so that to involve the necessary entities to the development activities and to minimize communication only to the necessary entities. For example customer warranty process is a full ERP E2E (end to end) process and the key areas to keep involved in customer warranty process related developments include: SD (sales and distribution) when related to orders or deliveries, CO (controlling) when related to costs in general or QM orders (order collecting costs, created from notification), MM (materials management) when related to purchases and FI (finance) when invoicing. At the same time, *alignment does not mean that all parties are necessary to participate all the way*, but they do need to know and be on board with the change. This limits the amount of information shared as all information is not shared to everyone and this eases the resourcing as alignment enables teams to collaborate without maximized participation in every single case.

Second, it is critical to enable sustainable change by adding influence diagrams or cause and effect relationships to release information and ensure feature and process level change communication as well, not just in the small separate development increments. The proposal is also to *Communicate towards the mapped necessary entities* with change information; these are in case company the team members that work as the highest level of expertise and as support for all specific area topics. It is critical that these experts receive and catch the topics from the shared information to be able to support when necessary.

The summary of the proposal is shown in Figure 20 below.

### Create base for the successful change

*Execute ONA in each team separately for each functional area, i.e. in QM team customer warranty, traceability, ... etc separately. Integrated systems included to the analysis with full E2E perspective.*

*Results of ONA to be used to align between necessary entities, to involve necessary entities to development activities & to minimize communication only to necessary entities*

### Enable sustainable change

*Add influence diagrams/cause and effect relationships to release information*

*Ensure feature & process level change communication as well, not just the small separate development increments*

*Communicate towards mapped necessary entities with change information these are in case company the team members that work as the highest level of expertise and as support for all specific area topics, they need to know if they are mapped to necessary entities*

*Figure 20: Summary of the improvement proposal*

Next, in Section 6, the improvement proposal is reviewed with key stakeholders for validation.

## 6 Validation of the Proposal

In this section, the thesis validates the proposal build in the Section 5 with key stakeholders identified during the thesis. The improvement proposal on improved ERP requirement management process was built in the previous section by combining the key findings from the current state analyses, key findings from existing knowledge and through additional data collection for the proposal. This section discusses the validation meeting held with the key stakeholders and continues to elaborate the next steps through creation of an implementation plan for the proposal.

### 6.1 Overview of the Validation Stage

Validation of the proposal was executed through a session held with key stakeholders by presenting shortly the initial and second current state analyses results, the findings from the existing knowledge that forms the conceptual framework; and in-depth the proposal and the reasoning behind each by connecting to the current state analyses and conceptual framework. The goal for the session with the key stakeholders was to collect feedback for the proposal to take the improvement proposal to next level and fit it better to the case company. Feedback in the session was highly positive and therefore direction of the section was turned towards next steps with implementation planning.

As main feedback from the key stakeholders were about taking the proposal into use and suggestions for bringing the other areas to similar level with QM (quality management) area, the validation stage next continued to plan for these two. Based on the discussions held with the key stakeholders, a piloting plan for QM area was defined and suggestions were defined for the other areas to bring their communication plans to the same level with QM area.

Key stakeholder group for the validation was built from the experts around the organization relevant for the thesis to strengthen the validation stage feedback. The key stakeholders included:

- Representative from team leading agile transformation in the case company
- Two team leaders leading other than QM area development teams and acting as scrum masters for the teams, and through this supporting the teams in agile methodologies and to follow the company IT processes

- Platform manager that sends the release information to the users around the company and acts in a key seat to transform how and what in the messages get shared
- 2 levels up manager that has the driver seat to push change in the organization
- QM area global process owner that has a key driver seat to influence what of the actions are taken in use in the QM area
- Communication manager that makes sure that there are people in the units to receive the information shared.

## 6.2 Validation Results and Stakeholder Feedback

Appendix 19 transcripts shortly the discussion for the validation and visualizes the presentation given to the stakeholders to get feedback.

The key stakeholders were overall satisfied with the work done for the topic with the thesis. The relevance of the thesis topic to improve the ERP requirement management process were recognized by the key stakeholders. The key stakeholders also recognized the importance of the proposed actions towards the key weaknesses on the ERP requirement management process, the *cross-organizational resourcing* and the *cross-organizational communication and cooperation*.

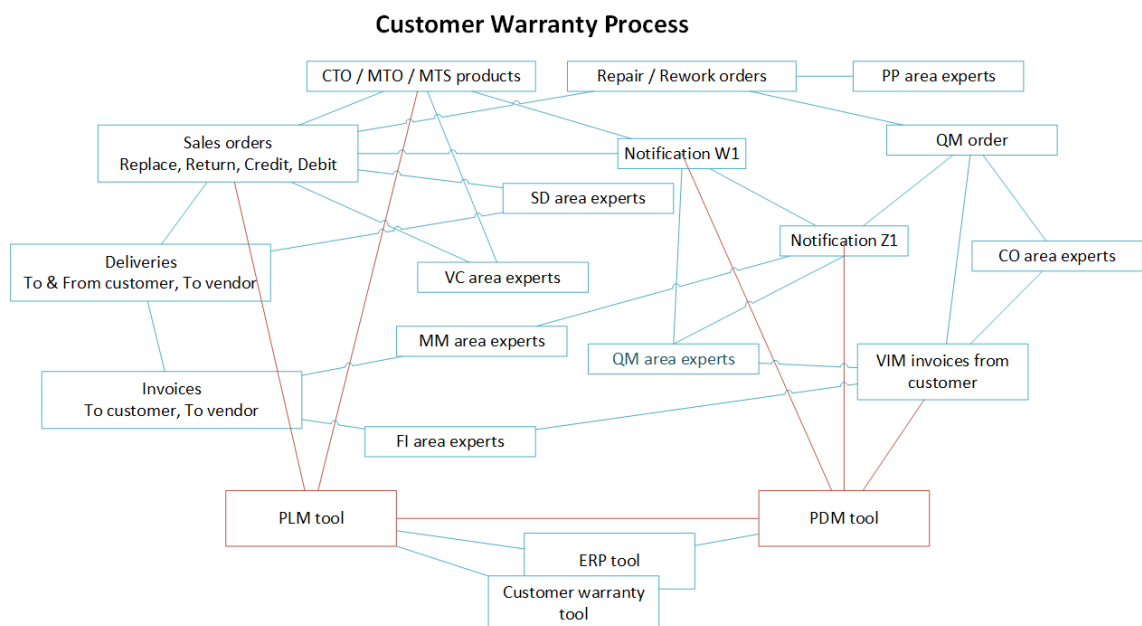


Figure 21: Top level ONA draft for customer warranty process.

First, the key stakeholders stressed the *difference between the teams* within the case company IT. QM (quality management) area was seen as a top of class team where communication towards the team members and towards the business has been taken into focus already earlier. For the other area teams, the key stakeholders suggested to enhance the communication first to the level of the QM area. QM has several communication channels like QM community (network), QM alignment with implementation experts and also the mandatory technical knowledge transfer. In QM area, the knowledge transfer is given to support, development and implementation team members as well as for developers. QM area has had the QM community since 2016 where the community was a pilot for the company to find new ways to communicate towards the key users. The QM community started with key users connecting with the development team. The team experts acted at that point also as implementation experts. During the years the QM community, QM network, has transformed to a community including the support, development, and implementation experts as well as the process owners, both global and local, key users, management and any other parties interested on the topic. New members are added to the community as they are supported through first phase of an implementation project, BIA (Business impact analysis). All areas do not have communities. If the area has a community, there the users are added to the network only after go-live of the implementation project. This can be several months or even couple of years later.

Second, the key stakeholders were interested to take the proposal into use and were looking for the ways to do that in practice. The first topic was identified where the proposals could be taken in to use in full scope and to learn about them during the piloting. As there is work to be done on the other areas to build communities (networks) and other communication channels, piloting in the QM area was suggested to be the best way to start. In addition, the key stakeholders also suggested to give praise towards the implementation teams that act as real life test environment for the end to end testing. The implementation work is seen to increase the expertise of the people and also give important feedback on the solutions towards the development teams.

### 6.3 Next Steps

The proposal for improving the ERP requirement management process was validated by the key stakeholder group. Stakeholders suggested piloting the proposed improvements in QM area in the next major project in planning phase at the moment, and to bring the

other areas to similar level with QM area before implementing further the proposed improvements to other areas. In addition, the group agreed for:

- Alignment with the agile core team
- Alignment with the communication plan
- Discussion to bring the study details available to a wider use (anonymized).

The listed activities will be initiated by the author of this study when the studies are finalized shortly. The topics will be followed up after pilot has been initiated with the next major development project in the QM area.

Next, in Section 7, this study proceeds to conclusions that summarizes the key findings of the thesis, gives further recommendations for the case company on the topic and discusses thesis evaluation from relevance, validity and reliability perspectives.



## 7 Discussion and Conclusions

This section proceeds to conclusions that summarizes the key findings of the Thesis, gives further recommendations for the case company, and discusses Thesis evaluation from relevance, validity, and reliability perspectives.

### 7.1 Executive Summary

The original and overall objective of this Thesis was to propose improvements to the new Customer warranty process in the case company through an exploratory case study. However, during the initial current state analysis (CSA), it became clear that the root cause for the “verbal feedback” received after implementation of the Customer warranty process was the lack of awareness of the process and the related system solution. The lack of awareness about the new Customer warranty process has a potential to harm or slow down any future implementations and developments in the continuously improving environment. The initial CSA, discussed in Section 3, revealed multiple other topics as well, but it was seen important to search for the root cause for the lack of awareness to enable success of the further implementations and developments. Due to these identified findings, the objective and the outcome of the study were changed along the research process. The study continued as an exploratory case study but focused on investigating the ERP requirement management process.

The revised objective of the Thesis was *to propose improvements to the ERP requirement management process from the quality management point of view*. If not fixed, the ERP requirement management process has a potential to harm other quality management processes and ERP system tools, but also potential to harm all other processes and ERP tools developed with same ERP requirement management process. The second current state analysis (CSA) continued the study by investigating the ERP requirement management process from cross-stream perspective. The key weaknesses identified from this current analyses – the *cross-stream cooperation, information sharing and resourcing* – became the focus of search for best practice and existing knowledge in the Section 4 for conceptual framework of this study.

Next, the improvement proposal of this study was built by relying on the data gathered during the two stages of the current state analysis as these interviews and discussions

followed the process development logic and touched the improvement proposals immediately during the discussions. The improvement proposals were identified, first, by studying the Customer Warranty Process and its implementation and, second, by studying the ERP requirement management process. To remind the reader, the focus changed since the study was re-directed during the course of the CSA to focus more on the reasons why the technical team in surrounding areas were not familiar enough with the customer warranty process. Second, new data was gathered during the proposal building stage to elaborate on the relevant changes in the organization, to gather more insights and proposals for the information sharing, and to verify the accuracy of the findings related to improvements. Interviews were executed to ensure that there are no additional data sources surfaced relevant to the topic of the study. Third, the information gathered from the existing knowledge, insights from the current state analyses, and new data from the proposal building stage were used to build the improvement proposal for the ERP requirement management process focusing on eliminating the weaknesses of the process and minimizing the information overflow.

The proposal for improving the ERP requirement management process includes suggestions for improving the Cross-organizational resourcing and Cross-organizational communication and cooperation within the ERP requirement management process.

First the proposal includes, to create a basis for the successful and sustainable change through *Execution of ONA (organizational network analysis) in each team separately for each functional area*. When scoping the ONA to include integrated systems, ONA supports teams to create more comprehensive picture of the extent of the functionality and all necessary entities for communication and alignment.

Importantly, the *results of ONA are to be used to align between necessary entities*, so that to involve the necessary entities to the development activities and to minimize communication only to the necessary entities. At the same time, *alignment does not mean that all parties are necessary to participate all the way*, but they do need to know and be on board with the change. This limits the amount of information shared as all information is not shared to everyone and this eases the resourcing as alignment enables teams to collaborate without maximized participation in every single case.

Second, it is critical to enable sustainable change by adding influence diagrams or cause and effect relationships to release information to enable deep learning. And to ensure

feature and process level change communication for the same reason in addition to the communication on the small separate development increments. The proposal is also to *Communicate towards the mapped necessary entities* with change information; these are in case company the team members that work as the highest level of expertise and as support for all specific area topics. It is critical that these experts receive and catch the topics from the shared information to be able to support when necessary. Enhanced ERP requirement management process will enable the case company to continue developments in successful and sustainable manner. The outcome of the study is *a process improvement proposal to the ERP Requirement management process*.

## 7.2 Managerial Implications

This Thesis investigated first the Customer warranty process, and thereafter revised the objective and continued to investigate the ERP requirement management process to propose improvements. The study searched for existing knowledge to find tools to tackle the found problems within the ERP requirement management process, and in the end to propose the improvements to the ERP requirement management process.

The proposed improvements to the ERP requirement management process enable ERP development teams in case company to limit the information sharing to necessary entities only. And enable the ERP development teams to build sustainable and successful solutions. The suggested changes should be applicable also for other IT development teams due to similar interlinked nature of the solutions.

For the proposed tools to be taken into use in all of the teams using ERP requirement management process (ERP development teams), it will require management support and commitment to change the expectation level for the teams, but also support and commitment from the agile core team instructing all IT teams in the ways of working in the case company, including the ERP development teams. Stakeholder group raised the importance of bringing the other ERP development teams to the similar level with communication actions than what the QM (Quality management) team currently is. This will require the managerial support as well as the QM team has not implemented any extraordinary ways but has tried to take the best out of the necessary tools expected by the case company to use in all of the ERP development teams.

The suggested improvements for the ERP requirement management process, can be implemented in many ways. In the most simple way to implement the suggestions, the suggestions do not bring significant extra work for the teams to handle, but will fairly soon reduce communication efforts when the information sharing can be targeted to necessary entities only and whereas the entities receiving the information can use the information shared more efficiently. This will enable the teams to work together in more efficient way and for the teams to sustain the solutions.

Finally, based on the results of the thesis, it is also possible to return to the original objective of improving the Customer warranty process.

For the connection between ERP requirement management process and the customer warranty process. The case company has an additional challenge to identify where all similar gaps lie than what was identified from the build of the customer warranty process. In the case company, several major solutions have been built during the past years after the initial template build, similarly to the Customer warranty process. It is expected that similar gaps may lie on all of them where similar communication protocols and cross-organizational cooperation according to current ERP requirement management process have been used. This will require investigation that should be doable during the organizational network analysis when technical solutions are mapped, and key experts are gathered to ensure the sustainability and success of the solutions. This brings an opportunity to make sure that the key entities are aware of the solution and an opportunity to initiate actions where necessary.

For the Customer warranty process itself, the study identifies several potential solution development actions in the overall lists of feedback and improvement idea lists. Although the study was directed to the major issues in the ERP requirement management process, it does not hide the information gathered during the initial current state analysis focusing on the Customer warranty process. On the contrary, it uses the information to ground the information gathered for the ERP requirement management process. Information gathered to Section 3.2, Section 3.6 and related appendixes can be used as a basis for further studies related to customer warranty process in the case company.

### 7.3 Evaluation of the Thesis

This Thesis investigated, first, the Customer warranty process, and thereafter revised the objective and continued to investigate the ERP requirement management process to propose improvements. The study searched for existing knowledge to find tools to tackle the identified problems within the ERP requirement management process, and in the end to propose improvements to the ERP requirement management process based on the data analysis and conceptual framework. In this section, the validity and reliability of the study will be discussed.

Section 2.4 discussed the validity and reliability plan of this study. Now at this stage, the study returns to these topics to reflect how the plan was followed to secure the reliability and validity of the Thesis. The plan was built based on studies conducted by Yin (2009) and Ghauri and Grønhaug (2010).

#### 7.3.1 Validity

Yin (2009) suggested to encounter the construct validity, external validity and reliability tests. For the *construct validity*, Yin (2009; 41) suggests using multiple sources for evidence, to establish a chain of evidence and to have the key informants review a draft of the report. As defined in the research design of this study, the study used multiple sources of evidence in forms of multiple group interviews and reviews of local and global documentation on the topic. The chain of evidence is built in Section 2.3 through the logic of data collection, as well as through elaborating the data in the field notes on each interview gathered in this study, and through references to the data collected throughout the study. The findings of this report have been checked with key stakeholder group to validate the findings and to ensure the relevance and secure that the topics are elaborated in correct manner and on subject.

Also, Ghauri and Grønhaug (2010; 212-213) suggest to use multiple methods and to confirm data from other sources to ensure validity of the research. Ghauri and Grønhaug (2010; 212-213) also suggest to approach a topic from multiple points of view and to find out if similar topics rise from all or several of those. This study used global and local documentation and interviews with a large scope of people to close into the topic from multiple angles, as suggested by Ghauri and Grønhaug (2010; 212-213). The interviewees were situated with the end and key users of the process, with the configuration and

process owners, as well as deployment team members implementing the process to the new units with the scheduled implementations.

The case study research design included the theory part after the current state analyses and before the proposal building to encounter the *external validity test* in this single case study (Yin 2009; 41). The conceptual framework was built supporting on existing knowledge gathered for the study.

### 7.3.2 Reliability

The *reliability* was improved, according to Yin (2009; 45), by building the report in the manner that another investigator would be able to repeat the study and end up to same conclusions. The key information of the study was gathered, visualized and elaborated throughout the study for another investigator to be able to understand how the study was conducted.

The main concern by Ghauri and Grønhaug (2010; 210-211) laid in the vast amount of data and in the tedious and time consuming data analysis phase. As Ghauri and Grønhaug warn, the main struggle of this study was the vast amount of data and topics to process which caused the timeline of this study to extend. This extending timeline brought new struggles for the study to embed the changes of the most recent processes to the storyline of this study and extra effort was required to keep the coherency of this study intact.

### 7.4 Closing Words

The original and overall objective of this Thesis was to propose improvements to the new Customer warranty process in the case company through an exploratory case study. However, during the initial current state analysis (CSA), it became clear that the root cause for the “verbal feedback” received after implementation of the Customer warranty process was the lack of awareness of the process and the related system solution. The revised objective of the Thesis was *to propose improvements to the ERP requirement management process* used to build the customer warranty process.

The study suggests improvements to the ERP requirement management process to ensure sustainability and success of the solutions developed with ERP requirement management process. In addition, the study shortly describes the next steps to take the suggestions into piloting with an upcoming project in the case company in the quality management area. Further work is required to find more detailed ways how the suggestions can be taken into use in the most suitable ways. Future project within the case company will be an exciting opportunity to dive into the practical side of the suggestions. Starting project will work as a benchmark for next projects to come and for other teams how the suggestions can be taken in use.

The author will be further involved with the upcoming piloting starting shortly and will continue on the topic to search for the ways to implement the suggestions in practice in the case company in the most efficient way.



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## List of questions for Data 1a

	Topic(s) of the interview	QUESTIONS
1	Starting point	<i>Are You familiar with customer warranty process? How have You been involved in customer warranty process?</i>
2	Rationale	<i>For what purpose was the customer warranty process built?</i>
3	Outcome	<i>Can You describe the customer warranty process in Your own words? With a graph? What is the Customer Warranty Process covering from Your point of view? Is there only one or many variants to cover? How would you evaluate the outcome/success of the customer warranty process? Was this the customer warranty process successful from your point of view? How?</i>
4	Organizational fit and cultural differences	<i>How would you describe the units implemented to the customer warranty process?</i>
	Human side	<i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account? How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i>
	Change agents	<i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i>
5	Key strengths	<i>What are the key factors behind the success of the customer warranty process? What were the company's strengths in the customer warranty process?</i>
6	Key concerns	<i>What are your key concerns about the customer warranty process?</i>
7	Analysis	<i>In which areas do you think there is space for improvement? In what way? How could that be done?</i>
8	Best practices	<i>What best practice do you think the company should follow as for customer warranty process?</i>
9	Development needs	<i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i>
10	To add	<i>What would you like to add that we have not yet discussed?</i>

## Research interview (Discussion) - Field notes (Group B1-1)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B1-1)

Table 1

Details	
Name (code) of the informant	Group B1-1 consist persons: P2 – Interviewee and P0 – Interviewer
Informant's position in the case company	P2: Indirect Sourcing Global Category Manager
Informant's role in the customer notification process	P2: Original concept owner, Pilot and implementation manager
Date of the interview	14.2.2017
Duration of the interview	1h 10min
Document	Field notes (Transcribed and translated from interview held in Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with customer warranty process?</i></b></p> <p><b><i>How have You been involved in customer warranty process?</i></b></p>	<p>P2: Is familiar to some extent.</p> <p>P2: I have been involved with process definition and systems solution, in both. Process in mainly written by P1. I was commenting from the side.</p>
2	Rationale	<p><b><i>For what purpose was the customer warranty process built?</i></b></p>	<p>P2: The purpose was to build a solution that fits to whole corporation globally, without limitations or scoping. One scoping was; That we don't touch ST (Sales Tool) end and what happens there. Scope was to build a global solution that will replace legacy warranty tool.</p> <p>The main drivers were; to be usable, working with ERP base and to support sensible reporting that covers the incidents and the cost impact.</p> <p>The target was also for the solution to be 20-30% faster in lead-time than the previous solution was.</p>

			<p><b><i>P0: Was said that sales tool (ST) was scoped out. How was is scoped out? Was it said not to be used or was it globally decided that sales tool will not be used?</i></b></p> <p>P2: The start point was that ERP was selected to be the one to be used; and that it will run in ERP. We did not start to build a solution that would run in 2 different systems. Was not meant to be build a rivalry solution to ST just for the purpose that business Z is using ST.</p> <p><b><i>P0: Was business Z involved in the decision?</i></b></p> <p>P2: This one needs to be asked from P1 and P3.</p> <p>P2: The hands of ST was also because we did not have the competence to use ST. We were trying to patch up the situation by using P12. Who was able to define some of the things, how these could work together.</p> <p>P2: We didn't have any named resource involved for this part. We tried few times to get business Z to be involved more strongly, but there were not resources to give to this topic. To avoid paralyzing the whole development process, was decided to go ahead without.</p> <p><b><i>P0: So, was seen that ERP and ST would not be used overlapping. Was it still seen that on some scenarios on the end of end to end the ST would still be used?</i></b></p> <p>P2: Decision was that the solution is based on ERP. Was seen that, if there would be any ST involvement it would be a data entry, nothing else. ST would be used a tool to enter data that will flow to ERP. Only for data entry, nothing else.</p> <p>P2: We do not want to build 2 systems that would work as masters. There are no reasons why we could not enter data to ERP through ST. If we just could get it built. It could even be something to wish for.</p> <p>P2: In practice we didn't want to competing systems and therefore the solution is purely ERP based.</p> <p>P2: It has been pondered that it would be beneficial that Field Z could enter data; for example service incidents entry would be natural way of working. The limitation is that Field Z is not using ERP, other that some few rare office persons are using. It is creating a natural barrier that in practice there not able to enter the data. They even would not know how to enter the data. Quite easily it is spoken that couldn't we enter it to ST. Why would it need to be ST? Why not some</p>
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			other system than ST? Any web interface would serve the same.
3	Outcome	<p><b><i>Can You describe the customer warranty process in Your own words? With a graph?</i></b></p> <p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p>	<p>P2: ERP -like. Everything is working very well, if there is a defined operations model, pre-defined and configured operations model. All that goes to exceptions are hard. It means that we need to conceptually think solutions between multiple systems and also between multiple ERP modules.</p> <p>P2: If You have a typical case, there are clear ways to handle it. It is not exceptionally light as it is working the way ERP is working. It needs certain information to be able to work as it is working. From my point of view it may not be a bad thing this forced data entry. In the previous life in the legacy warranty tool was seen that when certain things are not mandatory, those will not be there. This is then tripping the process in later stages. Don't know what people are longing for; that it would not force You to fill almost anything and that it could be some kind of web interface to use it, and not the ERP User interface.</p> <p>P2: Depends on what level we look for; Is it intuitive, no I would say. For a person that hasn't used ERP for sure not intuitive. For a person that has used ERP for a longer period of time, there's really nothing special and has familiar elements.</p> <p>P2: Integrated it is. We were heavily looking for that the things happening in the ERP would have a link to the case (notification) otherwise than that a person needs to update some reference fields. Now the things that happen in ERP are automatically linked to the case (notification). And this is enabling, or it should enable, the follow up.</p> <p>P2: To sensible level, yes. I claim that it is covering 80% of the cases. There is then 20% left mainly the business Z scenarios. And I am not 100% sure about the ETO scenarios. This is more on your knowledge than mine how well those are going through. But reasonably well it is covering. You can really use in this a cold 80/20 rule as also 20% of the cases have to be taken care of one way or the other. And therefore I am not fully satisfied that we were not able to get the business Z build. But with the timetable and resourcing we had, it was not even possible.</p> <p>P2: I am not fully convinced that all the business Z cases will go through nicely. It might be that we will have to do some</p>

		<p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>leveling invoices. Mainly the problem is in the money movements as I have understood, because of the compensations rules (old root cause responsible rule on). With the rules the solution and the chain becomes extremely complex, if it is even possible to do.</p> <p>P2: Complex this is anyhow as the process includes all the elements from a supply chain. The quality data collection is relatively easy to do. It just needs a ticket where to write. In here the need was that we need to integrate the data within the ERP the way that the other outputs are linked with the data. Then we are talking about the whole supply chain, sales to delivery and invoicing through purchasing, production and warehouse actions, and all its activities linked with the notification. It is a full chain of actions.</p> <p>P2: When we add to this the compensation rules, I still see that, if our compensation rules would be more simple the whole solution could be more fluent. But, that is a Business decision. It's not a system or concept dependent. business wants to function like this, the system and the concepts need to follow.</p> <p>P2: The solution is covering the parameter we originally want to the solution. Still to say in this interview that the numerous improvement ideas have been parked to be investigated further later. As in any project, we had a timeline when it needed to be ready and the content was modified accordingly.</p> <p>P2: We don't have any electronic methods for notification creation through systems or from Web portals. business Z integration is not fully ready from all perspectives. There are a lot of things that could be made better. With the given timeline the result is quite good.</p>
4	<p><b><u>Specific themes:</u></b></p> <p><b>Organizational fit and cultural differences</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p>	<p>P2: There are differences between the units. As an example we could look at the bigger first implementation in US and Canada. ETO has its own rules; system solution with a base with project system is different and organization and resourcing is different. CTO has its own rules; system solution is different and organization is slightly different.</p> <p>When we go to business Z the system landscape is even different and to the extent that there is no centralized quality function.</p>

	<p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p>	<p>P2: There is a pinch of through that the Business units are different. But do they have to be, that's a different question. How much of this is because we have done choices and that we are living with the organization structures and system landscape what we have. Is it still possible to take a stand on why we have what we have? Do we have to have different ways of working and different organizational structures? Not necessarily. Some differences between PS and normal ERP are understandable to certain extend. If we have to live with two systems, then we have to.</p> <p>P2: There is also part of our self-made believe in the mix. When we go to high enough level the process is made extremely similar and clear; Customer has bought something, there is issues with it and the customer problem needs to be resolved. I don't believe there are on this level any differences between the businesses X, Y and Z.</p> <p><b><i>P0: Are these Businesses the extend of differences or does it split to separate parts within these as well?</i></b></p> <p>P2: It depends on what granulate level do we want to review the topic on. Surely when we look within to business Z there are parts units and field Z units on their own. It's not that different from the Business Ares X. There also the customer orders something and we deliver it. But I need to state also that there are the business Z compensation rules that make the process complicated at Parts units.</p> <p>P2: Don't know what else the split could be; on high level the difference could be the selling service or a product. This is the current situation-.</p> <p><b><i>P0: There are the LEAN and PO-SO models within the CTO model; Do You see that these should be possible to harmonize?</i></b></p> <p>P2: If that would be possible, the easier this would be. We are then stepping out from the customer warranty process and we are then in the SD (Sales and Distribution) domain and discussing how SD should function. And this is the hard part, if we want to optimize the operations model based on the customer notifications then we are off the track. Of course it would be handy to state that in the customer notifications he system could always function the same way. Is that possible? Don't know. It would be easier from the execution point of view.</p>
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	<p><b>Human side</b></p>	<p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p>	<p>P2: From business Z Field Z had nominated persons on the US and Canada implementation. And the persons were really well involved always. But in practice as the implementation to US and Canada was set function the way that, if there are the customer cases, the they will guide the cases to centralized team. Their only job was because of this to make sure all the people need to know to inform centralized team. Otherwise was for the involved participants in the limits of their competence the information take-in similar overall.</p> <p>I didn't experience that any of the units would have tried to get rid of the project. Of course there are differences between the participants; others are able to more than the others.</p> <p><b><i>P0: Was the competence level good enough? Did the competence levels bring more challenges?</i></b></p> <p>P2: In the ETO we would have needed more resources. I am not aware, if there would have been any more resources to give. Business was really well involved. In the ETO there was really deep learning curve to learn how it functions. For Field Z, as thin as was defined to be. If it goes from outside as centralized, then it goes this way.</p> <p>P2: When we go to IT -side and to what was the IT involvement. We would have needed more process support from business Z. We would have also needed support from ST side. They could have conceptualized the things first and seen how we can get their end to work on the process without that it would mean changes elsewhere only because things work there are they work. This is one thing.</p> <p>P2: For the reporting; we were quite well troubled with that. Not sure, if it's yet still fully ready.</p> <p>P2: For ERP QM; The resources were really thin. You were having two different scheduled unit implementations on at the same time. We would have really needed more investment on to that.</p> <p>P2: For ERP FI and CO; Came with different kind of surprises which they were trying to solve with their best knowledge. They also had multiple scheduled unit implementations on at the same time. There were the process owners and some other persons trying to solve the issues without better time/resources "on the knee".</p>
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			<p>P2: For ERP SD; Similar for the SD where load of work was heavy at the same time.</p> <p>P2: The main thing for this implementation came to be the resources, where this project was meant to be easy enough implementation without bigger hassle. We were implementing just in a bigger scale what was already tested in smaller scale. The end result was that the solution had to be adjusted to directions X, Y and Z. And there were found topics due to bigger business involvement that were not found before; new cost compensation rules, reservations, ... A lot of new variants were needed, but the resources were not available. If I question the involvement of some party, I question the involvement of the IT itself. Surely understanding fully why the resources were in use elsewhere. No one had prepared to the need of resources on this implementation as well.</p> <p>P2: This was requested to be an EPIC -project for couple of times, but the request was denied. It should have been one.</p> <p><b><i>P0: Has this point of view been acknowledged after the project completion?</i></b></p> <p>P2: Because of the transfer to new tasks, I am not aware.</p> <p>P2: The best way to implement this solution, is to implement it with the normal scheduled unit implementation where the resources are already allocated. As this is not anymore possible due to the fact that part of the units is already live with the new system and there for do not require an scheduled unit implementation anymore. We would need a resourcing that would stay constant. When there is an expert answering to one subject matter and then goes away. And later for the next one we take from same team a different person for a subject matter, answers it and goes away. There is always a strong learning curve needed to get them on board/what we are talking about, when this has been decided and etc.</p> <p>Yes, from my point of view. We would need dedicated persons for this topic from all areas. These persons would be in charge to make sure this solution works from their angle in this context. For the deployment, the persons really need to have time to participate the deployment activities.</p> <p>P2: And the test management, even more careful management of the test cases would of been needed. Now was decided that the Business project managers will define the E2E</p>
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		<p><b><i>Who have been the main change agents driving the change to customer warranty</i></b></p>	<p>scenarios what they want to test. And they will test those. The detail level and the number of test scenarios depended highly per Business project manager. As the project team was as big it was, the average of the density of the testing was anyhow quite good.</p> <p><b><i>P0: So, you would say that there is something to improve in the model how the implementation is executed?</i></b></p> <p>P2: Generally, there is always something to improve in everything. The rough structure is ok, there is the question how much of resources we have to give to a project to follow up things.</p> <p>P2: Exceptionally good in this implementation was the steering committee with people from high enough places in the organization and these persons were committed to the project. When the decision has been made that we go ahead with this solution and when we find deviations, deviations get evaluated that we can live with the deviations, the deployment is much more painless with the support of the steering committee. We didn't need to enter the endless discussion how it should work and are we able to push ahead to Business go-live with this deviation.</p> <p>P2: All the hope can not be put on the "top management" support. Somehow this is quite old fashion and too simplifying, even though it has a part of truth. Top management needs to support, but they need to do it because they believe in it and they understand it; they understand what is coming and what could go wrong. Through the understanding they need to support. They need to be capable to say is this ok, or not. They need to be able say this is how we go ahead or to brake when that is needed and wait until the situation is cleared.</p> <p>P2: Business project managers were in extremely important role. The deployment is highly depended on how well the Business project manager has done the implementation. US centralized team leader and Business project manager (BPM) E were really pushing things forward. BPM E was really hands on driving things forward. Both had a need to be involved as their play area was changing.</p>
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		<b><i>process? What did they do in this role?</i></b>	P2: Don't know about the ETO, how well it is running at the moment. There was a person that was moved from the unit to under Centralized team, but is still located in the original unit. He has a little bit opposed management in the unit. It doesn't help in these kinds of changes to be implemented. The whole concept was challenged related to internal cost allocations (from the management).
5	Key strengths	<b><i>What are the key factors behind the success of the customer warranty process?</i></b>  <b><i>What were the company's strengths in the customer warranty process?</i></b>	<b><i>P0: We have already discussed about visibility, about the centralized information and reporting. Are these the ones or is there something to add?</i></b>  P2: The core is the ERP. It does what is has been set to do. It is not exposed to any malfunction. It is trustworthy. The traceability to verify the success of the matters at hand, no need for the person to go through two-three different documents and copy-paste any statuses/comments to additional places to make sure there is a single place for the information.  P2: Better visibility and one single system in use are the strong topics.
6	Key concerns	<b><i>What are your key concerns about the customer warranty process?</i></b>	P2: The intuitively and the usability. The ERP is not the easiest system to use. Cloud based application for handheld device or something else on top of the ERP, or some user interface limiter -type thing on top, could make a lot easier.  P2: ERP User interface is ERP-like. ERP is not anyhow intuitive, you have hundreds of fields, that have been divided to almost ten tab pages only on notification. In my books this is not intuitive and easy to use, that would show only the ones that needs to be filled in with some kind of visualization. At the same time the users, on some of the units at least, need to handle sales orders, purchase requisition, purchase orders, and so on. It's not as easy as it could be.
7	Analysis	<b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b>	P2: The intuitively is not that easy to improve, but the other things. Back to the basics. I would look at the coding/parameters and the reporting. It doesn't still serve as well it should. The parameters should be fixed as first thing.  If Field Z would be wanted to be brought in, we might not be able realistically to expect them to start to use ERP straight. What could be the solution for the notification entry by themselves? If we would have a cloud based application for handheld devices with the ERP, that could work.

			I have been taking some distance to the reporting, but I assume that there are more needs currently open. I don't know what the business units have requested, if it's some business separation or what. I would build the reporting to serve what the units in concrete needs, what they really need now. What are they reporting to management or to RUSH reporting?
8	Best practices	<b><i>What best practice do you think the company should follow as for customer warranty process?</i></b>	<p>P2: Bench marking is possible and it could be possible to get benchmarking references even from ERP where things have been made. And it brings us the limits what the system capability. I support the point of view that bench marking is not able to fix our home grown issue on its own. The main thing in our case is that how we have done our ERP and how we have done the Business compensation rules. These are the ones that are troubling us. For the usability, we could bench mark, but I could see that we could be able to on our own to understand the limitations and possibilities in cloud based application for handheld devices with the ERP.</p> <p>We could take input from Bench marking where we are compared to others, but the change needs to come from within.</p>
9	Development needs	<b><i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i></b>	P2: Already covered.
10	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	<p>P2: We should vision what we want this solution to be in the end. Where we want to be in long term. Do we have one?</p> <p>We are quite easily get stuck in to the short term fixes and of course those need to be fix, some parameter issues of course are critical to fix.</p> <p>We should create a vision where to be in the long term. Some customers want to use Web portal, some to call, some to use Web portal in Field Z. Where do we want to be? For this the bench marking could work. It could be that there is no good example existing.</p> <p>We should think from the usability. We have now created the foundation. We have created a foundation to build on and that doesn't mean that it's usability is high, yet. How could it be more reasonable? How can we make the commands as easy as possible? How far can we take the automation?</p>

		<p><b><i>Customer notification to internal vendor notification chain? Advantage or disadvantage?</i></b></p>	<p>Where not automation is possible, how can we make the information entry as easy as possible?</p> <p>P2: We wanted to decouple the customer resolution from the internal investigation. That was the main idea.</p> <p>If we would want to keep all the thing on the same notification, I am not sure if the less notifications would mean better lead time. The main idea would not come through with less notifications. The internal issues would still be investigated back and forth and nothing else would change than the system. All the rest would stay the same.</p> <p>P2: We were driving for something more than just a change of system. Idea is to resolve customer issue faster and the internal issue investigation can continue as long as needed.</p> <p>In some case this will not be the case, there are cases where internal issue needs to be resolved before the customer case resolution can be made.</p>
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## Research interview (Discussion) - Field notes (Group B1-2)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B1-2)

Table 1

Details	
<u>Name (code) of the informant</u>	Group B1 consist persons: P1 – Interviewee, P3 – Interviewee and P0 - Interviewer
<u>Informant's position in the case company</u>	P1: Global Process Owner, Quality Management P3: Vice President, Quality Development
<u>Informant's role in the customer warranty process</u>	P1: Main global process owner P3: Area head
<u>Date of the interview</u>	15.2.2017
<u>Duration of the interview</u>	2h 2min
<u>Document</u>	Field notes (Summarized and translated from Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with customer warranty process?</i></b></p> <p><b><i>How have You been involved in customer warranty process?</i></b></p>	<p>P3: Yes; what we want, what is our target and high level how it should work is familiar. The ERP details are less familiar.</p> <p>P1: Yes; High level and basic use of ERP, transactions and usage with instructions.</p> <p>P3: A long time. From start of the harmonization project, in the manufacturing stream at first as quality management was included to this stream first. In Springfield implementation customer warranty process was still included to the ERP template, but it was removed from there. In start of December 2014 the customer warranty process was presented in extended executive meeting. The process has been approved by highest management in the meeting.</p>

			<p>P1: From start of the harmonization project when quality management was not yet its own area. Separately we were presenting how legacy warranty tool works and the processes 2009-2010. Since first idea draft 2012 in process training. From there we continued to more specific study.</p>
2	Rationale	<b><i>For what purpose was the customer warranty process built?</i></b>	<p>P3: The purpose was to take the customer issue resolution closer to the customer. FI and CO were instructing to lower the amount of internal transactions. business Z was not ready to start to use pipeline cost and profitability calculations in customer warranty. We wanted to find answers; How to take care of the customer? How to take care of the customer as cost effectively as possible company result in mind? The customer is not paying for the internal hassle; it does not bring any additional value.</p> <p>P3: The purpose was as well to harmonize the system architecture and get rid of legacy systems. Optimizing through cutting down overlapping systems. To enable real time information. To create transparency and efficiency in actions.</p> <p>P1: We need to be able to serve the customer as fast as possible. We need as fast as possible organization and process. The actions that take the matter forward need to be close to the customer to avoid concentrating to irrelevant from customer point of view when solving the customer issue. We wanted to dismantle the tight integration of customer issue resolution and internal investigation, continuous improvement. We keep the integration to be able to continue with internal investigation when customer issue resolution is taken care of first.</p> <p>P3: To add one more topic. We have observations from old process (not system related) when the customer issues were handled in back office. There were cases where the back office did not have the information to carry out the needed actions or the resolution was an internal ping pong between units to get the understanding what the case is about.</p> <p>P3: As an example; In US, there might have been a that the crane had a broken radio. They made a reclamation, which is totally correct as the customer was unhappy. Reclamation came to the US factory, the factory investigation result was that no radio was sold to the customer with the related order and closed the case as it had no grounds. The reclamation was closed and lost from sight. Problem was that the customer was still unhappy. The radio could have been installed by our local</p>



			<p>service branch or be added by crane sales to the order later. Claim handler did not know what was sold to the customer.</p> <p>P3: The old setup was based on old organizational model from the 1980's when the company had all end to end functions in same physical unit. The operational model has changed since then and now we are changing the customer warranty process to match with the current operational model.</p>
3	Outcome	<p><b><i>Can You describe the customer warranty process in Your own words? With a graph?</i></b></p>	<p>P3: Customer oriented, cost-effective, transparent and integrated. Learning is still on the way and the execution is as well still on the way. In the reporting we still have a lot to develop and we have still plenty to implement.</p> <p>P1: Customer focused, overall workload has decreased as the information rework has decreased when compared to previous. The new process has changed the distribution of work has changed clearly in the organization. The new customer warranty process in a 3<sup>rd</sup> generation customer warranty process in the case company. Global system solution.</p> <p>P3: The business Z is now starting to get forward. Their main system is not supporting the customer warranty process; it is currently under work. The technician is only using handheld devices and it needs to support all quality related topics.</p> <p>When the technician is going to the site, we do not know if the case will be new sales or quality related. This will be later determined. Currently the ERP and ST are not supporting the order type change.</p> <p>P1: Yes; they do not know and the change is not possible. We start currently in the ERP solution with ZFD sales order and we later then create separate sales order for the cost collection from customer. The process description for the field service part how ST will be linked to the existing customer warranty process execution in ERP is missing. This is currently on work on the business Z.</p> <p>P3: In US the customer is contacting in multiple cases the closest service unit when they encounter issues with the cranes.</p> <p>P1: In US there are regional instructions between units for service cost amount how much they will reimburse always for the call to the site. In ETO the project manager might get the first information as well.</p> <p>P3: business Z is missing a customer warranty process owner for the modernizations and therefore the picture is fully open.</p>

	<p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p> <p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>P3: We have the believe that the customer warranty process covers all what harmonized material delivery process covers without supporting nuclear business. Basic idea is that it should be suitable. Current customer warranty process is fully suitable for pilot and US. The topics that are under the way of course needs to be pushed through.</p> <p>P1: For the new product deliveries and spare parts as well as modernizations, where the material delivery process is in use, the customer warranty process supports. PO-SO and LEAN variants and with ETO or basic cost solution. Meaning 4 variants in businesses X and Y.</p> <p>P3: What about the spare parts?</p> <p>P0: Old cost structure brings 40+ variants.</p> <p>P1: 40+ variants are most likely not manageable. 4-5 variants we have included already in the trainings.</p> <p>P3: It is rare that one person would need to manage all of the variants. Could we survive with less variants? Why do we need to have the variants?</p> <p>P3: Few positive and good elements. A Pilot user has told that customers are satisfied with the new customer warranty process. A US claim team manager has told that with business Z the relationship is much better than it has been. The customers are satisfied because of the speed of customer resolution</p> <p>We are too early to assess the solution. After a year or two we are able to assess the outcome. It has been di ERP pointing how the FI, CO and reporting topics have taken significantly more calendar time.</p> <p>P1: With experience of implementing two claim systems, ERP and legacy warranty tool; this is too short period to assess the solution. I made a short and fast customer satisfaction questionnaire to end users start of this week and the results have been sent to You. The results are both positive and negative. Examples; More labor as no link to carrier system as previous had. The principals and the new model, I believe it will prove to be working. Small adjustments we still will have to do. Legacy warranty tool was separate system and ERP fully integrated, which makes the development and further developments slower.</p>
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4	<p><b>Specific themes:</b></p> <p><b>Organizational fit and cultural differences</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p>	<p>P3: The main pilot unit was chosen to be in the pilot due to its reasonable size, the unit is able to systematic work, their internal communication is good and ability to give constructive feedback about strengths, weaknesses and improvement suggestions.</p> <p>P1: The main pilot unit is clearly an efficiency oriented unit. There are slight differences between alfas. They had a person involved with the process build early stages. It was a good choice.</p> <p>P3: The main pilot unit has understood that they can do thing for themselves as well.</p> <p>P1: US had strong region thinking earlier. The approach was adopted to a new kind before the implementation. The thinking was ready earlier in place.</p> <p>P3: US was chosen to be next implementation as the region has end to end process in place in new system. US was a different kind of project than the pilot. There was a large number of stakeholder to consider. It needed to be managed more structured way. We decided to implement the pilot lightly and decided to take extra care on the steering group selection. Decision helped.</p> <p>P1: The main pilot unit wanted to be involved with the build and had a strong desire start early.</p> <p>P3: In both locations the management support was strong. There is still a strong will to start in business Y with customer warranty process.</p> <p>P1: In business Y unit is creating external vendor notifications and want to be ensured to be able to use other notifications before</p>
	<p><b>Human side</b></p>	<p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p>	<p>P3: I believe the motivation levels differ per person. The desire to learn new affects the motivation. How well have we been able to communicate the benefits of the big picture?</p> <p>P1: I have been communicating the change. We have tried to communicate to the business and the units the upcoming benefits. Sensitive topic is to talk about the distribution of work.</p>
		<p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p>	

	<b>Change agents</b>	<b><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></b>	<p>P3: Some units have showed the signs of pain of losing.</p> <p>P1: P3 has had a big role to get commitment from executive team and to get the GO.</p> <p>P3: The message has been repeated again and again. Executive team does understand what are value generating actions.</p>
5	<b>Key strengths</b>	<b><i>What are the key factors behind the success of the customer warranty process?</i></b>  <b><i>What were the company's strengths in the customer warranty process?</i></b>	<p>P3: This supports the customer focused approach. This supports the harmonized system landscape; ERP solution and it fits to the target. It keeps the promise of transparency and we are hoping to bring transparency also to the costs. This helps to take the message to next units.</p> <p>P1: In the back ground we have the strategic initiatives.</p> <p>P3: This fits to the focus areas.</p> <p>P3: 2 persons were highly motivated and had a drive to get to the goal.</p> <p>P1: Business ownership and steering group leadership. Responsibility of execution was on the business.</p> <p>P3: Adequate seniority in the steering group from the target group point of view. Good plan that was build ready for the project manager and had good gate model.</p> <p>P3: I did have more expectations on the FI and CO readiness. Reporting would need more time investment, but the creation is extremely slow.</p>
6	<b>Key concerns</b>	<b><i>What are your key concerns about the customer warranty process?</i></b>	<p>P3: Learning is still incomplete. Business Z is still not done and the process starting point is still a bit unknown (ST -&gt; ERP)</p> <p>P1: A concern is how the resources will be available during the integration process related to latest acquisition to implement customer warranty process according to the roadmap.</p>
7	<b>Analysis</b>	<b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b>	<p>P1: There is space for improvement in the user interface and parameter lists. Reporting needs to be developed to sufficient level. The implementation and development is late from the reporting perspective. ERP has been developed after the Pilot and after the US implementation start. Development is hard to a flying target.</p> <p>FI and CO resources have been extremely hard to get and keep. Organization changes in reporting.</p> <p>P3: Reporting is one topic to be developed, not only in quality management, but generally. I would still believe; Ensure the</p>

			<p>ERP modules syncing together. Managerial communication; Unit management needs to understand the change. The change in the FI and CO changes on the same moment.</p> <p>P1: business Z informed that they do not take in use the solution before enhancements to more areas to the process on ST side.</p>
8	Best practices	<p><b><i>What best practice do you think the company should follow as for customer warranty process?</i></b></p>	<p>P3: We changed our way when we went harmonized processes and to ERP. We have done bench marking. The internal invoicing has been removed from the other companies as well.</p> <p>P1: Bench marking result has been a centralized system and team to handle the customer warranty.</p> <p>P3: There has been discussions about similar in our company as well and we have similar started in US. All business Z related customer warranty topics go through a centralized team.</p> <p>P1: A centralized team takes the call and records and handles the office actions.</p>
9	Development needs	<p><b><i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i></b></p>	
10	To add	<p><b><i>Customer notification to internal vendor notification chain? Advantage or disadvantage?</i></b></p> <p><b><i>What would you like to add that we have not yet discussed?</i></b></p>	<p>P1: Decoupling of customer resolution and internal investigation when this enables the faster customer service and people can close the case faster and go forward to next tasks, then it is a benefit. For the US implementation there has been discussions about administrative work increasing, but that has not been proven. With development the flow of information could be increased. The reporting needs to be built to support this.</p> <p>P3: This is a question of transparency, but otherwise I am not able to comment on this. Simpler the better.</p>

## Research interview (Discussion) - Field notes (Group B2)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B2)

Table 1

Details	
<u>Name (code) of the informant</u>	Group B2 consist persons: P10, P11, P12 and P13
<u>Informant's position in the case company</u>	P10: Service Processes Director P11: Process and Training Owner P12: Process and Training Owner (Present until 3 <sup>rd</sup> question, email answers to rest of the questions) P13: Vice President, Technology and Quality (Joined during 3 <sup>rd</sup> question)
<u>Informant's role in the customer warranty process</u>	P10-P13: Business Z representatives
<u>Date of the interview</u>	15.2.2017
<u>Duration of the interview</u>	57min + P12 Email answers 24.4.2017
<u>Document</u>	Field notes (Summarized from interview held in English), Skype recording with audio and video  P12 answers highlighted with blue

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with customer warranty process?</i></b></p> <p><b><i>How have You been involved in customer warranty process?</i></b></p>	<p>P11: Please, sent the materials. I am new with the process.</p> <p>P12: Pretty much with the solution. Yes. Business Z frontline not ready yet.</p> <p>P10: Yes, I am familiar. A bit less than P12, but quite close.</p> <p>P10: Since Piloting (US implementation), I was not involved with the design</p> <p>P12: From beginning of the build, but not all the time heavily involved</p>



		<p><b><i>of view? Is there only one or many variants to cover?</i></b></p> <p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>P13: A lot different processes and different scenarios that we have not even tested yet. Long journey.</p> <p>P11: I don't know.</p> <p>P12: To my understanding covering the cases relatively well. Naturally there are special cases, but those need anyhow the manual work. Currently the solution should be working nicely with all the parties (except the Business Z).</p> <p>P13: We don't know enough about it yet. Two persons are walking through couple of cases right now; Who has done what, what was needed to be done, ... I do not know enough about the solution yet. I do not know how the US works currently. We study that and we draw some conclusions.</p> <p>P10: Agreed. We are currently piloting in US and just now getting started with the real life cases how those have presented themselves. What has been explored from the notifications has been good from the internal perspective, but in terms of frontline in business Z that has not been explored enough yet. We can not yet evaluate the success or the outcome.</p> <p>P12: Not enough knowledge and user experience from "real life" yet, due the solution is not widely used.</p>
4	<p><b><u>Specific themes:</u></b></p> <p><b>Organizational fit and cultural differences</b></p> <p><b>Human side</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p> <p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p> <p><b><i>How have employees reacted to the cus-</i></b></p>	<p>P10: I am too far removed to be able to answer any of these behavioral questions.</p> <p>P13: Centralized handling is new for the company.</p> <p>P10: Could You, please, ask from person X about this as he experienced a little bit of this?</p> <p>P13: Not yet known. Will be known in a month. The two persons are doing a study by really visiting the branches.</p>



	Change agents	<p><i>customer warranty process? Have they been motivated? Why (not)?</i></p> <p><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></p>	
5	Key strengths	<p><i>What are the key factors behind the success of the customer warranty process?</i></p> <p><i>What were the company's strengths in the customer warranty process?</i></p>	<p>P13: Let's hope the process is lean enough a not too time consuming. We can not afford to create a monster.</p> <p><b><i>P0: Would You say that with the amount of process variants a lean process is possible to create?</i></b></p> <p>P13: We should have lean and mean processes to have good speed in the handling. Let's see. The ERP has the reputation that it is not always the fastest tool available. It has been seen in many cases.</p> <p><b><i>P0: In what kind of cases?</i></b></p> <p>P13: For example, in production and in project handling. Project handling of one crane includes approximately 100 different tasks when our old tools were one third of it.</p> <p><b><i>P0: What about in production?</i></b></p> <p>P13: There are issues with change management that are not flexible anymore at all. Typical change management meaning; when You have ordered for instance a hoist from a factory and you start to make changes to it, it is not that flexible anymore as it used to be. So the order is better to be right at the first time.</p> <p><b><i>P0: Are You saying that the rework model is not working? And can You open it a bit?</i></b></p> <p>P13: Yes, it is complex. When You have spent a material to a hoist, you can no longer give it back. In a lot of cases You need to make a new purchase order to production. That is one feature of ERP, it forces us to do things right.</p> <p>P10: For sure it needs to be lean. This needs management and clear communication. And no deviations.</p>

			<p>P11: I agree with P10. We need ownership and management support. They need to know what is expected of them.</p> <p>P12: The system usage and especially the rules need to be lean, in order to get the simple cases solved as soon as possible in order to be customer oriented and also cost efficient. The business model taken in to use should be similar in all units in order to get the process smooth and allowing the comparisons between different countries/units. The new processes should be well trained and make the management also aware the possibilities and needs for this one.</p>
6	Key concerns	<b><i>What are your key concerns about the customer warranty process?</i></b>	<p>P10: Customer warranty process did not consider the field service at all. We are now piloting and drawing how we make it work. My biggest concern is the internal fighting for the cost. Even, if we forget the frontline solution, the existing customer warranty process becomes the cost of operating the current solution. It has a real possibility to cost more money for the company than the amounts that we are arguing over the cost.</p> <p>P13: One concern is that how much we need to modify the ST for this process. We might need to have to change the tool. At least reporting of the notification has to be built to ST.</p> <p><b><i>P0: Does the system need to be sales tool (ST) or can it be any other system that can be used with a handheld device?</i></b></p> <p>P10: Absolutely not, it has to be the ST. <i>[Reasoning confidential]</i></p> <p>P12: Biggest concern currently is the integration for the ST in technical side and the allocation (or arguing about it) the internal costs from the process point of view.</p>
7	Analysis	<b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b>	
8	Best practices	<b><i>What best practice do you think the company should follow as</i></b>	<p>P10: Other units are not fighting over costs between the units</p> <p>P13: Check 2 companies; <i>[Suggested company names classified]</i></p>

		<b><i>for customer warranty process?</i></b>	P12: Benchmarking the equipment how they are currently operating and then the new acquired units.
9	Develop- ment needs	<b><i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i></b>	
10	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	

## Research interview (Discussion) - Field notes (Group B3)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B3)

Table 1

Details	
<u>Name (code) of the informant</u>	Group B3 consist persons: P14 – Interviewee, P15 – Interviewee and P0 – Interviewer
<u>Informant's position in the case company</u>	P14: Warranties Claim Manager P15: Quality Engineer
<u>Informant's role in the customer warranty process</u>	P14: Pilot unit representative, Creating unit P15: Pilot unit representative, Receiving unit
<u>Date of the interview</u>	16.2.2017
<u>Duration of the interview</u>	1h 10min
<u>Document</u>	Field notes (Interview executed in English), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with customer warranty process?</i></b></p> <p><b><i>How have You been involved in customer warranty process?</i></b></p>	<p>P14/P15: Yes.</p> <p>P15: We have been arranging the ground rules. Actually P2 was asking already some questions when he was developing it before pilot.</p> <p>P14: We were requesting this customer notification from the beginning. A certain manager has asked also this process. The previous concept owner asked a lot of questions when piloting. A lot of testing in testing environment and in live system.</p>
2	Rationale	<p><b><i>For what purpose was the customer warranty process built?</i></b></p>	<p>P15: To get rid of legacy warranty tool.</p> <p>P14: Main point to get rid of legacy warranty tool, but also to improve customer satisfaction.</p> <p>P15: Not fully there yet, as only using it with 2 units from pilot.</p>

			<p>P0: Would You say that when in global use it will full fill the need/purpose?</p> <p>P15: Yes.</p>
<b>3</b>	<b>Outcome</b>	<p><b><i>Can You describe the customer warranty process in Your own words? With a graph?</i></b></p> <p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p>	<p>P15: Complicated, but maybe initial answer from a platform is coming faster than before.</p> <p>P14: Not really complicated to use, but complicated to explain. It is quite straight forward. Quite similar to legacy warranty tool. You enter the complaint and You select the what has happened, what kind of default You have. And then You the different task to what ever, the factory, to person that needs to order the replacement, to person who maybe take components back. For me it is simple to use.</p> <p><b><i>P0: You say it's easier to use. Would You say it could be somehow even easier to use?</i></b></p> <p>P14: Of course it could be easier. Everything could be easier maybe. But it's at least compared to legacy warranty tool (warranty tool, legacy system) it is better.</p> <p>P15: It covers almost anything the legacy warranty tool was designed for. Maybe those, Maybe there are some more steps to reach those points (than in legacy warranty tool). There maybe some unnecessary or steps that seems unnecessary. Like with the component return.</p> <p>We have actually made a list with our claim handlers. How to improve; A list of things that need to be improved.</p> <p><b><i>P0: Have You sent the list anywhere?</i></b></p> <p>P15: Yes. My supervisor sent the list to some people. I do not know to which people. I think P3 was included in the email. I will share it to You right now. You can check the rest from the list, it is covering the all.</p> <p>P14: From our requirement perspective it is covering all important even a bit more than legacy warranty tool. But P15 saw that there are some unimportant step that only create some extra work load. For example this Z1 notification and something for us and P15 and his supervisor. I contacted them few months ago and we had a conversation about this Z1 notification. And that is something that is not a very good solution. That You always create this and that it's more less senseless.</p>

	<p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p>	<p><b><i>P0: So You don't see any reasoning for why would we have the Z1 notifications?</i></b></p> <p>P14: Yes, I see reasoning but only when we really claim it to the vendor. Only when the purchaser open a claim to externa vendor, to inverter suppliers for example. Why to create Z1 notification just to send it to the factory? That doesn't make any sense.</p> <p><b><i>P0: So it doesn't make any sense to do the investigation at the factory?</i></b></p> <p>P14: No-no-no. Of course it is important to make root cause investigation at the factory, but they could also do it the same way they do it in the Z1 notification, they could do it on the W1 notification. There is no reason for us to open this (Z1 notification). One funny thing we were in contact with the guys from the US and it seems that the did not use it. They do everything in W1 notification.</p> <p>P15: We used to have only one process how to handle the claims. But now 2; external customers + intracompany. And there could be a third one coming with the Business Z. We don't have any experience with those yet.</p> <p><b><i>P0: How are those different (the external customer notifications and intracompany notifications)? From the instruction point of view these should be similar.</i></b></p> <p>P15: There are nuances how we are handling the communication between two units. It's not exactly the same.</p> <p><b><i>P0: Why there are those differences?</i></b></p> <p>P15: I can not comment from on top of my head. I can send You the instruction we have sent to our claim handler's. We have now two sets of instructions.</p> <p>P15: There is still work to be done. For example, component return is too heavy on my opinion.</p> <p>P14: One good point is that we are able to serve the customer a lot faster. Because we can just order a replacement without asking to replace it. It is at least for the customer a big advantage.</p> <p>P14: And negative point is that we should have a global process, but it doesn't look like everyone is doing exactly the same. Because for example; When we same point is return</p>
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		<p><i>Was this the customer warranty process successful from your point of view? How?</i></p>	<p>components, we have different kind of processes with CPC and KHF. With CPC needs to be asked if returned or not/if replaced or not. With CPC the frontline needs to wait for return instructions and not just making the return order and sending it back like we do it with KHF. Currently we deal with only these units and I am not aware what's going to happen when France unit or someone else will come to ERP and then we have 3 kind of processes maybe. It's not really a global process on my opinion. Here other units are doing for example US or the Factory at Hyvinkää. I do not yet have a claim for the Hyvinkää, but I know they also have a slightly bit more complicated return process. I don't see a global process at the moment.</p> <p>P15: My feeling is also that is not a global process.</p> <p>P14: When You only need to deal with two units it may be easy, but some other units may need to deal with 5 or 6 units. Then it gets really complicated. At the moment I do not see that there really is a global process.</p> <p><b>P0: Would You say it is so far successful to being a first version of it? Or would You say that even the first version is not successful?</b></p> <p>P14: Depends. Regarding customer satisfaction, yes (successful). But when it was a plan to make it really a global process, No (Not successful).</p> <p>P15: I would say it is a success a prototype of a process.</p>
4	<p><b>Specific themes:</b> Organizational fit and cultural differences</p>	<p><i>How would you describe the units implemented to the customer warranty process? Similar, different? (Are there differences that we need to take into account in this context?)</i></p>	<p>P14: For my point of view, they are different. We are currently working with Finnish guys, so. There are not really a difference. But when we were, for example, in China. And we had the Chinese colleague to set it up there is a clear difference between Chinese thinking and Finnish kind of thinking. And also the Germans are thinking differently and French guys will do it differently also. Cultural differences between the units.</p> <p>P15: It's hard for me to say as we are familiar using this with SWF. I don't have any comparison.</p> <p><b>P0: You don't have any (notifications) coming from US?</b></p> <p>P15: Intracompany notification used with US, which is a little bit different.</p>





	<p><b>Change agents</b></p>	<p><b><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></b></p>	<p>that where is my part/replacement. It's also a bit less stress for us when we just have to find out what is needed and send it out. And more or less that's it.</p> <p>P14: But main reason why they were not motivated is that they have to learn completely new system and they have to understand how it is working, what has to be done and what is ok or not. That maybe the main point to learn the staff, main issue maybe. Why they were not that happy about it at the beginning.</p> <p>P14: We have only 2 persons using in our unit. I am ok, but the other is not so happy as it is more work. It is more work, You need to understand the process better, You need to understand the product and the claim. It's not just that we can say "Hey, this and that is broken. Send it to the factory and, please, find out what we need." That's not possible anymore. We really have to dig into it and you have to understand what is the problem and maybe the root cause already. That's of course more work load. I don't know, if everybody would be happy about that.</p> <p>P14: It's maybe our fault. When we were implementing ERP we were wondering why we don't have customer notifications in ERP and we start to request it. Maybe You have to blame us for this. But our fault was not meant like that.</p> <p>P14: There was a lot of people saying this is not needed and that we have legacy warranty tool which is quite new already. So we don't need a new system, but when of course our management also said that doesn't make any sense that, if You implement this completely new ERP system which has a customer notification solution; How come we don't use it? We tried to find out some advantage when we use it and of course our management did it somehow that put on somehow some force that other management in the factory. I don't know exactly, but it was not only that we say we would like to have it, and that's it.</p> <p>P15: I don't know anyone else except maybe The previous concept owner and the quality management process owner. They designed the process. I am not sure as I wasn't participating.</p>
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5	Key strengths	<p><b><i>What are the key factors behind the success of the customer warranty process?</i></b></p> <p><b><i>What were the company's strengths in the customer warranty process?</i></b></p>	<p><b><i>P0: You were earlier saying that there is better customer satisfaction and happier customers, is there something else also?</i></b></p> <p>P14: Good thing is the new process itself. Frontlines can decide what they want to do, what they send as replacement or not. So we are much better in providing the customer whatever he wants or needs. We are not so addicted to (restricted by) the factories. We can do whatever we want.</p> <p><b><i>P0: So, You have more power to decide?</i></b></p> <p>P14: Exactly. We can decide. We are independent now. Not really independent of course, because we are in contact with the factory. We do this root cause solution findings and so on. That is important still. But like before we don't have to ask the factory; "Could You, please, send a new inverter?" And maybe they say we need to check this and that first, that maybe correct but the customer did not understand that all the time. That is really important point for us. One other important thing is that, You can search easily search for an open tasks, this was not possible with legacy warranty tool. You could look for Your own tasks which are open to You, but You could not check the open task which You send to someone else, that was not possible. That is also especially important for us, when we for example ask the factory or someone to help us to investigate or to find whatever is. If didn't take tail, You couldn't find it anymore. It was somewhere in legacy warranty tool, but nobody new where. With ERP You can just search for Your open tasks and You find it.</p> <p>P15: I agree with P14 about the frontline independency. There are some benefits with the ERP regarding information that, if You need to look up some what kind of stuff has been sent to customer. It's maybe easier to find than before.</p>
6	Key concerns	<p><b><i>What are your key concerns about the customer warranty process?</i></b></p>	<p><b><i>P0: We have been discussing already about the different process variants, that there are too much of them.</i></b></p> <p>P14/P15: Yes.</p> <p>P14: This is really important point for me that we are really have set up a global process. When all units are the doing the same it's a lot easier to deal with from my point of view. That would be really a key factory when You make version 2 about this process. We should take care that we all do the same process.</p>

			P15: I agree with that.
7	Analysis	<b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b>	<p>P15: Room for automation. UD (usage decision) might be better to automate as it is almost always rejected.</p> <p><b><i>P0: Almost always? The system is not able to handle almost always with automation.</i></b></p> <p>P15: Well, almost cases are when customer has ordered wrong type of component that he/she doesn't really need. They return the component and we have agreed to take it back. Then we can put it back to self. This is quite rare occasion.</p> <p>P14: Maybe this return process itself is maybe one kind of process inside this customer notification process which is complicated, but otherwise I don't have any idea at the moment what to improve.</p>
8	Best practices	<b><i>What best practice do you think the company should follow as for customer warranty process?</i></b>	<p>P15: Of course we should copy whatever is useful. I don't know, if You have made any benchmarking with other companies. Maybe Kone would be one potential partner. I think some kind of internet web form would be like a current topic to do at some point.</p> <p>P14: The process itself is quite ok. I don't have any idea at the moment what to do better. Of course there is always improvements possible. I would not say there is anything to say that that would not be good kind of way how to do it and would need a different kind of way. But yea.</p>
9	Development needs	<b><i>How could the company avoid the problems in the next implementation of the customer warranty process?</i></b>	<p>P14: Global process is clearly explained, you need to follow this, there are no extra solutions. When You are using this process. We were not implemented; we were building this together. I really don't know; No one came to me hey this is our new process. I really don't know what to do better. Sorry.</p> <p>P15: One thing comes to mind. When we were taking this implemented with Pilot unit. We had to agree on many things between two of us. If this would be a global process, those things would have been resolve already before. But we were doing it.</p> <p><b><i>P0: You would say that all of the details should be included to process</i></b></p> <p>P15: Yes. All details should be included to the process. It is time consuming to start from the scratch.</p>

			<p>P14: Good point. This should be part of this global process. When we have different kind of rules within; for example, how use these tasks. It doesn't have anything do with the global process. Then You have these small extras for all of the units. And then it will be complicated again.</p> <p>P15: Good point from P15. Also these small tasks should be included to the GLOBAL guidelines. It should be implemented as part of the global process and there would not be kind of extra.</p> <p><b><i>P0: Do You have a document about those details what You have between Your units?</i></b></p> <p>P14: Yes, sure. The task guidelines.</p>
10	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	<p>P15: Not really, It's quite good coverage already. You can find more details from the attachments sent to You already.</p> <p>P14: Nothing to add.</p>

## Research interview (Discussion) - Field notes (Group B4)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B4)

Table 1

Details	
<u>Name (code) of the informant</u>	Group B4 consist persons: P19, P20, P21, P22, P23, P24, P25, P26, P27
<u>Informant's position in the case company</u>	P19: Quality Assurance Engineer P20: Return Goods Analyst P21: Assistant Controller P22: Customer Service and Marketing Associate Director P23: Quality Supervisor P24: Inventory analyst P25: Steel Purchaser P26: Quality Manager P27: Quality and Customer Service Manager
<u>Informant's role in the customer warranty process</u>	P25: End user P19-P24 and P26-P27: Key users and Business project managers
<u>Date of the interview</u>	16.2.2017
<u>Duration of the interview</u>	1h 10min
<u>Document</u>	Field notes (Summarized from interview held in English), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><i>Are You familiar with customer warranty process?</i></p> <p><i>How have You been involved in customer warranty process?</i></p>	<p>P27: Yes, I am. Working on this for a year. Leading the unit 3 to the discussion.</p> <p>P28: Working on with it a while. I don't deal with it in day-today basis. Backend details.</p> <p>P26: Yes, I was part of the US implementation team. Was analyzing some different scenarios before we went live with the system. Now playing the role of trainer in ETO.</p> <p>P25: User level. Interaction with steal vendors whenever there is a non-conformity in the shop. In the beginning it</p>

			<p>was kind of hard. Now we are in the better direction. Tool is still missing a central place for the materials. Reference library for processes.</p> <p>P24: I am not nearly involved as others. My role was part of testing. Not Switching roles right now.</p> <p>P23: Yes, familiar. I was involved in implementation and daily work. I have 2 persons working for me to do the daily actions.</p> <p>P22: Yes, very familiar. I was responsible for the implementation team and supporting the testing. Now working in system daily supporting our users daily.</p> <p>P21: I get few tasks from notifications. I have limitedly used the program.</p> <p>P20: Since from the training. I handle all notification related to shipping, coding, ... for 2 units. I use the system in daily basis.</p> <p>P19: Since the beginning. Not using daily basis. Supporting end users to use it.</p>
2	Rationale	<b><i>For what purpose was the customer warranty process built?</i></b>	<p>P27: To streamline customer resolution of warranty problems. Better follow up, filling caps that legacy warranty tool did not offer. Frontlines to own it from beginning</p> <p>P20: Same for me as well.</p> <p>P22: Add, integrate claim system to ERP. Information to have link to the original sales actions.</p> <p>P28: Ticket it all in one system for better tracking. Ties it all together, what was shipped, etc.</p> <p>P25: To prevent the same issue re-occurring in manufacturing process.</p>
3	Outcome	<b><i>Can You describe the customer warranty process in Your own words? With a graph?</i></b>	<p>P19: Really useful. Will track all issues that are our fault. What have we sent to customer that caused the issue. Not just the ones that are from the customer, but all. We did not have this full view before. From internal all the way to customer.</p> <p>P22: Both of frontline claims handling program and a system bucketing claims into more similar groups so that factory can look on that and prevent the claims.</p> <p>P28: All in one system, brought together what parts are needed, what are the costs, what are the financial impacts, what are the turn-arounds, ... It's a lot of things. It allows us to give better service to the customer when problem does</p>

	<p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p> <p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>occur. But also, to root cause and preventing it happening again. And the costs, sometimes the cost tells You, what You should be focusing on. Legacy warranty tool didn't have other than text field for the cost. Better customer service will be beneficial for us, I believe.</p> <p>P25: Customer-vendor relationship. The vendors know exactly when there are issues that occurred due to them. 8D report is good for vendor replies. Carrot and stick type with vendor. Quality was not good and therefore other will be used for the next case.</p> <p>P27: We still need help with the coding selection to capture frequent cases. Has helped/will help with frontline, supply, platform, design team information. Identification of the material is now easier. Notification flow W1-&gt;Z1: Still room to address the issue to avoid the notification quantity doubling or tripling. We enjoy seeing what we have shipped out.</p> <p>P25: We are starting to see the true cost of quality issues. We are starting to see the true cost of rework in-house or cost of vendor fixing the issue. Claim and materials wise.</p> <p>P27: Alfa versus Beta SO-PO-SO has still issues. The SO-PO-SO is heavy. Factory is seeing more coming from Alfa than from Beta. Some pre-commissioning still going to legacy warranty tool.</p> <p>P22: Frontline solution is very successful, because we were able to implement is quickly. Bucketing the claims to factories, we need the parameter clarification. Successful as we can better take care of our customers.</p> <p>More work towards getting the information needed for the Frontline to act on the customer notification.</p> <p>P25: Customer feedback missing; How the customer viewed our resolution?</p> <p>P26: From material handling point of view, tracking the solution is working. Analysis phase; We would like to know the cause. For ETO is not working. The cost analysis not yet working correctly. ETO QV is not ready yet for the ETO Customer notifications yet.</p> <p>P19: Successful yet. Financial impact due to cost settlement rule change is still not seen as we started to send free of</p>
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			charge components. Our financial team is a little bit worried about the customers really paying us the credits.
4	<p><b>Specific themes:</b></p> <p><b>Organizational fit and cultural differences</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process? Similar, different? (Are there differences that we need to take into account in this context?)</i></b></p>	<p>P27: This project has brought some nice unity between units. The units have felt really different past 20 years, but now we find that we are really common. The system is allowing us to focus on the customer together.</p> <p>P23: Were aren't creating W1-&gt;Z1 as a difference.</p> <p>P22: There is a big difference between PO-SO versus LEAN. The trainings increased general understanding about other Frontline units as well.</p> <p>P25: Contact persons for units missing/responsible persons.</p>
	<p><b>Human side</b></p>	<p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p>	<p>P22: Other units had issues on setting roles and responsibilities. To start plan the roles and responsibilities at the same time than the implementation. The recruiting process needs to be started in advance and the claim handlers need intensive training from multiple areas in ERP and product wise.</p> <p>P27: Turned out ok. KHA was not involved before asked to be involved. Not just the frontline, but also the receiving units to be involved. The trainings were good. Your ERP notification manual was helpful. More testing from factory perspective should have been done. We did not know what we should have been testing. Globally the situations are the same and IT should support on the baseline for the testing. People have not been involved with software implementation before</p>
	<p><b>Change agents</b></p>	<p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p>	<p>P25: Not enough advance notice. How was given, not the why. This brought resistance. Training covered only the basics. We needed support on more advanced cases. Our key user P26 supported us on this, we gave him the topic and he contacted the team and came back with solutions. That was very helpful.</p> <p>P22: Our employees very ready for the change. Our training was really early as the implementation was pushed out. The end users got homework to do real life cases to test system and a second training closer to new implementation date.</p> <p>P23: From people handling data; are satisfied, but not happy about missing details sales orders and defect types.</p>



		<b><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></b>	<p>P27: The notification description long text missing from reporting system.</p> <p>P23: Certain people</p> <p>P27: and certain people in addition were right people in place. We were receiving the solution when needed. All were contributing to the solution. All had important roles. P22 creating process and roles maps.</p>
5	Key strengths	<b><i>What are the key factors behind the success of the customer warranty process? What were/are the company's strengths in the customer warranty process?</i></b>	<p>P19: Good amount of communication.</p> <p>P25: Key driver is root cause investigation</p> <p>P27: That You are still in the company and saw it through. And the previous concept owner as well even though he moved to the new role. Your temperament and ability to speak to different kinds of people around the world constructive, positive and action based way. You did a wonderful job. It was a pleasure to have You around in this difficult thing as You were treating us as humans and taking all our concerns to account. Keeping the end game in mind, but not trying to forget that we are people and change is hard. Good leadership, I would sum it up. You did a wonderful job.</p> <p>We all are customer focused and we are called to be customer focused. We needed to figure this out and have a better system so that we can be faster resolving the problems and faster supporting our customers. But internally we can improve and avoid the problem happening again.</p>
6	Key concerns	<b><i>What are your key concerns about the customer warranty process?</i></b>	<p>P19: Fixing things on document flow, to make document flow better. Original sales order document flow does not contain the notification information.</p> <p>The notification document flow does not detail the notifications to separate kinds of notifications.</p> <p>P27: W1-&gt;Z1-&gt;Z1 linking together in reporting system? How to know that number of claims is not double counted?</p> <p>P26: Final cost analysis for ETO not ready yet.</p> <p>P22: Financial impact from reporting point of view; Profitability for topics not on frontline control?</p>
7	Analysis	<b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b>	<p>P26: Improve the training and case analysis early in the implementation; E2E/multiunit training/testing. To discover issues with other units.</p> <p>P19: Improve the training as P26 described, migration of the information could be improved that materials and serial numbers would flow automatic.</p>

			P27: Platform team was not principal part of the discussion; frontline, supply and the platform should be all included to the discussions
8	Best practices	<i>What best practice do you think the company should follow as for customer warranty process?</i>	P26: The how we implemented was really good practice. The same was not used in other implementations; internal or intracompany notifications.
9	Development needs	<del><i>How could the company avoid the problems in the next implementation of the customer warranty process?</i></del>	<i>Check previous</i>
10	To add	<i>What would you like to add that we have not yet discussed?</i>	P27: SWF went live a year before US. Details of the process are different. Oversight should be there.

## Research interview (Discussion) - Field notes (Group B5)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B5)

Table 1

Details	
Name (code) of the informant	Group B5 consist persons: P5, P6, P7, P9 (P0 – Interviewer)
Informant's position in the case company	P5: Quality Management Configuration Owner P6: Consultant, ERP Sales and Distribution P7: Sales and Distribution, Concept Owner P8: Consultant, ERP Quality Management P9: Project System Concept Owner
Informant's role in the customer warranty process	P5-P9: Deployment team members in several smaller single or double unit implementations
Date of the interview	15.2.2017
Duration of the interview	52min
Document	Field notes, Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with customer warranty process?</i></b></p> <p><b><i>How have You been involved in customer warranty process?</i></b></p>	<p>P9: Yes, for ETO</p> <p>P6: Tasks under the solution are familiar, Process itself = common idea known</p> <p>P5: Familiar on certain level, most of the idea, pretty hard on business cases how to follow this being the main issue</p> <p>P7: Yes, I was involved in original discussions; not known how it is deployed to business</p> <p>P8: Yes, aware. I was involved in the technical solution. Who does what is not clear. Between Business Z frontline and others differences. Centralized teams versus frontlines.</p>
2	Rationale	<p><b><i>For what purpose was the customer warranty process built?</i></b></p>	<p>P9: Centralized communication and documentation</p>



		<p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>P5: Training needs to be wider for the claim handlers for them to be able to use all needed.</p> <p>P9: Good enough to be rolled out to the units, but units by themselves might not see the importance of some return extra steps.</p> <p>P6: Good start. As first solution ok to roll out. Makes people to think more carefully on QM. This is a process implementation as well as system implementation.</p> <p>P8: Has been implemented and therefore is a good start. We now have possibility to fine tune the system and process.</p>
4	<p><b><u>Specific themes:</u></b></p> <p><b>Organizational fit and cultural differences</b></p> <p><b>Human side</b></p> <p><b>Change agents</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p> <p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p> <p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p> <p><b><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></b></p>	[no time]

5	Key strengths	<p><b><i>What are the key factors behind the success of the customer warranty process?</i></b></p> <p><b><i>What were the company's strengths in the customer warranty process?</i></b></p>	<p>P6: One tool for communication. Tool is helping to understand more widely, more carefully.</p> <p>P5: When we can harmonize the process the tool is able to support better. Information visibility.</p> <p>P8: Roles and responsibilities, process and the tool.</p> <p>P7: Structure in place</p> <p>P9: One tool, collects all together; Good trainings by QM</p>
6	Key concerns	<p><b><i>What are your key concerns about the customer warranty process?</i></b></p>	[no time]
7	Analysis	<p><b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b></p>	P5: When we can harmonize the process the tool is able to support better.
8	Best practices	<p><b><i>What best practice do you think the company should follow as for customer warranty process?</i></b></p>	[no time]
9	Development needs	<p><b><i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i></b></p>	[no time]
10	To add	<p><b><i>What would you like to add that we have not yet discussed?</i></b></p>	[no time]

## Research interview (Discussion) - Field notes (Group B6)

### Research Interview (Discussion)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

#### Information about the informant group (Group B6)

Table 1

Details	
<u>Name (code) of the informant</u>	Group B6 consist persons: P4 – Interviewee, P0 – Interviewer, P45 – Email answers to P4 interview field notes, P46 – Email answers to P4 interview field notes
<u>Informant's position in the case company</u>	P4: Quality Engineer
<u>Informant's role in the customer warranty process</u>	P4: Quality Engineer on a unit taking Customer notifications into use in short term future
<u>Date of the interview</u>	15.2.2017 + P45 Email answers 15.2.2017 + P46 Email answers 15.2.2017
<u>Duration of the interview</u>	50min
<u>Document</u>	Field notes (Summarized and translated from interview held in Finnish), Skype recording with audio and video P45 answers highlighted with blue (translated and summarized to English) P46 answers highlighted with green (translated and summarized to English)

#### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><i>Are You familiar with customer warranty process?</i></p> <p><i>How have You been involved in customer warranty process?</i></p>	<p>P4: Traditional ERP notifications are familiar. P45: Traditional ERP notifications are familiar P46: I have been involved in one customer notification information call. Otherwise involved with Z1 notifications.</p> <p>P4: Currently I am not creating notifications. I follow flow through different statuses and develop the usage in our unit. I collect monthly data from ERP and from legacy warranty tool. I follow the notification lead times. We have reporting system</p>

			<p>in use and there is room for development. There are some notifications that tend stay open longer than needed.</p> <p>P45: I create and follow the progress of Z1 notifications</p> <p>P46: I have been in one info call.</p>
2	Rationale	<i>For what purpose was the customer warranty process built?</i>	<p>P4: For information flow. One single system than would contain all feedback received (incidents/issues). One single system capable to enable to follow notifications and to do corrective actions with.</p> <p>Especially with the customer notifications to have one single system and to enable content customers.</p> <p>P45: From ERP notification point of view; 1 system to where the information is recorded for further use.</p> <p>P46: To have all information in one place.</p>
3	Outcome	<p><i>Can You describe the customer warranty process in Your own words? With a graph?</i></p> <p><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></p>	<p>P4: Not yet ready in our unit/ business; system is ready for us, but we are still using the system wrong way. We are recoding all, but we are not following the system/instructions.</p> <p>We have other that W* notifications in use.</p> <p>P4: I read yesterday the customer notification instruction. It should be made more clear. To start the implementation to our unit; When would You have ½day to visit to go through the instructions in practice.</p> <p>P4: All cases are currently opened to Z1 notifications (manual vendor); in these the root cause is at internal or external vendors.</p> <p>P46: With W1 notification we should record customer claims. As a question I have all the rest quality data at our unit; found during site operations, during the production process, ... We need a clear guideline what to open as W1 and what not.</p> <p>P45: I am opening these are Z1s. Others than internal are still processed in legacy warranty tool.</p> <p>P4: Officially we are not using W1 notifications. Training and testing un-done.</p> <p>P4: Don't know.</p>



		<p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>P4: For our unit, it would not be a problem to start to use the Customer notifications. This would clear the reporting.</p> <p>P4: Yes.</p>
4	<p><b><u>Specific themes:</u></b></p> <p>Organizational fit and cultural differences</p> <p>Human side</p> <p>Change agents</p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p> <p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p> <p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p> <p><b><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></b></p>	<p>P4: No experience. We have not been in contact with other units. Would be nice to hear.</p> <p>P46: No knowledge about other units.</p> <p>P4: Our unit has a strong will to take in use a clear way to use.</p> <p>P46: Very clear need to take all quality issue recording to one single system</p>

5	Key strengths	<p><b><i>What are the key factors behind the success of the customer warranty process?</i></b></p> <p><b><i>What were the company's strengths in the customer warranty process?</i></b></p>	<p>P4: We could be able to do real corrective actions by preventing repeating errors.</p> <p>P45: Current systems are helping to record the issues. No clear or acknowledged process existing. No JUNA where in start of the project all thing would be gone through. Collected data handling and processing should be better controlled.</p> <p>P4: One single system. Clear way of working.</p>
6	Key concerns	<p><b><i>What are your key concerns about the customer warranty process?</i></b></p>	<p>P4: The solution has no issues. Our unit has it is internal issues; low resources and need of training. Training being on higher priority.</p> <p>P46: Resourcing and instructions will become as bottlenecks at the start. Our product group has a lot of quality issues and 2 persons are not able to open all as notifications. Comparing to unit 1, it is unrealistic to request our unit to take care of similar steps as they are.</p>
7	Analysis	<p><b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b></p>	<p>P4: Training; Unit specific training.</p> <p>Logistics and purchasing departments are willing to invoice the vendors. Centralized invoicing function has been used, occasionally.</p> <p>P45: Resourcing</p> <p>P46: Implementation support from outside of our unit, not to turn all responsibility to the key user and to expect concept will work automatic when there is a power point instruction made. Our business has specialties that are not possible to take into consideration in the pre-phase.</p>
8	Best practices	<p><b><i>What best practice do you think the company should follow as for customer warranty process?</i></b></p>	<p>P4: STS team way of working; Notifications are processes from start to finish. Instructions are used. Global instruction has been divided to 7, 10 page piles and printed to the wall. The team is pleased with the instruction.</p> <p>P46: Product teams are handling notifications as per given instructions the best they can. Our product group has the biggest fleet and that results to prioritization and longer lead times on notifications. We should tailor the solution implementation to support the bottleneck products first and to make best practice for the other product groups. Reason= 80%</p>

			claim go through this user group and it should work with the others as well.
9	Development needs	<b><i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i></b>	<p>P4: Training should be developed. Solutions that are not used every day tend to be forgotten.</p> <p>ERP is complemented by the users that use the system seriously.</p> <p>P4: The solution should be as easy as possible, so it encourages to use.</p> <p>P46: More support and training to the key users. To listen our unit's special needs and to react on those.</p>
10	To add	<p><b><i>What would you like to add that we have not yet discussed?</i></b></p> <p><b><i>Customer notification to internal vendor notification chain? Advantage or disadvantage?</i></b></p>	<p>P4: We should make even more detailed global customer notification instructions; We could take example from global internal/customer change/vendor notification user manual that has been made to power point.</p> <p>P4: The instruction should be made the way that a summer employee could create a notification with the instructions.</p> <p>P45: How and where to record (i) design and (ii) production issues? How to include the production site and site operations could be included? How to report correctly about those?</p> <p>P46: There is a lot of quality data which is not recorded; site, production site, instructions what is recorded and what is not and how.</p> <p>P4: I do see the benefit.</p>

## Research interview (Discussion) - Field notes (Group B7)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B7)

Table 1

Details	
Name (code) of the informant	Group B7 consist persons: P16, P17 and P18
Informant's position in the case company	P16: Service Concept Owner P17: Subcontracting Concept Owner P18: Variant Configuration Concept Owner
Informant's role in the customer warranty process	P16-P18: Concept owners of crossing modules
Date of the interview	16.2.2017 + 5.4.2017 to continue with P18 (Highlighted with blue)
Duration of the interview	48min + 30min
Document	Field notes (Summarized and translated to English from interview held in Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with customer warranty process?</i></b></p> <p><b><i>How have You been involved in customer warranty process?</i></b></p>	<p>P17: I have been listening one training partly. Big picture is already lost after the fall.</p> <p>P16: I understand we are discussing about quality process. No knowhow on the topic. Pilot in US, but not more in use. For service some interim solution built until to use.</p> <p>P18: I have not been in a training. Generally aware of what we are discussing about. General picture is cloudy.</p> <p>P17: Purchasing for the testing, but not aware if the requests were from these or other type of notifications. Limited awareness.</p> <p>P16: I have been supporting from SD, but not involved anyway.</p> <p>P18: Involved in the scheduled unit implementations and helping with developments on my own area.</p>

2	<b>Rationale</b>	<b><i>For what purpose was the customer warranty process built?</i></b>	<p>P16: To make simple and harmonize the quality process. To have harmonized instructions, tools and standards to make the process more efficient.</p> <p>P17: Same as P16, all customer notifications to be recorded professionally and to learn from them.</p> <p>P18: Has been meant to document and coordinate customer warranty and to trace the changes over unit and module areas. Generic sales solution has been built for solution.</p>
3	<b>Outcome</b>	<p><b><i>Can You describe the customer warranty process in Your own words? With a graph?</i></b></p> <p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p> <p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p>	<p>P16: Not really able to define it, no clear picture. Process starts from contact by customer, we open customer notification and needed actions will be carried out to serve the customer need. The customer notification can create certain steps in the system; return orders, purchased, cost records, etc. Ticket that can be followed.</p> <p>P17: P16 gave clear answer. We will use notification to coordinate the situation; who needs to do, what needs to be done, ...</p> <p>P18: To describe with a metaphor; You would have a ball of string which You are unleashing while You enter a labyrinth. When You try to get back You can use the string to get out.</p> <p>P16: Covers the customer need related actions, but not sure if supporting FI, CO or billing. The start of the process is covered. Variants; There are variants in the extend of the issue, in the kind of issue and in the characters of the issue. How customer communicates towards us? -variants.</p> <p>P17: Generally covering quite well. How well in practice it works -&gt; The coordination has huge impact how well it works. Not able to say any specifics.</p> <p>P18: In production planning the CTO and ETO are different. The generic sales solution is good for CTO, but I am not sure how to do that for ETO.</p> <p>P16: I have not heard any comments, if it's good or bad it is. It can not be too bad as there are more units coming in.</p> <p>P17: My biggest concern is when we have notification flowing through multiple units in a row.</p> <p>P18: W21 Generac sales solution is good and saving time and steps from the users as done with the notification. Notification is used to trace the situation.</p>

		<i>Was this the customer warranty process successful from your point of view? How?</i>	
4	<p><b>Specific themes:</b></p> <p>Organizational fit and cultural differences</p> <p>Human side</p> <p>Change agents</p>	<p><i>How would you describe the units implemented to the customer warranty process? Similar, different? (Are there differences that we need to take into account in this context?)</i></p> <p><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></p> <p><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></p> <p><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></p>	<p>P17: Not able to contribute at all for this question. I have not been involved enough.</p> <p>P16: Same as for P17. There for sure are differences between the units generally. Internal competition, internal leadership and tools between the units.</p> <p>P17: Implementations have been executed at different times.</p> <p>P18: When implemented with scheduled unit implementation -methodology there are no issues. This is a topic that should be just pushed through to the units. I have no view for the other units that have been already implemented earlier.</p> <p>P18: Learning speed</p> <p>P18: In latest scheduled unit implementation where I am involved in the full crane return solution has been taken well as it has less work than original solution.</p> <p>P18: Certain users (Mary, Stuart W and Jack) responded positively to the challenge and were open minded persons in the unit.</p>

5	Key strengths	<p><b><i>What are the key factors behind the success of the customer warranty process?</i></b></p> <p><b><i>What were the company's strengths in the customer warranty process?</i></b></p>	<p>P16: We should focus on savings due to internal clarity and happier customers.</p> <p>P17: It should help towards customer when we have harmonized model.</p> <p>P18: On certain areas there are more steps and on some areas more. All can be followed with the notifications. All users are and need to be committed.</p>
6	Key concerns	<p><b><i>What are your key concerns about the customer warranty process?</i></b></p>	<p>P17: How the solution can be trained the way that all are using it how it is meant to be used. How to implement to units that are already used to using ERP certain way.</p> <p>P16: Similar thoughts. If solution will not be successfully lead to global.</p> <p>P18: How the ETO works especially on the production planning and production engineering area. In production planning the CTO and ETO are different. The generic sales solution is good for CTO, but I am not sure how to do that for ETO. Needs to be gone through with Process owners.</p>
7	Analysis	<p><b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b></p>	<p>P17: Not able to answer.</p> <p>P16: Concept owners should be more aware of the solution.</p> <p>P18: The generic sales solution for ETO. Knowledge about other areas and about other implemented units for support purposes. We could find critical development areas from this knowledge enhancement.</p>
8	Best practices	<p><b><i>What best practice do you think the company should follow as for customer warranty process?</i></b></p>	<p>P17: Not able to answer.</p> <p>P16: Not able to answer.</p> <p>P18: Not able to answer. No experience on this area from previous companies.</p>
9	Development needs	<p><b><i>How could the company avoid the problems in the next implementation of the customer warranty process?</i></b></p>	<p>P16: As a customer I would want to know the status of my notification. The system should update to me the status changes. It could be a portal where to enter the information at any time. Search for status with notification number until when we have a system for customer based system/entrance.</p> <p>P17: Internal training to know their part as well as the general vie to be able to guide the usage to correct direction.</p>

			<p>P16: To iterate from the previous implementations; to raise the awareness about the solution and retrospectively see what went well and what did not.</p> <p>P18: Same as 7 – Analysis. When You have more information about the other areas You are able guide the usage better when needed.</p>
10	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	<p>P18: Good that the process has been made. There has been a clear need for the process.</p>



## Research interview (Discussion) - Field notes (Group B8-1)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B8-1)

Table 1

Details	
Name (code) of the informant	Group B8-1 consist persons: P43 and P44
Informant's position in the case company	P43: Global process owner, Components delivery P44: Global process owner, Cranes delivery
Informant's role in the customer warranty process	P43-P44: Process owners of crossing modules
Date of the interview	27.2.2017
Duration of the interview	24 min
Document	Field notes (Summarized and translated to English from interview held in Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><i>Are You familiar with customer warranty process?</i></p> <p><i>How have You been involved in customer warranty process?</i></p>	<p>P43: From header level</p> <p>P44: Only header level</p> <p>P43: I have not been involved with the building, only involved with single discussions</p> <p>P44: Likewise, I understand the goals and principals</p>
2	Rationale	<p><i>For what purpose was the customer warranty process built?</i></p>	<p>P44: To replace legacy warranty tool. Customer claim handling purely to ERP.</p> <p>P43: Similar view</p>
3	Outcome	<p><i>Can You describe the customer warranty process in Your own words? With a graph?</i></p>	<p>P43: I would not describe other than header level as described already.</p> <p>P44: Complicated and multilevel solution. It can appear to basic used as complicated at start. Not sure how this appears; Are those compared to the previous system complicated or not? I am not sure; Are the roles and responsibilities clear?</p>

		<p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p> <p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>P44: I have never seen the solution in practice. In big picture, it covers what it needs to cover.</p> <p>P43: Similar view</p> <p>P44: On paper it looks good. I am not the correct person to evaluate success or the outcome.</p> <p>P43: Would need to see the solution first to evaluate it.</p>
4	<p><b><u>Specific themes:</u></b></p> <p><b>Organizational fit and cultural differences</b></p> <p><b>Human side</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p> <p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p> <p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p>	<p>P44: Has this been implemented to 1 US unit so far? I have certain picture to where it has been implemented to and from that perspective I am not able to describe the differences.</p> <p>P43: Generally, the differences between the units come from the history that units have been bought and the similar process have not been implemented to the units. They have continued with their own processes. I do not see any reasons why the harmonized processes could not be implemented to these units. As I am not aware which units have been implemented exactly, I can not comment on what type of units we are now talking about.</p> <p><b><i>[Human side and Change agent questions were skipped due to lack of information about the implemented units]</i></b></p>

	<b>Change agents</b>	<i><b>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</b></i>	
5	<b>Key strengths</b>	<i><b>What are the key factors behind the success of the customer warranty process? What were the company's strengths in the customer warranty process?</b></i>	P43: We aim for harmonized process in ERP. P44: Roles and responsibilities are defined globally within units and between the units. The system solution will be brought to support.
6	<b>Key concerns</b>	<i><b>What are your key concerns about the customer warranty process?</b></i>	P44: We could communicate more widely. Apparently we were sleeping when this was communicated. P43: We could communicate more widely.
7	<b>Analysis</b>	<i><b>In which areas do you think there is space for improvement? In what way? How could that be done?</b></i>	Key concerns +: P43: We should start from checking with the end users are they using how it is planned to be used and are they able to use it. P44: We could start from clarification and to tie the solution to business model. We could start as well from the units and the users that are already using the solution. The big picture we could go through more widely.
8	<b>Best practices</b>	<i><b>What best practice do you think the company should follow as for customer warranty process?</b></i>	P44: P1 has made bench marking for sure to find the best solution for the company, also with the new comers. P43: Nothing to add.
9	<b>Development needs</b>	<i><b>How could the company avoid the problems in times of the next implementation of the customer warranty process?</b></i>	<i><b>[Skipped as discussed already in Analysis part]</b></i>
10	<b>To add</b>	<i><b>What would you like to add that we have not yet discussed?</b></i>	

## Research interview (Discussion) - Field notes (Group B8-2)

TOPIC: Customer Warranty Process Current State Analysis (CSA)

### Information about the informant group (Group B8-2)

Table 1

Details	
Name (code) of the informant	Group B8-2 consist persons: P29 and P30
Informant's position in the case company	P29: Global process owner, Controlling P30: Global process owner, Finance
Informant's role in the customer warranty process	P29-P30: Process owners of crossing modules
Date of the interview	22.2.2017
Duration of the interview	48min
Document	Field notes (Summarized and translated from interview held in Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><i>Are You familiar with customer warranty process?</i></p> <p><i>How have You been involved in customer warranty process?</i></p>	<p>P30: Partly.</p> <p>P29: Familiar, but I do not remember all the details anymore. We have not had lately anything I would have needed to investigate.</p> <p>P30: I have been involved one when there has been Finance topics. I have only been involved with the invoicing solution.</p> <p>P29: I was involved to some extend at the development phase. The US rollout came as surprise and I needed to do quite much for that implementation by force as the controllers were not happy with the solution.</p>
2	Rationale	<p><i>For what purpose was the customer warranty process built?</i></p>	<p>P29: Customer returns something back, sold product or defected part.</p> <p>P30: In addition, we want to invoice our costs from vendors.</p>

3	Outcome	<p><b><i>Can You describe the customer warranty process in Your own words? With a graph?</i></b></p> <p><b><i>What is the customer warranty process covering from Your point of view? Is there only one or many variants to cover?</i></b></p> <p><b><i>How would you evaluate the outcome/success of the customer warranty process?</i></b></p> <p><b><i>Was this the customer warranty process successful from your point of view? How?</i></b></p>	<p>P30: I was not involved in the start. We invoice vendors. The invoicing solution I am not happy about as the solution causes manual work for our team.</p> <p>P29: Slight complain about the rollouts as the US implementation came as a surprise. It was not tested thoroughly with controlling before rolling it to US. This is as well related to 3<sup>rd</sup> party cost object issue. We do not have the ability to take the cost to the root, but we are not able to.</p> <p>P29: As a process the solution is complicated; a lot of variants included to the process. The process is well documented, but the practical life it will be complicated for the users that are also before customer warranty process handling multiple processes. The ERP should be developed the way that it would support the complex process as well as possible.</p> <p>P30: I can not be satisfied with the solution. Big risk of double credits. In Finland the GR/IR (goods-receipt/invoice-receipt) account is cleaned late, not on time and this affects the numbers.</p> <p>P29: I would want to make all of the quality management processes simpler. Maybe the QM user that uses the concepts and processes daily knows what s-/he is doing, but the when controllers are trying to look at the numbers they are puzzled.</p> <p>P30: The how we communicate the set solution needs to be detailed and well organized communication as there are cases where people have misunderstood the message.</p> <p>P29: From my point of view the solution was not ready before it was rolled out to the business. The solution should be gone through with all related areas before implementation. I needed to calm down the controllers in the US implementation as not all was ready on our area. The quality management module is as connected to the other modules as the finance and controlling modules are.</p> <p>We should implement this with a team that contains resources from all needed areas. As far as I am aware, there was no team built for the US implementation and as I was</p>
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			<p>asking around in our team, no one new about the implementation or the solution.</p> <p>We do understand that QM solution implementations have to be pushed through as QM would not get anything ready by waiting others.</p> <p>P30: Would be good to have at least a pre-warning about the implementations.</p> <p>P29: The quality reporting should be worked through and gotten working. The original 3<sup>rd</sup> party orders will not be able to take the cost.</p>
4	<p><b><u>Specific themes:</u></b></p> <p><b>Organizational fit and cultural differences</b></p> <p><b>Human side</b></p> <p><b>Change agents</b></p>	<p><b><i>How would you describe the units implemented to the customer warranty process?</i></b></p> <p><b><i>In what ways were they similar or different? How did these differences impact the implementation? How were they taken into account?</i></b></p> <p><b><i>How have employees reacted to the customer warranty process? Have they been motivated? Why (not)?</i></b></p> <p><b><i>Who have been the main change agents driving the change to customer warranty process? What did they do in this role?</i></b></p>	<p>P29: The units have their own processes, but we are bringing them together. There are differences especially in the production world. Service and Industrial Equipment has different ways of working.</p> <p>P30: In Finance there is only one way to operate.</p> <p>P29: Cultural differences; Consider how the topics are presented to the people. There are level differences as well; People with 50 years of experience and people that have just joined the company.</p> <p>P30: The experience can also affect the change management.</p> <p>P30: Not able to answer.</p> <p>P29: The US experience was not good. The users thought that this was not properly tested. I do not know if the controllers were not involved in the testing. They were after I joined, but I am not aware if they were before that.</p> <p>P29: Controllers are important. They understand and they need to understand the logistics and their own area.</p> <p>P30: And finance as well. They got more work during the implementation and it can not appear to their desks out of the blue. It needs to be communicated early enough.</p> <p>P29: Quite often the controller is the one to communicate to the financial side about the extra tasks coming when involved in the implementation.</p>

5	Key strengths	<p><b><i>What are the key factors behind the success of the customer warranty process?</i></b></p> <p><b><i>What were the company's strengths in the customer warranty process?</i></b></p>	<p>P29: When and if we get the quality reporting functioning properly it will be really good on showing to what all we have spent the money to.</p> <p>P30: And without the manual steps in finance this would be fine.</p> <p>P29: The process is a lot more controlled as it is done in the system. Roles will be checked as well as one person is not able to handle the whole end to end.</p>
6	Key concerns	<p><b><i>What are your key concerns about the customer warranty process?</i></b></p>	<p>P30: Manual steps in financial teams</p> <p>P29: Reporting from QM and CO points of view. Everything is not possible to be handled systematic way. I would want to know; How reliable the report is?</p>
7	Analysis	<p><b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b></p>	<p>P29 and P30: The previous +</p> <p>P29: I would improve the way the customer notifications are implemented and trained. I would not take only the customer notification, but whole QM to the units.</p>
8	Best practices	<p><b><i>What best practice do you think the company should follow as for customer warranty process?</i></b></p>	<p>P29: Not able to answer.</p> <p>P30: ERP standard is credit from vendor. Would be interesting to see how the others are acting with ERP standard and getting the report to work</p> <p>P29: Same applies to 3<sup>rd</sup> party and reporting</p>
9	Development needs	<p><b><i>How could the company avoid the problems in times of the next implementation of the customer warranty process?</i></b></p>	
10	To add	<p><b><i>What would you like to add that we have not yet discussed?</i></b></p>	<p>P29: I made a QM + Controlling -instruction that was sent to QM for inspection. I can send it to You.</p>

# Initial CSA findings



Strength  
Weakness  
Both  
Development idea





## List of questions for Data 1b

	Topic(s) of the interview	QUESTIONS
1	Starting point	<p><i>Are You familiar with ERP Requirement Management Process?</i></p> <p><i>What documentation/instructions exists on the topic?</i></p> <p><i>How have You been involved with ERP Requirement Management Process?</i></p>
2	Rationale	<p><i>For what purpose is the ERP Requirement Management Process used for?</i></p>
3	Outcome	<p><i>Can You describe the ERP Requirement Management Process?</i></p> <p><i>What is the ERP Requirement Management Process covering from Your point of view?</i></p> <p><i>How do we ensure in the ERP Requirement Management Process the cross stream point of view?</i></p> <p><i>How do we choose who is involved?</i></p> <p><i>How do we resource the needed people?</i></p> <p><i>How do we ensure the cross stream topic knowledge transfer to;</i></p> <ul style="list-style-type: none"> <li>- <i>Business?</i></li> <li>- <i>Helpdesk?</i></li> <li>- <i>Process owners?</i></li> <li>- <i>Concept owners?</i></li> <li>- <i>Configuration owners?</i></li> <li>- <i>Consultants?</i></li> </ul> <p><i>Is the ERP Requirement Management Process successful from your point of view? How?</i></p>
4	Key strengths	<p><i>What are the key factors behind the success of the ERP Requirement Management Process?</i></p> <p><i>What were the company's strengths in the ERP Requirement Management Process?</i></p>
5	Key concerns	<p><i>What are your key concerns about the ERP Requirement Management Process?</i></p>
6	Analysis	<p><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></p>
7	Best practices	<p><i>What best practice do you think the company should follow as for ERP Requirement Management Process?</i></p>
8	To add	<p><i>What would you like to add that we have not yet discussed?</i></p>

## Research interview (Discussion) - Field notes (Group B9)

TOPIC: ERP Requirement Management Process

### Information about the informant group (Group B9)

Table 1

Details	
Name (code) of the informant	Group B9 consist persons: P31, P32 and P33
Informant's position in the case company	P31: Head of 1KC Supply Development P32: Program Director P33: Head of IT
Informant's role in ERP Requirement Management Process	P31-P33: Change Approval Board (CAB) members
Date of the interview	22.3.2017
Duration of the interview	50min
Document	Field notes (Summarized and translated to English from interview held in Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with ERP Requirement Management Process?</i></b></p> <p><b><i>What documentation/instructions exists on the topic?</i></b></p> <p><b><i>How have You been involved with ERP Requirement Management Process?</i></b></p>	<p>P33: P35 has an instruction for the level higher than requirement instruction.</p> <p>P31: P41 has an instruction that is more strongly from process owner point of view from header level</p> <p>P33: Latest change has been that the process owner has more responsibility</p> <p>P33: I have been involved since the beginning developing and I am the chairman on the Change Approval Board (CAB).</p> <p>P31: I am included to CAB and I was involved building the instruction that P41 has.</p> <p>P33: P31, P33, P36 ja P42 are the main members of CAB.</p> <p>P32: I was involved when I was leading the ERP harmonization project.</p>

2	<b>Rationale</b>	<b><i>For what purpose is the ERP Requirement Management Process used for?</i></b>	<p>P33: Somehow we need to control what kind of changes we do to ERP. As we have a global ERP, we need to be more controlled in the decision making. Previously we did not have a CAB. It was a must to control the situation and to control the releases to the live system. The CAB has existed for about 3 years now.</p> <p>P31: To keep harmonized ways of working.</p> <p>P32: Clear model and not a shout-steering. We want to keep the global ERP as standard as possible, to keep the updating cheaper and easier.</p> <p>P33: I have understood that our ERP is more standard than a lot of others have.</p> <p>P32: You need to give reasons why something would be needed to be done and not just to do all.</p>
3	<b>Outcome</b>	<b><i>Can You describe the ERP Requirement Management Process? What is the ERP Requirement Management Process covering from Your point of view?</i></b>	<p>P33: We collect all needs to one single place, to one system. We insist that the needs have certain content. We ensure that all needs are handled with same certain content equally. We have a CAB where we go through the needs and make decisions. We have the CAB every 2 weeks, previously the CAB was every week when we had more needs.</p> <p>P33: When compared to other systems, ST has a CAB only few times a year. They collect the needs and sit down together to go through the whole pile at one long sitting.</p> <p>P33: We have had a will to harmonize the requirement management process from different systems. Different kinds of CAB cycles bring a challenge needs that are related to multiple systems.</p> <p>P31: When we create roadmaps and bench mark, it is currently in process to be understood, if it is something we need to push through this process. These are things that we need to do before we are able to create the needs to the system.</p> <p>P33: Our current process is based on already known needs. The pondering happens before the requirement is created. We have wished to separate the ponderings and requirements. The pondering should happen on an EPIC (Roadmap items). We want to know what we are pondering; we want the transparency, but not to have all people are doing in the requirement management system. The resources should be controlled differently and understood where they are included to; to EPICs, to requirements, to pre-studies, and so on. This</p>

	<p><b><i>How do we ensure in the ERP Requirement Management Process the cross stream point of view?</i></b></p>	<p>is still a bit open topic how we should consider these ponderings.</p> <p><b><i>P0: What if we have a change that is not a technical change and not really a process change? A change to how we use the system or a concept change?</i></b></p> <p>P33: Good question.</p> <p>P31: Isn't this kind of change something to be implemented through key user networks? The implementing has been thought to happen through the key user networks.</p> <p>P32: The key user network was meant for this kind of topics. The key user network is meant to refine the ways of working, where the key users can discuss how they are using the system.</p> <p>P31: We also had the local process owner network, but the key user network is more about the implementation of new ways of working.</p> <p>P33: If this change needs the resources of the technical team, it is a ERP requirement need. The process and concept development is a little bit gray area from the ERP requirement management process point of view. Does this need have an impact to the IT system or to where?</p> <p>P33: This should work that the single people handling the requirements are taking care that the ERP as a whole will be considered. Solution Area Managers have a role in this. Otherwise we do not have other ways.</p> <p>P31: Process owners as a group will take care of this when they notice that there is a cross stream topic. A process owner will lead the case.</p> <p>P33: That all is taken care of is the responsibility of the leader. We do not have any other ways how we would check, if the case is a cross stream topic or it has an impact to other areas.</p> <p>P31: In roadmap and EPIC thoughts we need to write down what are the cross domains to consider. This EPIC and roadmap thinking is not yet that well implemented.</p> <p>P33: In the CAB we try to raise the cross stream point of view. The members are questioning, if the case has been checked with affected modules.</p>
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	<p><b>How do we ensure the cross stream topic knowledge transfer to;</b></p> <ul style="list-style-type: none"> <li>- <b>Business?</b></li> <li>- <b>Helpdesk?</b></li> <li>- <b>Process owners?</b></li> <li>- <b>Concept owners?</b></li> <li>- <b>Configuration owners?</b></li> <li>- <b>Consultants?</b></li> </ul>	<p>P31: At least with certain system P43 is keeping these bigger information sessions with the business; this is what we have done, this is where the development is ongoing. IT stakeholders should be already aware of the solution as those were considered at the start of the development. I do not know how the information sharing from the persons involved with the development to their team mates go.</p> <p>P32: Release info is the way to inform the changes to the business.</p> <p>P33: Release info is still existing, but not all are there. Mainly the business and the SAMs are there now-a-days. If no one is asking specifically, they are just going through fast that these are the ones coming in the next big release.</p> <p><b>P0: What all is included to the Release info? All requirements or something else as well?</b></p> <p>P33: Only the technical changes are included to the release info. There are as well these kinds of changes that we add a plant to the system. These are there as well in the release, but not in the release info. We do inform these kinds of big things a build related to this scheduled unit implementation is going in, but not the details.</p> <p><b>P0: How the units get the information that their partner units are going to start with ERP?</b></p> <p>P33: There are no such information flow to the units that US unit would get an information that Thailand unit is going to start with ERP. We are not communicating such information to the units. It could be done by the business units that are in the process of implementing ERP, or it is a weakness. There already are examples that exiting ERP units have not been aware of new units coming to ERP. The scheduled unit implementation related cutover activities should be including these communications. And as You have there as questions the helpdesk and so on; in scheduled unit implementations all these communications are included to the scheduled unit implementation methodology. When we discuss about the single developments with requirements, there is only the release info. In the bigger ones these are under control, but in the smaller ones these are not and there is space for improvement on this area.</p> <p>P31: From the other perspective, is it beneficial in this information overload to inform more?</p>
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		<p><b><i>Is the ERP Requirement Management Process successful from your point of view? How?</i></b></p>	<p>P33: That is as well a valid point of view, are the people interested to join meetings that will go through in details all the developments. We know that there has been issues that information has not flown.</p> <p><b><i>P0: P31 – If there is a process change, how will it be informed? How has it been defined for the process owners?</i></b></p> <p>P31: The key user networks and process owner networks will be used to inform the change to the process. How within IT; in process owner team we will go through monthly reports of past month and plan for the next month. In this cross stream process ownership will come through.</p> <p>P32: Absolutely super.</p> <p>P31: We can always make it better and we have improved it</p> <p>P33: With a school grade 8. When I have bench marked other companies, others are really good and they have the business leaders involved with the approval board. Our starting point is that this is more IT oriented. Process owners job is to validate the need; we do not anymore challenge the business need.</p> <p>P31: You are anyhow the challenging the need.</p> <p>P33: Couple of example companies are discussing in the approval boards the business need mainly for long period of time compared to us.</p> <p>P31: This is for us as well the main thing and we are not keeping this principal tightly enough; and therefore the school grade 8.</p> <p>P33: In the past we had the issue that the process owners were not discussing enough with the business leaders. Then there were builds that the business did not use.</p> <p>P33: Now the situation is better and the process owners are discussing with the business every single day and really discussing what is needed and what is not. Business development and the business needs to be on the same page.</p>
4	Key strengths	<p><b><i>What are the key factors behind the success of the ERP Requirement Management Process?</i></b></p>	<p>P33: Enough people involved. Large amount of people what there is coming to the development, transparent process.</p> <p>P32: We have well shaped clear process and systematic functions.</p>

		<b><i>What were the company's strengths in the ERP Requirement Management Process?</i></b>	P31: We have tried to build roadmaps for all process areas and on all process areas we have a stakeholder meeting. We are building the commitment to the developments already before. There are people from all businesses and management involved with the roadmap building. There is a group of people with enough authority to decide what is the best direction to take. We are not able to discuss with hundreds and hundreds of people, but a large enough group with enough authority.
5	Key concerns	<b><i>What are your key concerns about the ERP Requirement Management Process?</i></b>	<p>P31: Slowness</p> <p>P33: Capacity management and slowness, because of it. The requirements are approved and wait for execution for a long time. How to get the full pipe to work fast enough. We have the issue that, CAB does not take a stand, if there are resources or not. We take a stand; is there a business case or should it be done, but never if we have the resources to do it.</p> <p>P32: Correct model. It is good that we have clear decisions that this should be done, and then we need to then think about the capacity. It should not be mixed with the do or not to do decisions.</p> <p>P32: We need to focus on doing the correct tasks to get them to be ready on the correct order by prioritization.</p> <p><b><i>P0: Has the Kanban helped on this?</i></b></p> <p>P33: Not enough. The lead times are still long. You are able to walk through some more important ones.</p> <p>P32: It has helped with the simpler ones.</p> <p>P33: We are not anymore stuck with 3 releases per year. This helped us with the release methodology change. When we look at the amounts we develop per year, we get nicely done quite a lot of developments. The lead time of each development has been too long. We need to get the buffer away and continue with new developments with shorter lead times with same amounts.</p>
6	Analysis	<b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b>	P31: The money should prioritize the developments. We are not that good on the business case calculations and business case maintenance, that we would be able to do that. Expectation management with communication of what is coming soon through the pipe and understanding that the development takes time.

			<p>P33: We need follow the rules even stronger than now. We need to better go through the cases before the CAB. We need define better what happens before the CAB meeting. We are for some reason bringing the requirements to CAB too early. We should define better what is the way of working before the requirements are brought to CAB. As an example, in ST they have a work stream that handles the needs before they get to the approval. This has been improving as well on our side, the process owners that have been in the project for a longer period of time know how this should be done and that premature requirements should not be brought to the CAB.</p> <p>P32: We do have a worry that as we have the process owners divided per business, the business X has the process owners more involved with IT ERP team than business Y and Z.</p>
7	Best practices	<b><i>What best practice do you think the company should follow as for ERP Requirement Management Process?</i></b>	<p>P33: We do have 3 best practices; COBIT (IT Governance Framework), SAFe (Scaled Agile Framework) and ITIL (Information Technology Infrastructure Library). These our CABs and requirement management process are visual there.</p>
8	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	<p>P31: Could we lower the amount of mixed messages?</p> <p>P33: We have separate requirement management processes per domain or by application even. This is a weakness; we are now thinking to create one funnel for all. There are of course positives and negatives in this, then we have a lot of people involved and people are interested on different topics in the same meeting, but of course they can here interesting topics as well. We have for this reason sometimes situations where other CAB has already improved the change and we don't have any other option than to approved.</p>



## Research interview (Discussion) - Field notes (Group B10)

TOPIC: ERP Requirement Management Process

### Information about the informant group (Group B10)

Table 1

Details	
Name (code) of the informant	Group B10 consist persons: P34, P36, P37 and P41
Informant's position in the case company	P34: ERP Technology Manager P36: ERP Product Manager P37: ERP Release Manager P41: ERP Development Manager
Informant's role in the customer warranty process	P34-P41: IT team management members
Date of the interview	22.3.2017 + 3.5.2017 to continue with P41 (Highlighted with blue)
Duration of the interview	50min + 38min
Document	Field notes (Summarized from interview held in English), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with ERP Requirement Management Process?</i></b></p> <p><b><i>What documentation/instructions exists on the topic?</i></b></p> <p><b><i>How have You been involved with ERP Requirement Management Process?</i></b></p>	<p>P34: Kanban instructions,</p> <p>P36: Roles and responsibilities excel. We might re-visit the document now as we have the Kanban.</p> <p>P37: A process document from another internal team was our base several years ago when process was created. Started on the process in early days. There were different processes in the start of the project. The usage of the requirement tool has been changed during the time many times.</p> <p>P41: Overall description, KCERPFUNC- requirement instruction, coming later EPIC -instructions, Release management times of releases etc. Release documentation, Testing methodology, ...</p>
2	Rationale	<p><b><i>For what purpose is the ERP Requirement</i></b></p>	<p>P34: Might be also leading to process changes, not always system changes.</p>

		<b><i>Management Process used for?</i></b>	<p>P36: From business requirements to all the way to the system solution implementation. Business has requirements and we try to fulfill.</p> <p>P37: Needs also raised from integrated systems.</p> <p>P41: Defined as a framework to have smooth execution and management around that. Harmonize the ways for different needs. In process changes IT is needed as support and guide the way.</p>
3	Outcome	<p><b><i>Can You describe the ERP Requirement Management Process? What is the ERP Requirement Management Process covering from Your point of view?</i></b></p> <p><b><i>How do we ensure in the ERP Requirement Management Process the cross stream point of view?</i></b></p>	<p>P37: Requirements coming from the Business that are technical changes or process changes. They can come in form of incident turned to requirements. For new unit's requirements and localizations.</p> <p>P41: All needs raised where ERP team is needed should be raised through requirement. Incidents are also raised as requirements, if new needs. Service requirements go through separate process. About others than defined service requests.</p> <p>P36: Requirements coming from Business and our own requirements.</p> <p>P41: The definition of requirement; we have different kinds of requirements. Service requirements and new requirements. This process handles the new requirements, not the service requirements.</p> <p>P41: Process owners are not by the modules and there we take wider thinking already.</p> <p>P36: FI and CO are the challenge. Process owner should check, if there is a need to consider as a cross stream requirement.</p> <p>P41/P34: Thursday cross module meeting is for information sharing. Not sure how it works.</p> <p>P34: Some have now been found during the process, not in live.</p> <p>P37: In CAB meeting we have larger audience. People come more aware about other systems as well and they come aware of main and contributing streams. It is not still in the perfect state.</p> <p>P41: It is meant that the process owners align first between them.</p>

	<p><b>How do we ensure the cross stream topic knowledge transfer to;</b></p> <ul style="list-style-type: none"> <li>- <b>Business?</b></li> <li>- <b>Helpdesk?</b></li> <li>- <b>Process owners?</b></li> <li>- <b>Concept owners?</b></li> <li>- <b>Configuration owners?</b></li> <li>- <b>Consultants?</b></li> </ul>	<p>P36: FI and CO process owners are participating (CAB) quite often now and that is a good thing. That is the biggest concern area. We are doing a lot and we do not want to screw up the FI and CO.</p> <p>P41: In solution option step before the CAB the concept owners should be aligned. The idea is that first we have the process owners that should have a look and align between themselves, then comes the CAB and there they can also raise others up, if not seen/heard before, then it comes to team work and to common Kanban board and there should be the one who is the leader and keeps all the others aligned.</p> <p><b>P0: At which stage the concept owners should be aligned?</b></p> <p>P41: When the solution options are prepared before the CAB and the next time is when it has been designed.</p> <p>P34: At latest again in the functional design phase to approve the functional designs.</p> <p>P41: We should align then again at the functional design phase between the streams. And then it is concept owner, or configuration owners or someone else on that who is aligning.</p> <p>P37: Specific swim lane now for the cross stream topics also.</p> <p>P36: Business and helpdesk is normal process how we ensure any information sharing. In implementations there are implementation training where these are shared and for the other users it is the release briefings and for the helpdesk it is the normal handover process.</p> <p>P41: For individual requirements as well we have defined that we give knowledge transfer to helpdesk.</p> <p>P34: Release Briefing</p> <p>P41: Release Briefing is available for all process, concept, configuration owners and consultants.</p> <p>P36: I am thinking that should the cross stream knowledge transfer be something else; maybe something during the development process.</p> <p>P41: Cross stream work is including the cross stream knowledge transfer. The cross stream requirement team should align among themselves and they should go to their</p>
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		<p>teams to share, if there is something that the others in their streams should know. During the development type of knowledge transfer we do not have.</p> <p><b><i>P0: Do You see that it is enough that the own area person is giving knowledge transfer about the cross stream topic on larger process and concept changes? Do You see that they are capable of training whole topic or that they would train else than their own smaller part?</i></b></p> <p>P36: Good question. Of course, we should do this knowledge transfer to the whole team. With the amount of development, we have, it would be impossible to train all concept and configuration owners and consultants always.</p> <p><b><i>P0: Do You see that there should be a certain part of developments that would be more critical to training?</i></b></p> <p>P36: Yes, we should somehow identify what are the most critical ones to give extensive training.</p> <p>P41: We have in the tool that You need to think about the training; does this need training to existing units, does this need regression testing. These are leading to the point that these are something that need more. Example; If we see that it needs a training for existing units, we arrange separate sessions that can be then shared with the helpdesk team.</p> <p>P37: With the release briefing we encourage to do it that way. I do not really know how we currently do with the key user networks. Are the helpdesk team and the core team members as well participating the sessions? Key user network as well brings a risk as well; we do not have a key user network which is a cross stream network as such. How those things are shared? If the people are not able to relate to the topic, it is hard for them to be interested about the topic. It is a grey area where we should work on.</p> <p>P36: In principal we have the release briefings etc. We give the opportunity for the people to participate to the sessions, but how much they really participate is a different topic.</p> <p>P37: To summarize; We do have the channels to share the information and if we have not shared something enough the people still know who to contact if needed.</p>
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	<p><b><i>Is the ERP Requirement Management Process successful from your point of view? How?</i></b></p>	<p>P41: We are taking care of helpdesk and Business better than our own team. All have received the information about the release briefing and what requirements there are. Main thing is that You should get some kind of idea that on what points in the process there have been changes so that You can contact certain colleague in the same office to get more information when needed. For the support topics there should not be need for a knowledge transfer.</p> <p><b><i>P0: Would You say that the content on the release briefing is detailed enough or presented the way that the business can get a climb what the change is all about and to what process phase it is affecting? What about cross stream point of view?</i></b></p> <p>P41: There is a large variance and different need between the people to understand more about the topic when comparing business to IT personnel. I would say it is more about how the topic is presented. We have allowed now more slides to the presentation to help the presenting. I don't have any idea how to improve; maybe to add something to the presentation template, but not more than that. I think it is more that people are too busy to be able to participate the release briefing session.</p> <p>P36: It is successful. Some things need to be improved, but it is continuous improvement process. We are capable of turning the business requirements to system behavior.</p> <p>P34: Works fine for the scheduled unit implementations and individuals. We have a big bunch of other things that are coming from the side. EPIC requirement process is a bit unclear. It is in the development.</p> <p>P36: We have put a lot of effort to the ERP requirement management project. For the enhancement projects we have are not always nominating a project manager from IT. There might be a process owner leading the work and they do not understand always the process.</p> <p>P36: And also when the business is directly contacting our people. The supporting topics, are those really requirement management topics. For example; If they want to change a process, is that a requirement management topic.</p>
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			<p>P37: We are good on the execution. Several topics that are not all are reaching CAB. Some kind of prioritization is helping us. Process owners to clean up the open requirements. More effort is still needed. The daily life is another topic; is all what we do really value adding business. KPIs for the success of implemented requirements. We need to continue to developing the E2E process. The middle part is working quite nicely.</p> <p>P36: Cross application requirements are quite hard sometimes. Company level enhancement projects. A big picture is not always behind the requirements. Anyone can create a need and it will be approved by the CAB. From the big picture from the company level it might not even make sense to do it. The beginning of the process needs to be enhanced. Implementation is done to first unit but may not be done to the second or the other units. No clear responsibility to on the implementation on the rest of the units.</p> <p>P37: For people that are sitting around the world, not in Finland, it seems that the units located in Finland are quite well taken care. The units in the east and west are more left on their own.</p> <p>P36: The process owners are actively working on this now-a-days.</p> <p>P41: There are good elements. We have formal way of collect the requirements that keeps the process together and ensures that things will be done. The situation could be a lot worse, if we would not have a systematic way of doing. Clear rhythm, clear systematic way.</p>
4	Key strengths	<p><b><i>What are the key factors behind the success of the ERP Requirement Management Process?</i></b></p> <p><b><i>What were the company's strengths in the ERP Requirement Management Process?</i></b></p>	<p>P36: We have a process that works, but still requires fine tuning. Rather good discipline to follow the process. Nominated/agreed roles and responsibilities. Base for the successful process is in place.</p> <p>P37: I agree with P36. We have a good tool and instructions are good, and we have good people around it. For the areas that we have mainly working on past 4 years, it is working quite well there. We are improving constantly.</p> <p>P36: Continues improvement ongoing and mentality that we want to improve. Of course this sometimes creates frustration as we are constantly changing. Clear target that we try to create the process to be as clear and smooth as possible.</p>

			<p>P37: Well working CAB.</p> <p>P34: No further comments.</p> <p>P41: Base idea is strong. In this company we have seen that the requirement management is needed and we have from there created a clear base how this is done.</p>
5	Key concerns	<b><i>What are your key concerns about the ERP Requirement Management Process?</i></b>	<p>P36: Business strategy versus Requirements. Architectural view; ST side makes developments to ST that makes more sense to do to ERP. Now we have monthly meetings with systems. There is still a point of view that on business Z all needs to be</p> <p>P34: Works well inside ERP box, but when gone outside of the box it doesn't work as well.</p> <p>P37: Ownership of Business prioritization and feedback.</p> <p>P36: Is the business really buying in the developments we do? Veto right on Businesses; Development done, but we don't want to use it. Lack of global view on the Business side (Local units).</p> <p>P41: My concern is the continuum. The done developments are left for business implement and evaluate, if should be taken into use or not. No formal way to upgrade ERP units. Depends on the case; If it is a larger case where process owners are involved or business is otherwise really interested, the change gets done in the units. In the smaller cases or in cases where we are developing something from single unit request for all units/certain units, this usually does not have pull from the business to take it into use in other than requesting unit. We do not have a push from the IT to take it into use to others as well, or a clear way to do it. The demand side has more developments done in recent times, but the upgrades are not.</p> <p>P41: Also the process owner evaluation, how it is done, is a concern. There are a lot of sides to consider and there are a lot of smaller developments that tend to wait for the analysis in the queue. The technical team still have had job enough. Resourcing should be thought through on the process owner team.</p> <p>P41: The technical team has a lot on their plate. The Kanban board does not visualize all the tasks at hand, not even the larger ones fully. The team has at the same time unit implementation, enhancements, requirements, networks, smaller</p>

			<p>and larger other developments, and some support as well. A lot on the plate. That whole picture is a concern.</p> <p>P41: There has been good feedback about the Kanban as it allows the persons concentrating on something to concentrate to limited amount of tasks at the same time. In the prioritization phase we need to consider the relations to the projects, enhancement and implementations to enable to correct order in the development process. Fast lane might be needed. How the developments are done for the implementations may need to be considered, there is a need to be in the major release currently and that does give limitations to the available environments and through there how it should be developed. If we could bring the implementations to other than major releases, it would enable more free development prioritization.</p> <p><b><i>P0: Is there a clear need for others than the new unit implementation related localizations to be in the same schedule than the implementation overall? Or could this tight bond be untied? Could the other developments be in the system faster than the implementation or by the time of the implementation? Do we test in the implementation only the system or do we train the unit and the flow goes through?</i></b></p> <p>P41: The new unit implementation related testing is more about the unit and the overall flow, not so much about the specific needs. We could still follow the implementation related requirements under the implementation, but allow them to be developed earlier or with Kanban process. And the release to production could be done separately, but testing needs to be organized. The implementation process already includes all these functions. Requirement content evaluation is needed more heavily, if separated from the implementation.</p>
6	Analysis	<p><b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b></p>	<p>P36: IT level requirement process should be there instead of separate requirement processes on separate systems. Silo thinking is a big issue here.</p> <p>P34: We need to change the organizations to get out of the silos.</p> <p>P37: When we are doing the developments. We should measure, if the developments are causing incident levels to rise or not. It is one angle to look at the result of the development. Problem management.</p> <p>P41: Check previous</p>



7	Best practices	<b><i>What best practice do you think the company should follow as for ERP Requirement Management Process?</i></b>	<p>P34: Partially we are following. We have been involved with a lot of ERP developments here and elsewhere. We have seen a lot of what should not be done. We have those in place.</p> <p>P36: Good practice to handle a global system. We have done bench marking with other companies. We are doing quite good compared to many other global companies. We are not perfect, but better than average.</p> <p>P37: We are unique in the sense. We have good practices and we can not adopt some best practice straight. Continues improvements we need to continue of course. We have used other companies to train our people for Kanban for example.</p> <p>P41: <a href="#">Not known what would help us.</a></p>
8	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	<p>P36: Waterfall and Kanban doesn't work together very well. It could with separate resources, but not with same resources on both.</p> <p>P37: Would be good to see the Business point of view feedback as well for this study.</p> <p>P41: <a href="#">Nothing to add.</a></p>

## Research interview (Discussion) - Field notes (Group B11)

TOPIC: ERP Requirement Management Process

### Information about the informant group (Group B11)

Table 1

Details	
Name (code) of the informant	Group B11 consist persons: P38, P39 and P40
Informant's position in the case company	P38: Solution Area Manager P39: Solution Area Manager P40: Solution Area Manager
Informant's role in the customer warranty process	P38-P40: Quality management and crossing area Solution Area Manager's
Date of the interview	24.3.2017 + 3.4.2017 to continue with P39 (highlighted with blue)
Duration of the interview	50min + 33min
Document	Field notes (Summarized and translated to English from interview held in Finnish), Skype recording with audio and video

### Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Starting point	<p><b><i>Are You familiar with ERP Requirement Management Process?</i></b></p> <p><b><i>What documentation/instructions exists on the topic?</i></b></p> <p><b><i>How have You been involved with ERP Requirement Management Process?</i></b></p>	<p>P38: We have the release schedule and the related process for the requirements. We have our own requirement process that is one of our biggest directional process. We (Solution Area Managers, SAMs) are a bit falling to the middle on this topic between the process users and the higher management. We are looking at the process from both managerial level and from the user level. Yes, familiar.</p> <p>P39: Yes, familiar. I am not surprised that You have made the middle conclusion the way You have made it. I can find the related documents easily and I have read them. This topic from quality management perspective could also include in the big picture also other system related requirement managements.</p> <p>P38: We have a lot of discusses what we have for the ERP requirement management process. We have in the process definition the paths for the different kinds of requirements; if</p>

			<p>the requirements go to helpdesk, come to our team, change from incident to a requirement, ... We are aware of issues what we have on this topic; on the process of turning the incidents to requirements, end user training for new and earlier implemented units, or at the time when business is ready to take the new feature in use. We do not have in the enhancement projects a process for how to widen the piloted feature or process to more units. It is a known gap.</p> <p>P40: Same comments as P38 and P39. I have been involved and I do have the same knowledge as them.</p>
2	Rationale	<p><b><i>For what purpose is the ERP Requirement Management Process used for?</i></b></p>	<p>P38: To control ERP change processes and to control the requirements, to take in use new features and handle the customer needs (internal customers).</p> <p>P39: It should include internal cost administration. It should take into account the business case thinking. If we are there or not, that is a different case. We have helped the needed people to understand, but have the</p> <p>P40: I agree with the P38 and P39.</p>
3	Outcome	<p><b><i>Can You describe the ERP Requirement Management Process? What is the ERP Requirement Management Process covering from Your point of view?</i></b></p> <p><b><i>How do we ensure in the ERP Requirement Management Process the cross stream point of view?</i></b></p>	<p>P38: Everything starts from the type of the needed change; process change compared to technical changes take a different path as an example. Our requirement management process also handles the requirements that are built for units under implementation project.</p> <p>P39: We work towards to handling the ERP system related change requests. There are different kind of change requests; technical change, process change, as examples.</p> <p>P39: ERP has been integrated to several places. These requirements can have an impact to other systems and therefore include work related to this. This area is not known for a lot of people; I am not fully aware of the whole picture. For this we do not have a good picture and process for it. So far the CAB is only per application and this would be better to be for all applications.</p> <p>P38: A year ago we did not this kind of cross stream work. Kanban has helped the situation a little bit by visualizing the cross stream requirements. We are trying to check the requirements that are clearly signaled as cross stream from the start. Kanban has brought the cross stream work more to the table.</p>

			<p>P39: I agree with P38. Earlier we did not control the cross stream work, but now it is a little bit better. In real life Kanban is really not a part of ERP requirement management process and therefore the cross stream work starting at Kanban board is a little bit too late. Voice vote is the method how we define, if the requirement is cross stream or not.</p> <p>P38: We define in the start of the requirement, if the requirement is cross stream or not. The person who is doing the pre-analysis should add also the supporting streams.</p> <p>P39: The process owners should as well check the cross stream point of view. We do not have a manner to check in the middle, if there should be also other streams included during the process, after the start. In the CAB they might notice that other streams are needed, if correct people are in the in the meeting present.</p> <p>P40: SAMs are challenging as well that other streams should be included.</p> <p><b><i>P0: If the design changes, do we include other areas during the development process?</i></b></p> <p>P39: Usually next check point is in the user acceptance test, which is way too late.</p> <p>P40: In the Kanban board we do sometimes raise them to the cross stream lane.</p> <p>P38: As P39 described the most of the times we realize the cross stream too late, if not described in the start correctly. We end up to the situation that either in the user acceptance test or in the live system we need to do fixes to the system to get all sides to work.</p> <p>P39: Especially in these cases we do not calculate ROI (Return on investment) or updated it.</p> <p>P38: We forget the documentation changes.</p> <p>P39: At this point we have passed the mental no point of return. We are forcing the development to the goals. Here we forget the ERP requirement management process evaluation point of view and search of business benefits. We do not have a re-review practice in our process that would define that some development needs to return to design due to found topics.</p> <p>P38: We do document the tests and so on, but we do not follow if the found topics and fixes were documented to the</p>
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	<ul style="list-style-type: none"> <li>- <b>Configuration owners?</b></li> <li>- <b>Consultants?</b></li> </ul>	<p>P40: We have from helpdesk transition managers that will take care that the knowledge transfer sessions will be kept for helpdesk. We have space for development in the knowledge transfer between and within teams. I have asked that the KT (knowledge transfer) invites by helpdesk would be shared also to the Core team members within the team. This works well for a while until there is a new person in the helpdesk. The information to the other streams come from the team member that was involved with the requirement.</p> <p><b>P0: Do You see that the person is able to share the information also generally about the development and not just the details of the own area related?</b></p> <p>P40: I would guess that the shared information will be about the own area. I would say that is the best way as I see that in common SD and FI development the FI persons would not be interested what was done in the SD.</p> <p>P38: The transition manager P40 mentioned is only on the major releases, not in the minor releases. The KT (knowledge transfer) to helpdesk in the minor releases go with the same newsletter than to the business, if not some proactive person is arranging something separate for certain area or development. If we have process changes that do not require large system changes and there is not separate session organized by the requirement leader, the information does not go to the helpdesk.</p> <p>P39: The helpdesk especially is unaware of changes that were made quietly and fast through the pipe as there not involved with the day to day work that much than the others. Part of the information sharing happens within the cross stream and solution area Kanban meetings. The people present in the office are more aware about the ongoing developments than the others abroad.</p> <p><b>P0: What about the rest of the team?</b></p> <p>P39: The process owners should be aware of the coming changes during the first steps in the ERP requirement management process. The information may change during the development and the latest information may not reach the process owners.</p> <p>P38: We do have had cases where, when though about the concept owners and consultants, the information has not reached all recipients as it should of. We have also had</p>
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			<p>cases where the configuration owner has not been aware of the changes. The configuration owners should be the one to approved the technical changes, and still we have had cases where the configuration owners haven't been enough aware. If they approve a charm, it does not mean that they are automatically aware of the full extent of the change.</p> <p>P40: That is a true, but at least on our team when we had earlier a huge legion of consultants, this was a problem. Now I have not seen this.</p> <p>P38: Ones in a while we have these, not often anymore.</p> <p>P40: One cause for the customer warranty process build could have been this that we have a lot of other things as well on at the same time ongoing.</p> <p><b><i>P0: Our consultants, concept and configuration owners are working in projects that are implementing processes. If the processes (process changes) are not trained to them, how are they able to implement the processes?</i></b></p> <p>P39: Their not.</p> <p>P40: At the same time that we train helpdesk, meaning is to train the rest of the team. The invite is sent only per area.</p> <p>P38: There is a development area on our own team training.</p> <p>P39: There are shortcomings. The requirements are taken care of when there are the release briefing sets and so on. The rest is up to the communication reaching the people. A large part is up to that people would be able to participate or to listen later the recording. This does not happen. The release briefing audience is usually from the areas that have their own requirements on the briefing, not from the areas that do not attend usually.</p> <p>P39: Repetition is missing on the information. Main point would be to have possibility to ask more from the persons. We are in these circumstances always fighting for the time, that is the evil in this. People do not have the capacity to take in more information.</p> <p><b><i>P0: Should the release briefing contain more that the technical requirements only? What about the process changes? Should the slides somehow describe to which process phase this change is related to?</i></b></p>
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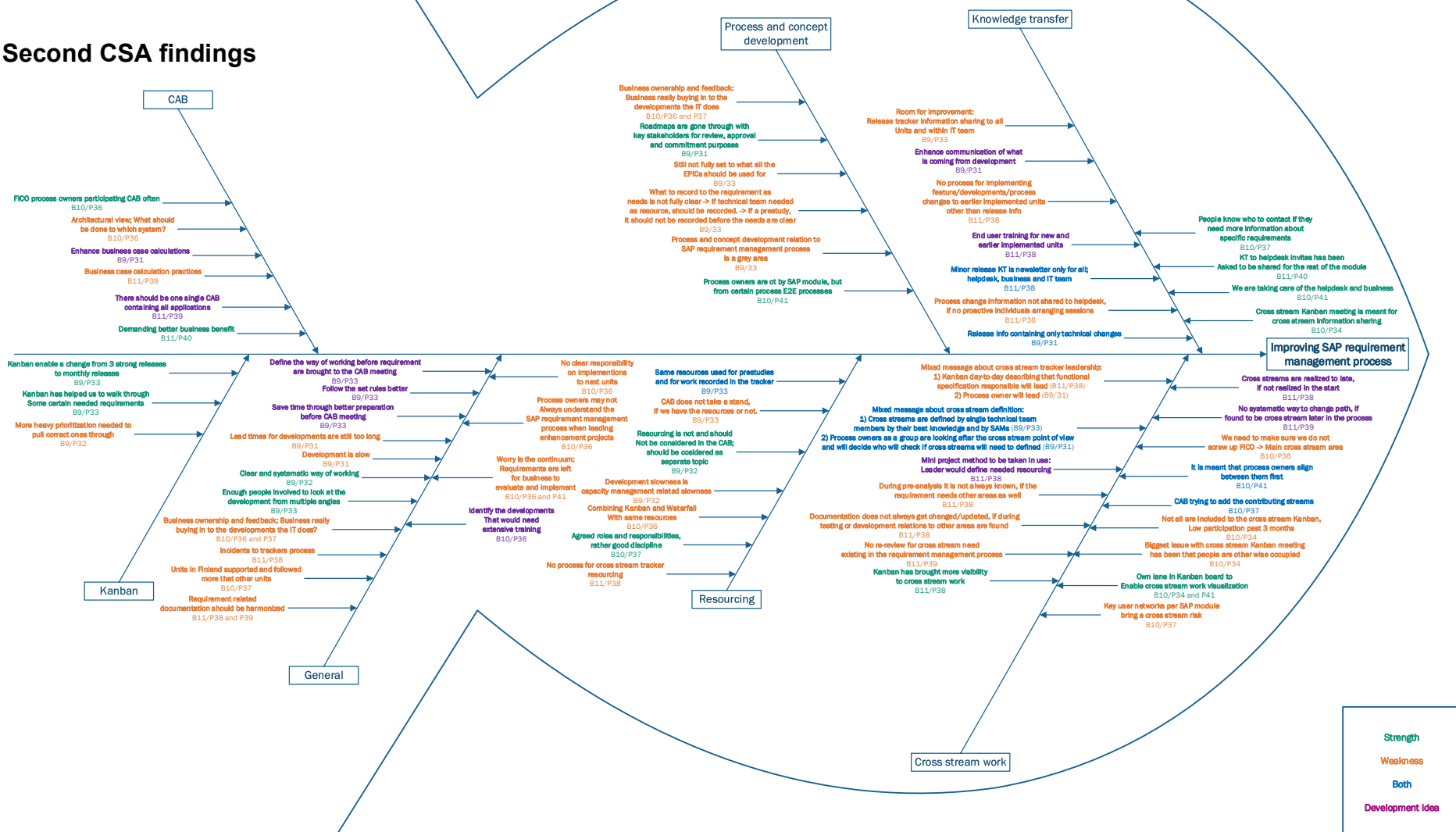
		<p><b><i>Is the ERP Requirement Management Process successful from your point of view? How?</i></b></p>	<p>P39: It could be. The main challenge we have is; If I would be new person joining the project right now, the release briefings have already gone. We do not have any comprehensive material for the new comers to read about the overall processes. We do have process tool with certain authorization restrictions. The presentation model should be maybe something else as there are a lot of different kinds of learners in the team. We have had a lot of good ideas, but nothing has been kept and maintained.</p> <p>P39: It should be a process description with links to practical instructions.</p> <p>P38: There are successful change implementations done, not all are unsuccessful.</p> <p>P40: Successful and functional process. Process has evolved during the time. Kanban has improved the information flow about the ongoing developments and the status of the developments. Functionalities have improved to correct direction during the time by small steps.</p> <p>P39: ERP Requirement Management to certain extent we have, but a company level requirement management process we do not have. A team that would be looking over of all processes and applications to decide on the whole picture.</p> <p>P39: My biggest concern is ROI (Return on investment) follow up. From my point of view, we are not expecting similar profitability from internal functions than from the sales; What is the ROI and how soon are we getting our investment back? We are not demanding business to commit to have a development in use in certain units by certain time and to have certain amount of ROI in money or some other way measurable benefit.</p> <p>P39: We should have after ERP world tour to; analyze, if the units are using the system correctly. Does not look like that from the system. We should have a team that audit the units and calculated the ROI per unit and guides them to correct path.</p>
4	Key strengths	<p><b><i>What are the key factors behind the suc-</i></b></p>	<p>P38: Cost wise; We have a CAB. The costs related to the changes should be well known. We demand the process own-</p>



		<p><b><i>cess of the ERP Requirement Management Process?</i></b></p> <p><b><i>What are the company's strengths in the ERP Requirement Management Process?</i></b></p>	<p>ers check the requirements in the start of the ERP requirement management process to ensure we don't waste time on requirements not suitable for the process.</p> <p>P40: CAB is starting demand better business benefit calculations. I have been wondering why we do not require really good calculations.</p> <p>P38: This practice has changed also my way of working, I have been more concentrating on the requirements that those would have the business benefit calculations in place before the team is using time for the requirements. I feel that my job is to patch this a little bit as well with the proactive asking of business benefit calculations from the business.</p> <p>P40: Requirement is a good tool for requirement management. Major success factor compared to previous job.</p> <p>P38: I agree. I can also check other area requirements; transparency. I can be proactive on requirement process to make sure the cross stream point of view.</p> <p>P39: It is good, that we have a process. We have a tool in where we progress the final requirement. And that the tool is linked to release management.</p>
5	Key concerns	<p><b><i>What are your key concerns about the ERP Requirement Management Process?</i></b></p>	<p>P38: The documentation is a concern; it is not easy to find the related documentation.</p> <p>P40: To find the overall situation of the requirement; what all has been done?</p> <p>P38: Communication and knowledge transfer</p> <p>P39: Main concern is that we have for a short period of time multiple ERPs instead of 1 harmonized ERP. And also that we are not looking currently from whole company point of view the requirements, only per application.</p>
6	Analysis	<p><b><i>In which areas do you think there is space for improvement? In what way? How could that be done?</i></b></p>	<p>P38: For the documentation for all applications; there is room for improvement and there is a development process ongoing for this topic. Latest status is unknown for me. The documentation area is a big area to improve.</p> <p>P38: On the MM side we have done cleaning for the documentation. It takes a lot of work, it needs guidelines what is saved where and also follow up. In the current resourcing situation, the active follow up is not possible at least for me.</p> <p>P38: I would still want to improve the cross stream requirements to mini project direction. There would be a nominated leader in charge, this person would check if the requirement</p>

			<p>is related to other areas as well and would handle the communication.</p> <p>P40: I agree with P38. We have been discussing about these topics. We have been trying to direct the process towards the mini project type leadership on the cross stream requirements.</p> <p>P39: <a href="#">Documentation harmonization and the contacting surface to the ERP requirement management process. Documentations processes are not harmonized currently. A framework how all team should work would lead us to better situation.</a></p> <p>P39: <a href="#">When we have developed a requirement. We do not have time for implementation. Implementation should be a separate function that would concentrate to implementing the developments. We would have people that are providing service and people that will implement. I have drawn with a team in a IT academy a model for IT that had implementation as separate function. The CIO (Chief Information Officer) at that time complemented and started to drive the development to that direction. The implementation function should implement all applications.</a></p>
7	Best practices	<b><i>What best practice do you think the company should follow as for ERP Requirement Management Process?</i></b>	<p>P40: ITIL could be one where the best practice could come from.</p> <p>P38: That we have always a comment in the tool that the process owners have checked the requirement and the same from the next phases from corresponding owner approvals as well. This enables us to track back when needed.</p> <p>P40: Requirement instruction is our internal best practice that defines the functional steps.</p> <p>P38: Sprint type of approach would be the best for us, but this would need us to be less tight with the implementation projects and releases. We would have a certain team that does the whole requirement from start to end with the same team.</p> <p><a href="#">P39: Check previous</a></p>
8	To add	<b><i>What would you like to add that we have not yet discussed?</i></b>	<p>P38: Especially in the quality management area there are a lot more than just the ERP. We have other applications and we have practical guiding.</p> <p>P40: Nothing to add</p> <p><a href="#">P39: We should have a harmonized documentation architecture through applications.</a></p>

## Second CSA findings



## Research interview (Discussion) - Field notes (Group B12)

TOPIC: Discussion on findings to validate accuracy of the findings

### Key stakeholder group (Group B12)

Table 1

Details	
Name (code) of the stakeholder	Group B12 consist persons: P48
Key stakeholder position in the case company	P48: Manager, Business Connect ERP Support
Date of the meeting	6.5.2021
Duration of the meeting	1 h
Document	Field notes (Summarized)

### Field notes

Table 2

	Topic(s) of the interview	QUESTIONS	FIELD NOTES
1	Information sharing towards key users	<b><i>Information sharing towards key users in Business was found to happen 2 ways, key user networks &amp; email information sharing.</i></b> <b><i>Is this accurate? Is something missing?</i></b>	P48: Recent changes to Scrum has brought to some of the team demo sessions towards Business users. All areas do not have key user network sessions where the release information would be shared. This perception is accurate.
2	Information sharing cross-stream	<b><i>In your perspective, what are the sessions where the concept and configuration owners are informed about cross-function topics?</i></b>	P48: There are none.
3	Information sharing	<b><i>You seem worried, are you worried about something specific especially</i></b>	P48: I'm worried especially about the robotics developments as the current process is to fix the robotics when it is already broken after release.

## Validation result summary (Group B13)

TOPIC: Proposal validation

### Key stakeholder group (Group B13)

Table 1

Details	
<u>Name (code) of the stakeholder</u>	Group B13 consist persons: P49, P50, P41, P51, P1, P52, P37, P48
<u>Key stakeholder position in the case company</u>	P49: Solution Area Manager P50: Director, IT Product Development and Supply Chain P41: ERP Development Manager P51: Solution Area Manager P1: Global Process Owner, Quality P52: IT Process Owner, Quality P37: IT Platform Owner, Manager P48: IT Communion Owner, Manager, Communication
<u>Date of the meeting</u>	10.05.2021
<u>Duration of the meeting</u>	45 min
<u>Document</u>	Field notes (Summarized and translated to English from interview held in Finnish), Skype recording with audio and video

### Field notes

Table 2

	Topic(s) of the meeting	FIELD NOTES
1	Key issues to improve	<ul style="list-style-type: none"> <li>- cross-stream cooperation</li> <li>- information sharing</li> <li>- resourcing</li> </ul> <p>theory gathered on perspectives:</p> <ul style="list-style-type: none"> <li>- it best practises</li> <li>- cross-organizational resourcing</li> <li>- cross-organizational communication and collaboration</li> </ul>
2	Proposal presentation	

# Improving ERP Requirement Management Process

ANNA PERKIÖ

## Business Challenge, Objective and Outcome

### BUSINESS CHALLENGE

- A new customer warranty -process has been defined. First implementations have been successfully executed.
- A road map has been defined to implement the new customer warranty -process to rest of the units.
- "Feedback" has been received; Clarifications and enhancements would be needed to the new customer warranty -process.
- Current state analysis revealed that supporting key stakeholders are not adequately aware of the customer warranty -process and therefore are not able to support the process when needed; Key main topics:
  - Ensure cross module knowledge transfer
  - Ensure successful QM module development
  - Ensure harmonized model discipline in deployment

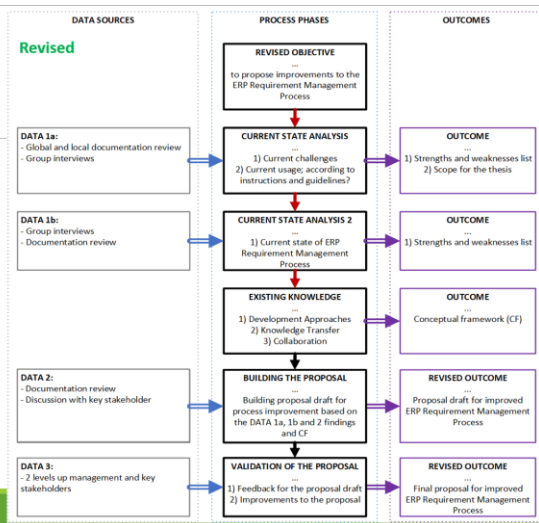
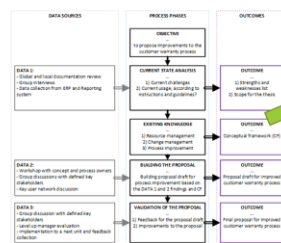


- My revised OBJECTIVE is ... to propose improvements to ERP Requirement Management -process.

- The revised OUTCOME of the thesis is the improvement proposal.

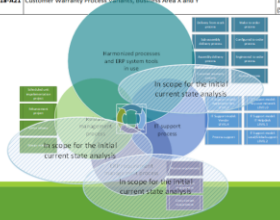
## Research Design

Initial



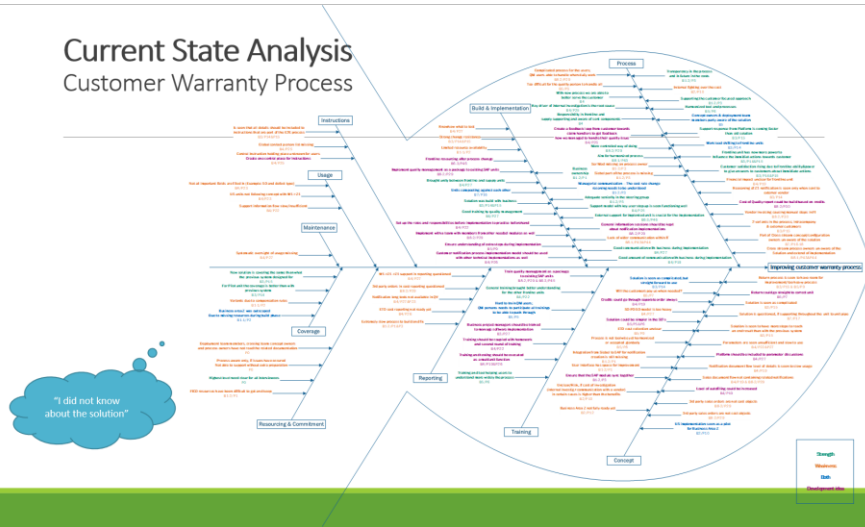
## Data Collection Data 1a – CSA for Customer Warranty Process

Data ID	Document description	Document amount	Review date
D1a-A1	Customer Notification Instruction Manual	40 pages (3,84 KB)	January 2017
D1a-A2	Notification User Manual	73 pages (53,9 KB)	January 2017
D1a-A3	Customer Warranty Process Description, Global	13 pages (1,4 MB)	January 2017
D1a-A4	Local additional instructions: Unit 1 -> Unit 2	1 page (15,1 KB)	January 2017
D1a-A5	Local additional instructions: Unit 3 -> Unit 3	1 page (15,2 KB)	February 2017
D1a-A6	Local additional instructions: Unit 2 -> Multiple units	1 page (15,6 KB)	February 2017
D1a-A7	Development ideas	1 page (13,9 KB)	February 2017
D1a-A10	Customer Warranty Process Variants, Business Area Z	13 pages (8,6 KB)	April 2017
D1a-A11	Customer Warranty Process Variants, Business Area X and Y	1 page (15,6 KB)	April 2017



Data ID	Process group	Participants	Date and duration	Documentation
D1-85-1	Topic Owners	P2: Indirect sourcing manager	14.2.2017 1 h 10 min	Appendix 2 Transcribed and translated field notes
D1-85-2	Topic Owners	P1: Global Process Owner, Quality Management P3: VP, Quality Development	15.2.2017 2 h 2 min	Appendix 3 Transcribed, translated and summarized field notes
D1-85	Topic Owners	P10: Service Processes Director P11: Process and Training Owner P12: Process and Training Owner P13: VP, Technology and Quality	15.2.2017 57 min	Appendix 4 Transcribed and summarized field notes
D1-85	Key users, Pilot	P14: Warranties Claim Manager P15: Quality Engineer	16.2.2017 1 h 10 min	Appendix 5 Transcribed field notes
D1-84	Key users, US and Canada implementation	P19: Quality Assurance Engineer P20: Return Goods Analyst P21: Assistant Controller P22: Customer Service and Marketing Associate Director P23: Quality Supervisor P24: Inventory analyst P25: Steel Purchaser P26: Quality Manager P27: Quality and Customer Service Manager P28: System Support Manager	16.2.2017 1 h 26 min	Appendix 6 Transcribed and summarized field notes
D1-85	Deployment members, Wave implementations	P5: Configuration Owner, Quality Management P6: Consultant, ERP Sales and Delivery P7: Concept Owner, Sales and Delivery P8: Consultant, ERP Quality Management P9: Concept Owner, Project System	15.2.2017 52 min	Appendix 7 Transcribed and summarized field notes
D1-85-1	Key users, Next implementation	P4: Quality Engineer	15.2.2017 50 min	Appendix 8 Transcribed and summarized field notes
D1-85-2	End user, Next implementation	P45: Project Engineer	15.2.2017 Answers received by email	Appendix 8 Writes answers translated, highlighted with blue
D1-85-3	End user, Next implementation	P46: Project Engineer	15.2.2017 Answers received by email	Appendix 8 Writes answers translated, highlighted with green
D1-87	Concept owners, Cross stream	P16: Concept Owner, Service P17: Concept Owner, Subcontracting P18: Concept Owner, Variant Configuration	15.2.2017 48 min + 5.4.2017 20 min (P18)	Appendix 9 Transcribed, translated and summarized field notes
D1-85-1	Process owners, Cross stream	P43: Global process owner, Components delivery P44: Global process owner, Cranes delivery	27.2.2017 24 min	Appendix 10 Transcribed, translated and summarized field notes
D1-85-2	Process owners, Cross stream	P29: Global process owner, Controlling P30: Global process owner, Finance	22.2.2017 48 min	Appendix 11 Transcribed, translated and summarized field notes

## Current State Analysis Customer Warranty Process

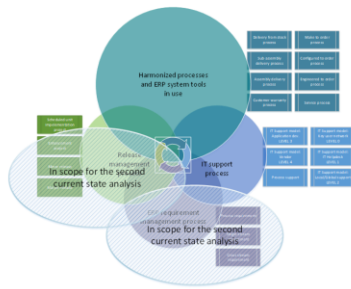


## Current State Analysis Customer Warranty Process

- Strengths**
  - Stable system solution
  - Key user commitment
- Weaknesses**
  - Cross stream knowledge transfer
  - Cross stream resource planning
- Key topics raised by initial CSA to study in second CSA:**
  - Ensure cross module knowledge transfer
  - Ensure successful QM module development
  - Ensure harmonized model discipline in deployment



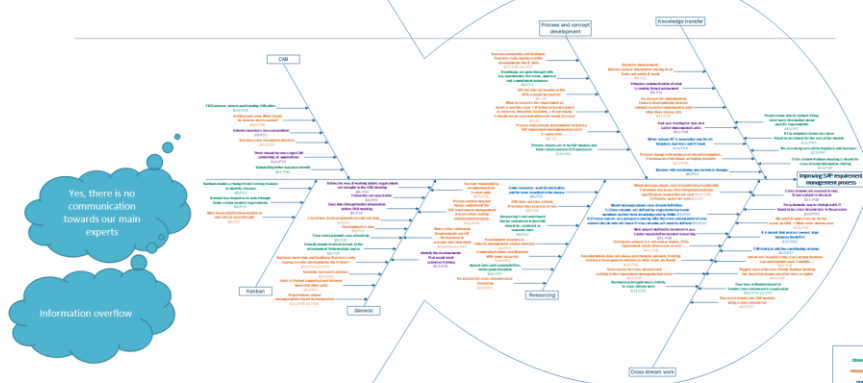
### Data Collection Data 1b – CSA for ERP Requirement Management Process



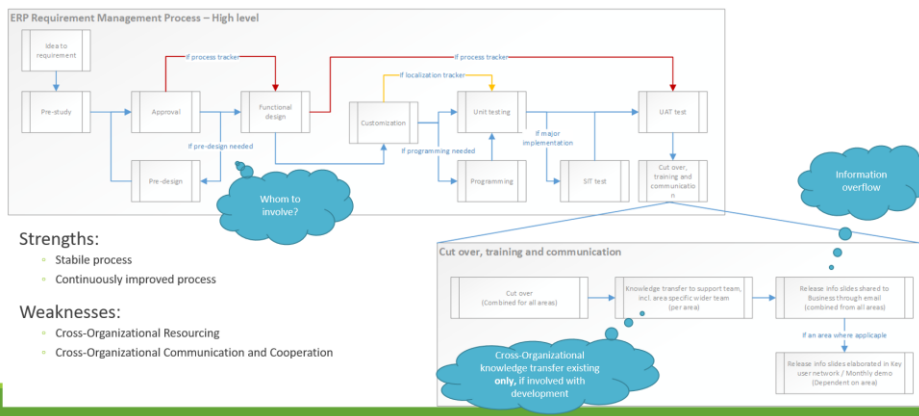
Data ID	Focus group	Participants	Date and duration	Documentation
D18-89	Management, ERP Requirement Management Process	F31: Head of Development F32: Program Director F33: Head of IT	22.3.2017 1 h 1 min	Appendix 14 Transcribed, translated and summarized field notes
D18-90	Product and Release Management Process	F34: ERP Technology Manager F36: ERP Product Manager F37: ERP Release Manager F41: ERP Development Manager	22.3.2017 53 min + 15.3.2017 38 min (P41)	Appendix 15 Transcribed and summarized field notes
D18-91	Solution Area Management, ERP Requirement Management Process	F38: Solution Area Manager F39: Solution Area Manager F40: Solution Area Manager	24.3.2017 1 h 7 min + 1.5.2017 33 min (P39)	Appendix 16 Transcribed, translated and summarized field notes

Data ID	Document description	Document amount	Review date
D18-88	Tracker instruction v39	14 pages (1,02 MB)	April 2017
D18-89	ERP Product Requirement Process - Intrapage	4 pages (953 KB)	April 2017
D18-90	ERP Product Requirements Prioritization Process	15 pages (2,82 MB)	April 2017
D18-91	Tracker instruction v20	24 pages (2,53 MB)	April 2017
D18-92	ERP Requirement Management v1	11 pages (1,46 MB)	April 2017
D18-93	EPIC content	11 pages (1,46 MB)	April 2017
D18-94	EPIC Brief - template v1	11 pages (438 KB)	April 2017
D18-95	Gate Overview	3 pages (1,29 MB)	January 2019
D18-96	ERP Implementation Methodology - Intrapage	-	January 2019
D18-97	ERP Release Management - Intrapage	-	January 2019
D18-98	Release Management process - Intrapage	-	January 2019

### Current State Analysis ERP Requirement Management Process

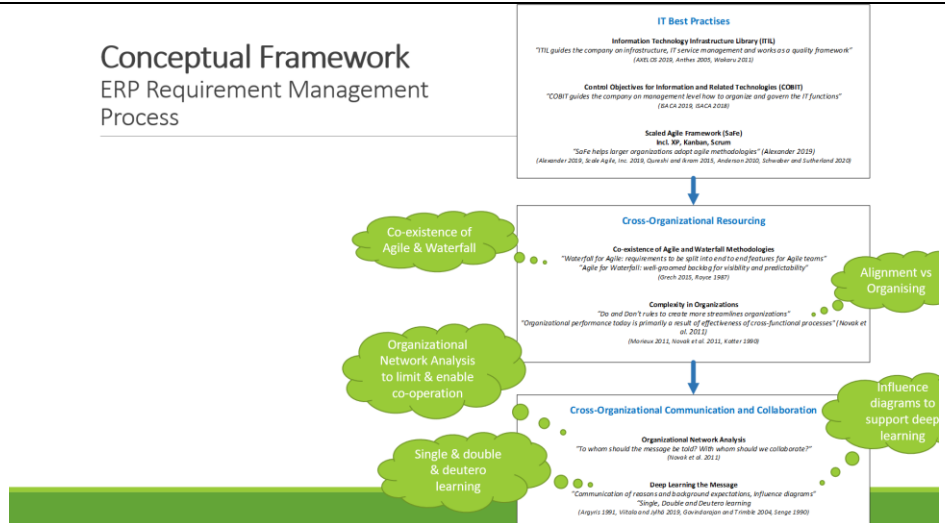


### Current State Analysis ERP Requirement Management Process





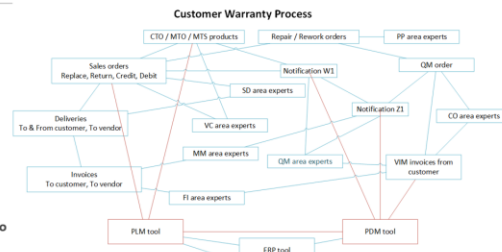
### Conceptual Framework ERP Requirement Management Process



### Proposal to improve ERP Requirement Management Process

#### 1) Execute Organizational Network Analysis (ONA) – Create base for successful change

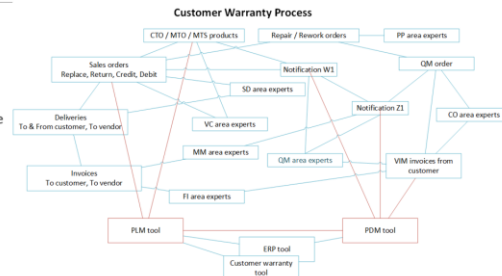
- According to existing knowledge, Organizational Network Analysis is one way to map activities between different functions, teams, people and tools.
- **Execute ONA in each team separately for each functional area**, i.e. in QM team customer warranty, traceability, ... etc separately. Integrated systems included to the analysis with full EZE perspective.
- **Results of ONA to be used to align between necessary entities, to involve necessary entities to development activities & to minimize communication only to necessary entities**, i.e. in QM team for customer warranty process key areas to keep involved include SD when related to orders or deliveries, CO when related to costs in general or QM orders, MM when related to purchases, FI when invoicing, and so on... as it is full ERP EZE process.



### Proposal to improve ERP Requirement Management Process

#### 2) Align between entities – Create base for successful change

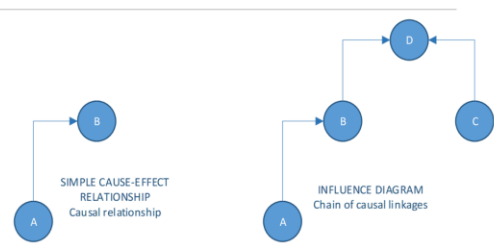
- According to existing knowledge, alignment creates better results than organizing. With alignment all necessary parties are meant to be contacted to get them on board to enable change to be made
- **Align between functions mapped with Organizational Network Analysis**, i.e. in QM team customer warranty, traceability, ... etc separately. Integrated systems included to the analysis with full EZE perspective.
- Alignment does not mean that all parties are necessary to participate all the way, but the do need to know and be on board with the change.



### Proposal to improve ERP Requirement Management Process

3) Enhance communication by explaining why the change is made and what expectations are applied with selected direction – Enable sustainable change

- According to existing knowledge, deep learning only happens, if background expectations, background reasons & whys are explained.
- According to existing knowledge, only with deep learning sustainable learning and next level of learning to learn can be achieved.
- According to existing knowledge, Influence diagrams support the explanations of expectations, reasons and whys.
- **Add influence diagrams/cause and effect relationships to release information**
- **Ensure feature & process level change communication as well, not just the small separate development increments**

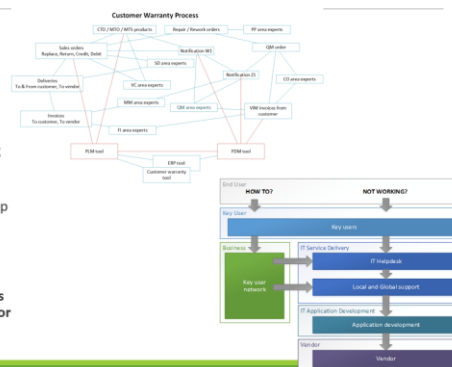


(Govindarajan and Trimble (2004, p.71))

### Proposal to improve ERP Requirement Management Process

4) Communicate towards mapped necessary entities with change information – Enable sustainable change

- Basic principle of learning is to be informed about the topic
- According to existing knowledge, deep learning only happens, if background expectations, background reasons & whys are explained.
- According to existing knowledge, only with deep learning sustainable learning and next level of learning to learn can be achieved.
- Communicate towards mapped necessary entities with change information **these are in case company the team members that work as the highest level of expertise and as support for all specific area topics, they need to know if they are mapped to necessary entities**



### Proposal to improve ERP Requirement Management Process

#### Summary

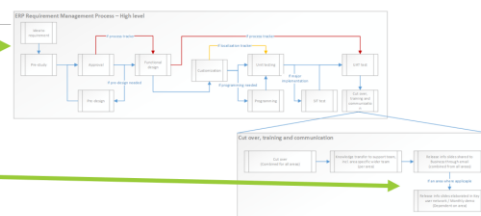
Create base for successful change

- 1) Execute Organizational Network Analysis (ONA) to map necessary entities for each team for each functional area

Align between entities mapped entities

Enable sustainable change

- 3) Enhance communication by explaining why the change is made and what background expectations are applied with selected direction
- 4) Communicate towards mapped necessary entities with change information for them to be able to apply the knowledge in future and sustain the solutions



3	Feedback	<p>P48: Map all our short comings. No surprises to the group listening. To direction as Microsoft has, links to processes &amp; system processes. Instructions updated in each sprint. Agile does not have detailed instructions for the communications. Quarterly planning as main communication point. Other areas have different relations to systems/teams/etc. Doubt any simpler for them. Caught the main points. We should be grateful.</p> <p>P1: Number of efforts have been made during the past year in the QM area in stakeholder meeting, key user network meeting. Is it any better? ONA really hitting the point and this should be</p> <p><i>Interviewer: Yes, it is. Ideas taken in use already partly.</i></p> <p>P50: How does the company run its business? If KPIs do not reflect correctly, there is a gap. This topic has been the pain point. Communication with connection points good point.</p> <p>Process driven KPIs</p> <p>P49: We could implement all of them and we could try out the suggestions. Looking outside to QM community. Learnings can be taken to other teams already from the QM area. Other teams should try to match the QM level first. QM area could be the pilot or all areas could be done at the same time.</p> <p>P48: Agreeing with previous. In QM area these are better than in the other areas.</p> <p>P37: Change management in the other companies there are ways. There should be KPIs for the business. How to split between the areas?</p> <p>It is not necessary that all have the process information. Simplify for the users.</p> <p>In agile we are doing a lot of changes. Business change management is still missing to know, if the business is using the data.</p> <p>P51: Promising proposals.</p> <p>P50: TPP target setting was changed for this spring. Mid-review is coming. If the process is moving a lot, the end of the process is moving even more. Where would You start?</p> <p><i>Interviewer: I would start from ONA to get an idea whom to connect with.</i></p> <p>P48: Tribe plan</p>
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P41: Cornerstones taken on how to handle the things. Especially for the customer, what is changed and how it affects there. Definitely good work. Points that could be communicated wider. Good to hear the thoughts that this is not that easy to contact others.

P1: Next project just starting could be used as a pilot to start the mapping with.

P37: Implementations are good for E2E testing and really working solutions.

P1: New team members -> How to maintain the network information when people are moving between positions?

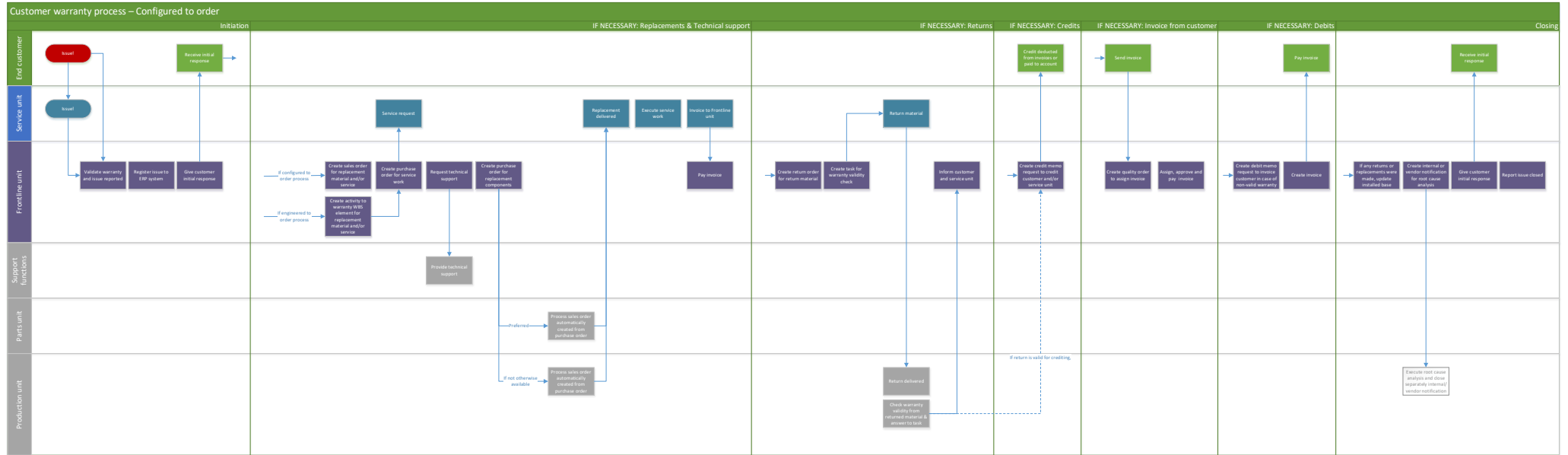
P48: Onboarding plans should be there. Comms plan material has also parts for the IT organization.

P50: Extend to wider area. Areas are missing key user networks. Understanding the bigger picture. Where to draw the line? What is enough? What is too much?

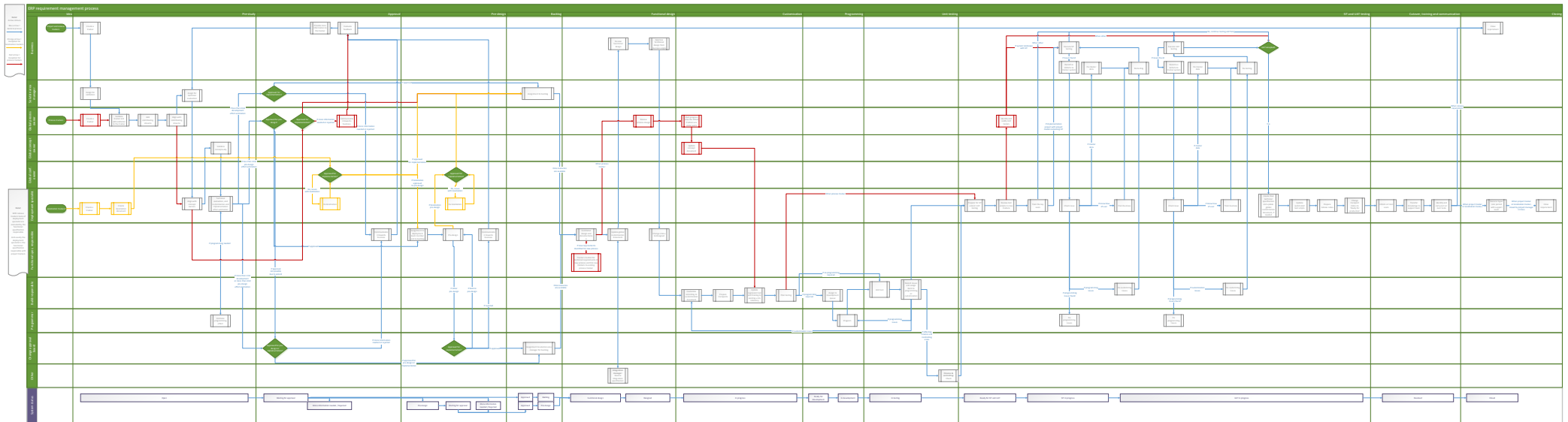
Next steps:

- Alignment with agile core team
- Alignment with P48 on comms topics
- Pilot in QM area with next bigger project touching majority of the IT organization starting soon
- Presentation on technology organization level, if sessions held at the moment
- Discussion with P50 to bring the study details available for wider use (anonymized)

# Customer Warranty Process



# ERP Requirement Management Process



## Full list of findings from Customer warranty process interviews

Area	Valuation	Comment	Reported in/by	Tool/Process	Finding category
Customer warranty process	Both	US&Canada implementation seen as a pilot for Business Z	B2/P10	Process, ERP application	Customer warranty process
Customer warranty process	Both	Solution is seen as complicated, but straight forward to use	B3/P14	Process, ERP application	Customer warranty process
Implementation process	Both	Units competing against each other	B7/P16	Process	Customer warranty process
Customer warranty process	Strength	Customer satisfaction rising due to frontline ability&power to give answers to customers about immediate actions	B3/P14&P15	Process	Customer warranty process
Customer warranty process	Strength	Supporting the customer focused approach	B1-2/P3	Process, ERP application	Customer warranty process
Customer warranty process	Strength	Transparency in the process and in future in the costs	B1-2/P3	Process, ERP application, Reporting tool	Customer warranty process
Customer warranty process	Strength	For Pilot unit the coverage is better than with previous system	B3/P14	ERP application	Customer warranty process
Customer warranty process	Strength	New solution is covering the same than what the previous system was designed for	B3/P15	ERP application	Customer warranty process
Customer warranty process	Strength	Aim for harmonized process	B8-1/P43	Process	Customer warranty process
Customer warranty process	Strength	Business ownership on the customer warranty process	B1-2/P1	Process	Customer warranty process
Customer warranty process	Strength	Support response from Platform is coming faster than old solution	B3/P15	Process	Customer warranty process
Customer warranty process	Strength	Frontline unit has now more power to influence the immediate actions towards customer	B3/P14&P15	Process	Customer warranty process
Customer warranty process	Strength	With new process we are able to better serve the customer	B4	Process	Customer warranty process
Customer warranty process	Strength	Responsibility in frontline and supply supporting and aware of sent components	B4	Process	Customer warranty process
Customer warranty process	Strength	Brought unity between frontline and supply units	B4/P27	Process	Customer warranty process
Customer warranty process	Strength	More controlled way of doing	B8-2/P29	Process, ERP application	Customer warranty process
Customer warranty process	Strength	Key driver of internal investigation is the root cause	B4/P25	Process	Customer warranty process
Development process	Strength	Solution was built with business	B3/P14&P15	Process	Customer warranty process
Implementation process	Strength	Adequate seniority in the steering group	B1-2/P3	Process	Customer warranty process
Customer warranty process	Weakness	ETO cost reporting not ready yet	B4/P26	Reporting tool	Customer warranty process
Customer warranty process	Weakness	Business Z modernization part missing a process owner	B1-2/P3	Process	Customer warranty process
Customer warranty process	Weakness	Integration from Sales tool to the ERP for notification creation is still missing	B1-2/P1	ERP application, Sales tool	Customer warranty process
Customer warranty process	Weakness	3rd party orders in cost reporting questioned	B8-2/P29	ERP application, Reporting tool	Customer warranty process
Customer warranty process	Weakness	Notification document flow level of details is seen to slow usage	B4/P19	ERP application	Customer warranty process
Customer warranty process	Weakness	Multiple variants in Business Z due to old compensation rules	B1-1/P2	Process	Customer warranty process
Customer warranty process	Weakness	Financial impact unclear for frontline unit	B4/P19	Process	Customer warranty process
Customer warranty process	Weakness	Will the customers pay us when needed?	B4/P19	Process	Customer warranty process
Customer warranty process	Weakness	US units not following concept with W1->Z1	B4/P23	Process	Customer warranty process
Customer warranty process	Weakness	W1->Z1 support in reporting is questioned	B4/P27	Process	Customer warranty process
Customer warranty process	Weakness	2 variants in the process; intracompany & external customers	B3/P15	Process, ERP application	Customer warranty process
Customer warranty process	Weakness	Parameters are seen insufficient and slow to use	B4/P22&P27	Process, ERP application, Reporting tool	Customer warranty process
Customer warranty process	Weakness	User interface has space for improvement	B1-2/P1	ERP application	Customer warranty process
Customer warranty process	Weakness	Return process is seen to have room for improvement/too heavy process	B3/P15 & B5/P	ERP application	Customer warranty process
Customer warranty process	Weakness	Solution is seen to have more steps to reach an end result than with the previous system	B3/P15	ERP application	Customer warranty process
Customer warranty process	Weakness	Solution is seen as complicated	B3/P15	ERP application	Customer warranty process
Customer warranty process	Weakness	SO-PO-SO model is too heavy	B4/P27	ERP application	Customer warranty process
Customer warranty process	Weakness	Not all important fields are filled in automatically when creating vendor notification from customer notification (Example: SO and defect type)	B4/P23	ERP application	Customer warranty process
Customer warranty process	Weakness	Sales document flow not containing related notifications	B4/P19 & B8-2/P29	ERP application	Customer warranty process
Customer warranty process	Weakness	Solution is questioned, if supporting throughout the unit to unit pipe	B7/P17	Process	Customer warranty process
Customer warranty process	Weakness	Is seen that all details should be included to instructions that are part of the E2E process	B3/P14&P15	ERP application	Customer warranty process
Customer warranty process	Weakness	3rd party sales orders are not cost objects	B8-2/P29	ERP application	Customer warranty process
Customer warranty process	Weakness	Vendor invoicing causing manual steps in FI	B8-2/P30	ERP application	Customer warranty process
Customer warranty process	Weakness	Internal fighting over the cost	B2/P10	Process	Customer warranty process
Customer warranty process	Weakness	Unclear/Risk, if cost of investigation (internal investigation + communication with a vendor) in certain cases is higher than the benefits	B2/P10	Process	Customer warranty process
Customer warranty process	Weakness	Global contact person list missing	B4/P25	Process	Customer warranty process
Customer warranty process	Weakness	Too difficult for the quality person to handle all	B5/P5	Process	Customer warranty process
Customer warranty process	Weakness	Complicated process for the users; QM users able to handle when daily work	B8-2/P29	Process, ERP application	Customer warranty process
Customer warranty process	Weakness	Notification long texts not available in reporting tool	B4/P27&P23	Reporting tool	Customer warranty process
Development process	Weakness	Reports are extremely slow to build and fix	B1-2/P1&P3	Reporting tool	Customer warranty process
Implementation process	Weakness	Reasoning of Z1 notification is seen only when sent to external vendor	B3/P14	Process	Customer warranty process
Implementation process	Weakness	Process is not toolwise yet harmonized or accepted globally	B5/P8	Process	Customer warranty process
Implementation process	Weakness	Central instruction holding place unknown for users	B4/P25	Process	Customer warranty process

Area	Valuation	Comment	Reported in/by	Tool/Process	Finding category
Development process	Weakness	ETO customer warranty cost collection unclear for a concept owner	B5/P9	ERP application	Cross-stream cooperation
Development process	Weakness	Process owners aware only, if issues have occurred -> Not able to support without extra preparation	B8-2/P29	Process, ERP application	Cross-stream cooperation
Development process	Weakness	Solutions should be gone through with all crossing areas before implementation to avoid problems	B8-2/P29	Process, ERP application, Reporting tool, Sales tool	Cross-stream cooperation
Implementation process	Both	External support for units under implementation is crucial for the implementation	B6-3/P46	Process, ERP application	General
Support process	Strength	Support model with key user setup is seen functioning well	B4/P25	Process, ERP application	General
Support process	Weakness	Systematic oversight of usage missing	B4/P27	Process, ERP application	General
Development process	Weakness	Fully integrated ERP system is slower to develop	B1-2/P1	ERP application	General
Development process	Both	Concept owners & deployment team members only partly aware of the solution	B5	Process, ERP application	Information sharing
Implementation process	Both	Hard to train QM users; QM persons need to participate all trainings to be able to push through	B5/P5	ERP application	Information sharing
Implementation process	Strength	Good communication with business during implementation	B4/P27	Process, ERP application, Reporting tool	Information sharing
Implementation process	Strength	Good training by quality management	B4/P27	ERP application	Information sharing
Implementation process	Strength	General training brought better understanding for the other frontline units	B4/P22	ERP application	Information sharing
Implementation process	Strength	Training and tool helping users to understand more widely the process	B5/P6	ERP application	Information sharing
Development process	Weakness	Lack of wider communication within IT	B8-1/P43&P44	Process, ERP application	Information sharing
Development process	Weakness	Cross stream process owners un-aware of the Solution and extend of implementation	B8-1/P43&P44	Process, ERP application	Information sharing
Development process	Weakness	Part of cross-stream concept/configuration owners un-aware of the solution	B7/P16-18	Process, ERP application	Information sharing
Implementation process	Weakness	Key users do not know what to test in the implementation process	B4/P27	ERP application	Information sharing
Implementation process	Weakness	Strong change resistance among end users	B3/P14&P15	Process, ERP application	Information sharing
Development process	Weakness	Limited resource availability in ERP application team	B1-1/P2	ERP application	Resourcing
Development process	Weakness	Business area Z was outscoped due to missing resources during build phase	B1-1/P2	Process, ERP application, Sales tool	Resourcing
Development process	Weakness	Business Z not fully ready yet	B2/P12	Process, ERP application, Sales tool	Resourcing
Development process	Weakness	FICO resources have been difficult to get and keep	B1-2/P1	Process, ERP application	Resourcing
Development process	Weakness	Sales tool part of the process is missing	B1-2/P3	Process, ERP application, Sales tool	Resourcing



## Release slide

1

[DESCRIPTION]

**WHAT?**

- [add here an explanation of what is going to change]


**WHY?**

- [add here explanation of why the change is done]

MORE INFO: [add relevant names]

May 6, 2021

[TRACKER NUMBER]



- **Benefits / Improvement Achieved**
  - x
- **Affected areas & processes**
  - ERP Module: **x**
- **Organizational impact – Affected units**
  - x
- **Interface & Data**
  - x
- **Link to training material**
  - x