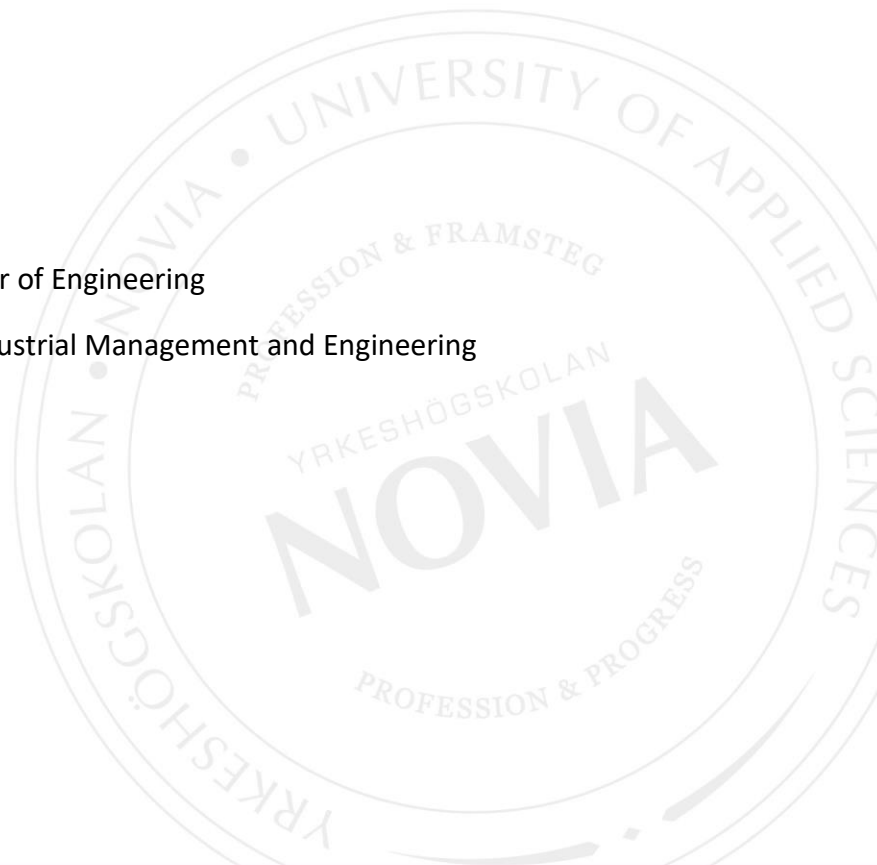# World Class Commissioning and Site Management Customer Experience for Wärtsilä Marine Business

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Degree Thesis for Bachelor of Engineering

Degree Programme in Industrial Management and Engineering

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BACHELOR'S THESIS

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Title: World Class Commissioning and Site Management Customer
                     Experience at Wärtsilä Marine Business

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Date 28.5.2019   Number of pages 37   Appendices 1
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Abstract

This thesis is made on behalf of Site Management and Commissioning at Wärtsilä Marine Business with the purpose of improving the customer experience in site management and during commissioning.

The aim of this thesis is to increase transparency and analyze the ways of working and finding weak spots in their processes. Studying on how Wärtsilä could have a more transparent way of working, enabling site management and commissioning to reach its full potential while acting more as a joint partner with the shipyard rather than a supplier.

The methods used in this thesis are analyzing both customer satisfaction surveys and global site surveys as well as a visit to a ship yard, resulting in a list of various areas that the customer has found to be lacking from Wärtsilä's' side.

The found areas such as communication and reporting were then given recommendations to, as defined in the theory. These were, for instance enhancing a clearer communication platform with DCM365 or having standardized way of writing reports at the shipyard.

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Language: English   Key words: Customer experience, Commissioning, Site
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EXAMENSARBETE

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Titel: Kunderfarenhet av världsklass vid idriftsättning och varvleding vid Wärtsilä Marine Business

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Datum 28.5.2019   Sidantal 37   Bilagor 1

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Abstrakt

Detta slutarbete görs på uppdrag av varvledning och idriftsättning på Wärtsilä Marine Business med syftet att förbättra kundupplevelsen inom varvledningen och idriftsättningen.

Syftet med detta arbete är att öka synligheten och analysera arbetstillvägagången och hitta svaga punkter i dessa processer. Studier om hur Wärtsilä skulle kunna ha ett klarare sätt att arbeta, vilket möjliggör för varvledningen och idrifttagningen att uppnå sitt fulla potential samtidigt som man agerar mer som en gemensam partner med varvet i stället för att agera som leverantör.

Metoderna som används i denna avhandling är analyser över enkäter för både kundnöjdhet och enkäter ämnade för varvledningen, samt besök på en varv, detta resulterade i en lista över olika områden som kunden har funnit att saknas från Wärtsiläs sida.

De funna områden som kommunikation och rapportering hittades, fick sedan rekommendationer enligt teorin. Såsom att använda en tydligare kommunikationsplattform som DCM365 eller ha standardiserat sätt att skriva rapporter på skeppsvarvet.

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Språk: Engelska   Nyckelord: Kundupplevelse, Idriftagning, Varvledning

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Table of contents

1 Introduction

The first chapter will go through the background, purpose and scope of this thesis. It will also define central terminology and the disposition.

1.1 Background

This bachelor thesis is done on behalf of Commissioning Control and Development at Wärtsilä Marine Business. This thesis is aimed to analyze to what is needed to increase the customer experience in both commissioning and site management, which is a part of the Wärtsilä Marine Power Solutions.

Whether the challenge is increased regulatory pressure, consolidation, cost pressures, rapidly shifting customer trends, or most likely, all the above. Today's businesses becoming a more customer centric is not just a feel-good mantra, it is an essential commercial requirement. In Wärtsilä's case, to have the best engines and solutions in the world, they must provide the best customer experience in the world. Each project has customer surveys to use as reference when developing their ways of working, however, how is this info being used? At the time being, the data is very scattered.

Even though Wärtsilä knows what the customer have ordered and when the customer want it, one of the more important factors Wärtsilä needs to know to build a strong relationship is how the customer felt during these interactions. Tangible attributes of a product or service have far less impact on customer preference than the unconscious sensory and emotional fundamentals derived from the whole experience. Individual stories, products and experiences may change over time, but the expectations to deliver a great customer experience is timeless.

1.2 Purpose

Most businesses assume that they consistently give customers what they want. For the most part, they are only joking with themselves. Bain & Co surveyed 362 firms and 80% of these firms believed that they provided superior customer experience. However, when they asked the customers the results were different, only 8% of these companies where delivering a great customer experience. (Allen, et al., 2005). Quoting A.G. Lafley, former CEO of Procter & Gamble "I am a broken record when it comes to saying, "We have to focus on the consumer." I do not think the answers are just in the numbers. You have to get out and look."

That is why the purpose in this thesis is to think outside the box and look at the process from a new perspective. The internal processes change frequently but the external processes have remained unchanged.

The aim of this thesis is to increase transparency and analyze the ways of working, finding weak spots in our processes that affects the customers, studying on how Wärtsilä could have a more transparent way of working, enabling the already in use applications to its full potential. Furthermore, providing a concept that have an easy access to both real time and quality data, enabling easy and fast progress reporting, overall responsibility matrix plans as well as the scope, schedule and budget.

1.3 Scope

This thesis will reach its purpose firstly by defining important theory regarding this thesis, what it is, how it is controlled, measured and developed. The base of this thesis will be with the help of both customer satisfaction and global site surveys, because the feedbacks given straight from the customer on how to improve Wärtsilä's customer experience, is the very essence of this thesis. Both surveys will be analyzed starting of the year of 2016, mainly because the current way of conducting these surveys was set in 2016, site surveys uses a standardized template and the customer satisfaction surveys on the other hand lets the customer have the word. Several developments have been made since, though after assessing the situation, many of them still occur, giving the summaries more depth and width.

After defining a handful of areas worth developing, the thesis will deepen in the areas with the help of studies and interviews including a visit to the customer. The studies will work as a guiding light, the interviews are to look at the way of working and recommendations on how internal stakeholders think how we can change the customer experience, the visit will give valuable time with the customer, see and analyze how Wärtsilä work at the sites and also see what the customer is pleased with Wärtsilä and what things should be further developed.

The result of this thesis will be a handful of recommendations over different ways of working, applications and conclusions over how earlier studies have resulted in a greater customer experience.

1.4 Limitations

The customer satisfaction surveys and processes have a very broad spectrum, from project management to engineering and logistics. This thesis will exclusively focus on the areas within Site Management and Commissioning, things that does not concern directly the commissioning and site management will therefore be left out. However, processes that are not included in site management and commissioning but still has an impact during commissioning will be considered in the research. The customer satisfaction surveys will be from interviews conducted between 2016 and the beginning of 2019 to be more relevant in present ways and matters.

1.5 Disposition

This thesis is divided into six chapters. The first chapter will present the background why this thesis is done, what is the purpose and how the thesis will meet up with the background and purpose.

The second chapter is a brief presentation about Wärtsilä and the Site Management & Commissioning department.

The third chapter will process the central theory about the methods and results in the thesis.

The fourth chapter will present with the methods used to find the development areas.

The fifth chapter revises the lacking areas and the findings from methodology.

The sixth chapter will analyze the findings from the surveys and interviews.

The seventh chapter will conclude this thesis with recommendations over further studies.

1.6 Central terminology

CRM – Customer Relationship Management

CX – Customer Experience

WEB – Wärtsilä Energy Business

WMB – Wärtsilä Marine Business

CCD – Commissioning Control and Development

B2B – Business to Business

NPS – Net Promoter Score

IPI – Installation Planning Instruction

CM – Commissioning Manual

SOLAS – Safety of Life at Sea

HSE – Health and Safety Environment

CSS – Customer Satisfaction Survey

GSS – Global Site Survey

2   Wärtsilä

Founded in 1834, Wärtsilä has grown from a sawmill in Karelia into a global leader in maritime and energy markets. Wärtsilä's business portfolio have consisted of many products and services throughout the history, besides supplying solutions both in the marine and energy segments, Wärtsilä has also had ship yards and products outside of the core market such as Arabia ceramics and Abloy locks. As of 2000, Wärtsilä have sold large amounts of their holdings to concentrate on core businesses that Wärtsilä provides in the maritime and energy sectors. (Wärtsilä Corporation, 2018b).

Wärtsilä has annual revenue of 5 174 million Euros and employs over 19 000 people at 200 locations in over 80 countries. The employers are scattered over the world with 20% working in Finland, 40% elsewhere in Europe, 25% in Asia, 11% in Americas and the remaining 4% in the rest of the world (Wärtsilä Corporation, 2018a).

Wärtsilä's portfolio ranges from underwater services, exhaust gas cleaning, ship design, entertainment, gas handling systems, propulsion and of course its engines. (Wärtsilä Corporation, 2019). As of 2017 Wärtsilä 31 engine is recognized by Guinness World Records as the world's most efficient 4-stroke diesel engine. (Wärtsilä Corporation, 2017)

2.1   Wärtsilä Energy Business, WEB

Wärtsilä Energy Business is a market leader in energy system integrating. They offer combustion engine-based power plants as well as renewable energy power plants. They also offer solutions for LNG terminals and different distribution systems. The Energy segment have over 67 gigawatts of power installed in 177 countries over the world. (Wärtsilä Corporation, 2018a)

2.2   Wärtsilä Marine Business, WMB

Wärtsilä Marine Business is a market leader in the maritime industry with a 47% market share in the medium speed main engine market. (Wärtsilä Corporation, 2018c). Providing its customers in the marine market with innovative solutions and products that are safe, efficient, flexible, economically sound and environmentally sustainable (Wärtsilä Corporation, 2018a).

2.3   Commissioning and Site Management

As it is possible to see from Figure 1 Site Management & Commissioning Hierarchy the department is a part of Wärtsilä Marine Business Project Management organization, which takes care of the delivery of propulsion and engines. Commissioning is the final stage before project handover where the compliance with the customer goes through the validations and agreements for the vessel. Having a smooth and successful commissioning process can be a differentiator to the customer for future projects. (Wärtsilä Internal, 2018)
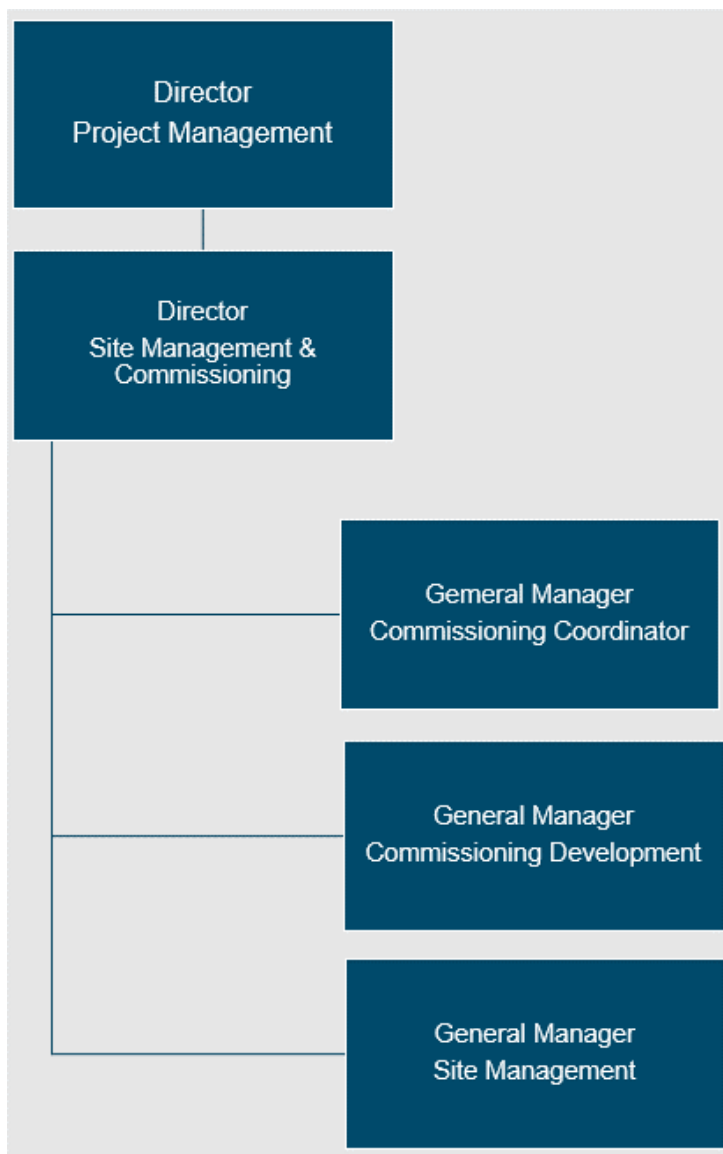

Figure 1 Site Management & Commissioning Hierarchy

In total there are 47 people working in three different teams with the coordination based in Europe and Asia, development in Finland and site management at the ship yards, mainly in Asia but also in Europe.

2.3.1 Commissioning Coordination

Commissioning Coordination is a part of the quality assurance process in each project. The aim for commissioning is to validate that the products are installed and interfaced so they reach the quantitative, qualitative and functional requirements as agreed with the customer, and prepare the resources to ensure a safe and efficient execution of commissioning. (Wärtsilä Internal, 2018)

2.3.2 Commissioning Control & Development, CCD

The CCD team is supporting the commissioning coordination and site management by constantly developing the procedures and the application of resources to strengthen the efficiency for delivery, therefore improving the overall commissioning experience for both Wärtsilä and the customer. The CCD department is also in charge over maintaining the master files for commissioning manuals. (Wärtsilä Internal, 2018)

2.3.3 Site Management

Site managers are supporting the customer on site to improve the quality of commissioning and the handover phase. The site manager is Wärtsilä's contact between the project manager and customer. (Wärtsilä Internal, 2018)

3 Theory

This chapter will present the theory backing this thesis. Beginning with explanations what commissioning is, different touchpoints central to the subject of this thesis and strategies and metrics used in managing customer experience are presented.

3.1 Commissioning

Commissioning is the process of confirming that all systems and components are designed, installed, tested, operated and maintained according to the operational requirements of the owner (Enertiv, 2019).
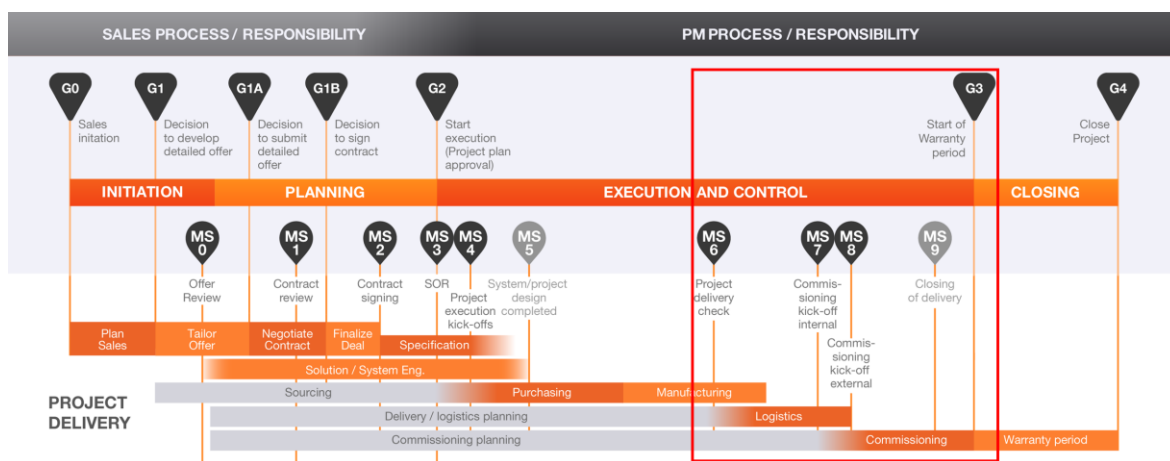

Figure 2 Wärtsilä Project Gateway with commissioning highlighted

The commissioning phase for engines and propulsion at Wärtsilä is divided into four different phases; pre-commissioning, commissioning, sea trial and a gas trial if the engine can be run on gas. (Wärtsilä Internal, 2018).

Pre-Commissioning is the installation of equipment by the customer with the help of the installation planning instructions, IPI, handed by Wärtsilä. Pre-commissioning has three phases where the first is: Mechanical completion, when the installation is mechanically completed, where all the equipment is in place with the piping, wiring as well as the final drawings and certifications. The checklist is then filled in by the customer and forwarded with pictures to the commissioning manager where the completion is revised if it is sufficient or not, if it is then the Mechanical completion inspection by Wärtsilä can be ordered. When the mechanical completion inspection is ordered, Wärtsilä arrives to the

yard to ensure that the installation in correctly executed according to Wärtsilä's recommendations. If it is not complying to the recommendations, the engineer creates a punch list with estimates on completion date. (Åbonde, 2017, p. 21)

The first phase of commissioning is the final installation inspection where the Wärtsilä field service engineer checks the open tasks from the punch list created from the earlier inspection. At this phase they also prepare the engines and safety checks to ensure that all shutdown functions are working properly before for initial startup. The initial startup consists of a five-minute run, thereafter they check for the bearing temperatures. When the initial five-minute run is completed they will begin testing the engine with different loads, depending on class requirements. (Åbonde, 2017, p. 21)

The engineers that contribute in commissioning are also part in the sea and possible gas trials, where they check that the engines operate as supposed, adjusting the parameters if needed. During the sea trials the engines will be operated in diesel mode, and in the gas trials the engines will be run in gas mode. (Åbonde, 2017, p. 22)
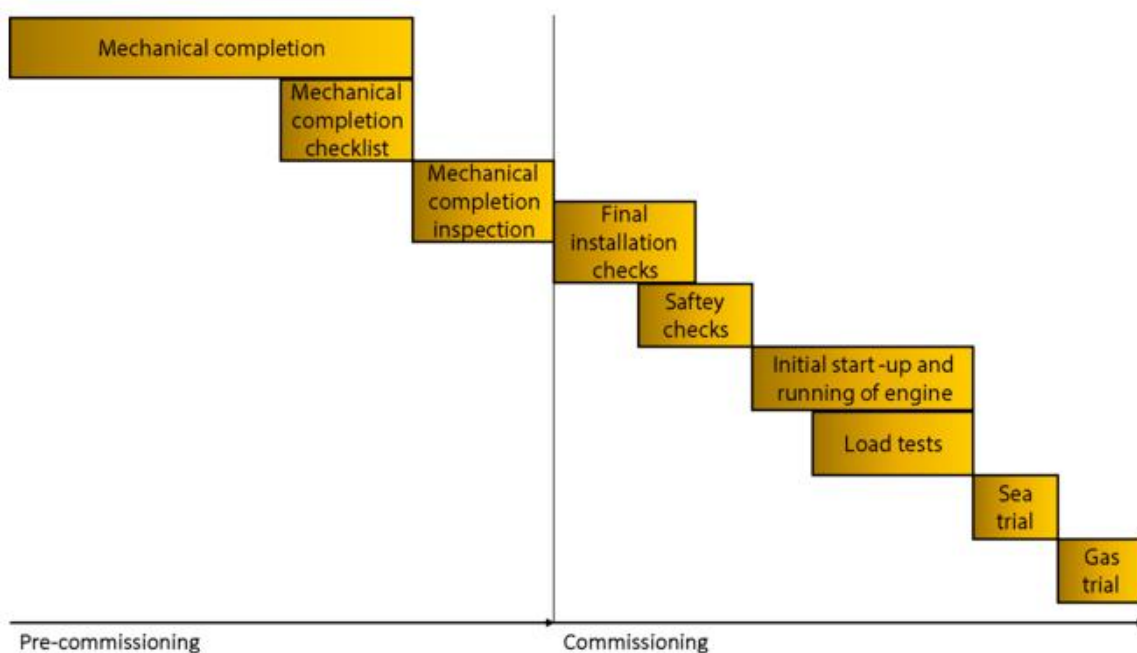

Figure 3 Principle time schedule for commissioning activities (Wärtsilä Internal, 2018)

3.2 Customer Relationship Management, CRM

Thanks to the greater access to information and goods, customers are nowadays less forgiving when they have a negative experience with a company. Social medias enable them to share these experiences with their friends and families which makes the reputation of the businesses sensitive to customer experience. Businesses have adapted to the changing market environment and customer experience has been implemented as an essential part of their strategy. It is a significant differentiator for staying competitive in a continuously changing market. (Alguacil-Mallo, 2018, pp. 39-40). Instead from trying to increase the value of transactions, businesses are now trying to grow their relationship with numerous shareholders. This has profound benefits, it concentrates the attention on building customer value to retain customers. Instead of trying to win every sales encounter, relationships have a lover risk and less significant financial outlay. (Payne, 2006, p. 11)

In the modern digitalized environment, CRM is separated into two major IT sections, data sources and applications. The function of the data repository is enabling the organization to collect a complete set of information on customers, used with analytical tools to develop a better understanding of customers in terms of previous, and possible future actions. Whereas the applications support the repository with value adding interactions, often in different channels, to meet the customers need. (Payne, 2006, p. 15)

There are several ways to build long term relationships by building trust with the help of customization, transparency and collaborative selling. (Cook, 2018)

- **Explore their challenges**

    Finding out what is the most important for the customer, their goals, challenges and preferences. Making a follow up after every touchpoint so it can be revisited before the next meeting. (Salesforce, 2017)

- **Customization and personalization**

    Treating customers as people, not numbers. Giving them tailored messages and experiences. (Cook, 2018)

- **Increasing transparency**

  Usually businesses are very protective over their assets and information can result in that customers do not really get the grip over what exactly the business does. Giving the customer access to "behind the scenes" will give the customer confidence in the business which deepens the relationship. (Cook, 2018)

- **Establish Your Goals**

  Whether it is to increase the response rate or mapping the customer journey it is beneficial to define them, so it is easier later to go back and analyze what worked and what did not. (Cope, 2017)

- **Use a CRM software across all departments**

  Using a software tool across all departments will not only give sales and marketing departments better understanding of the customer, but also the research and development departments which will benefit of it while figuring out the next product or upgrades. (Cope, 2017)

- **Analyze and Improve**

  While actively mining the data to figure out where the challenges are. Knowing what works is almost as important to know what does not work. (Cope, 2017)

3.3 Customer centricity

"Customer centricity is a strategy that aligns a company's development and delivery of its products and services with the current and future needs of a select set of customers in order to maximize their long-term financial value to the firm" (Fader, 2012, p. 39). Customer centric organizations focus neither on the average customer nor acquiring low quality customers. Rather focusing on the best customers, engaging with them from the beginning, measuring what matters for the customer and focusing on products and services for the best customers. (Galetto, 2016)

Customer centricity at Wärtsilä Marine Business

If Wärtsilä genuinely recognizes its customers' businesses, it is well positioned to enhance worth to the customer. Customers on the other hand, are not only happy to pay for products and services that add value; they are also more likely to come back to the partner that provides them. Therefore, conclusions at Wärtsilä should be taken from the

customer's perspective and its activities should focus on the customers' best interests. (Wärtsilä Internal, 2018)

Following bullet points may be used to increase the customer centricity at a business:

- **Define the customer experience strategy**

  Customer experience strategy flows from the brands strategy, with the strategy the goal is to meet the expectations from the customer. (MCorpCX, 2019)

- **Listen to the customer**

  Not only conducting surveys, but also asking them what they think and why, and then working from that (MCorpCX, 2019)

- **Measure the Customer Experience at key touchpoints**

  Taking the customers point of view and defining every touchpoint in the relationship while measuring the customer experience at every touchpoint. (Munkholm, 2014)

- **Improve the employee experience**

  If employees are treated well, they will probably share their happiness with the customers. (Pogrebniak, 2019)

- **Identify what drives customer loyalty**

  Surveys usually focus on satisfaction, but it is the reoccurring customers that increases the profit. Satisfied customers can easily change to customers, but loyal customers are faithful and even recommend you to others. (Munkholm, 2014)

- **Mapping the customers journey**

  Customer journey mapping enables to see from the same point of view as the customer. With a research-based approach from the customer perspective enables you to see the needs at every touchpoint, how they are met and where there is room for improvement. (MCorpCX, 2019)

- **Make customer knowledge available to the employees**

  Enabling the departments to access customer information and how they should use this to mark their energy to enhance customer experience (Munkholm, 2014). One of the easiest ways to motivate with customer feedback is to bring it from online to the physical space of the office. (Pogrebniak, 2019)

- **Share success stories internally**

  Whether it is new orders or comments from the customer will create a drive and motivation to use in daily work. (Munkholm, 2014)

3.4   Customer experience

There are many commonly accepted definitions for customer experience, but most people define it as how customers perceive their interactions with a company. These interactions occur any time a company and its customers have a two-way exchange. These moments of interaction are referred to as touchpoints. (Alguacil-Mallo, 2018, p. 40). These touchpoints can be seen as particles, there are a lot of them and they can last a microsecond or a lifetime. They can be big, such as purchases, services and awareness, but also smaller such as messages and content sharing. (Skerrett, 2017). The goal of customer experience is to provide customers with excellent experiences across every touchpoint in a way that exceeds their expectations going into the interaction. (Alguacil-Mallo, 2018, p. 40)

For delivering a good customer experience, the company has to be customer centric. Resulting in the motivation for wanting to deliver a good customer experience. (Peppers & Rogers, 2012) Customer experience in B2B markets are usually larger and more complex than in B2C markets. The number of suppliers is fewer and products have more technical requirements, though the assumption that B2B decisions are made in a cold and logical manner is not the case. (Morgan, 2019)

A way to approach a good customer experience strategy involves following seven stages:

- **Needs Assessment and Segmentation**

  To begin with it is important to understand what the customers' needs are, what drives them and what products and services they need from their supplier. (Morgan, 2019)

- **Customer Journey Mapping**

  Constructing a customer journey map for the customer segment. The journey details, customer touchpoints from the first awareness through to handover into warranty. (Morgan, 2019)

- **Identify the Desired Experience**

  With the help of the customer journey map it is possible to design the optimal customer experience. This stage is about to reflect on the customer journey map and comparing it to the actual experience with the internally perceived experience. (Morgan, 2019)

- **Design the Brand Experience**

  Addressing the emotions that businesses wants to induce in customers in their touchpoints with the brand. To design the brand experience, it is important to have a clear vision of the identity and values. Brand experience are often translated into promises which will support the customer experience in terms of what they can expect from the relationship with the brand. (Morgan, 2019)

- **Structure the Customer Touchpoints**

  The touchpoint analysis is structured to ensure that the processes are in place to deliver long term loyalty. This is a long process, enabling a seamless experience and the brand value is delivered across and between all the touchpoints over all the segments. (Morgan, 2019)

- **Measure and Develop**

  There are several approaches to measuring the customer experience, not least the return on the investment in financial terms (Morgan, 2019). The most common are the Customer satisfaction survey, CSAT, are made to understand the customer's needs and understanding problems with your products and services. The customer satisfaction surveys usually use a type of rating scale with net promoter score being the most popular. (qualtrics, 2019)

- **Create a clear customer experience vision**

  Creating a set of statements that acts as guiding principles, knowing these principles by heart and embedded in every area of training. (MacDonald, 2019)

3.5 Communication Management

Planning the communication is essential to the ultimate success of a project. Bad communication planning may lead to problems such as delays, information to wrong people, insufficient communication to stakeholders or misunderstandings. Communication planning is usually performed very early, such as during project management plan development. This allows appropriate resources, such as time and budget to be allocated to communication activities. Effective communication means that the information is provided in the right format, time, audience and with the right impact. Efficient communication means providing only desired information. (Project Management Institute Inc, 2013, p. 290)
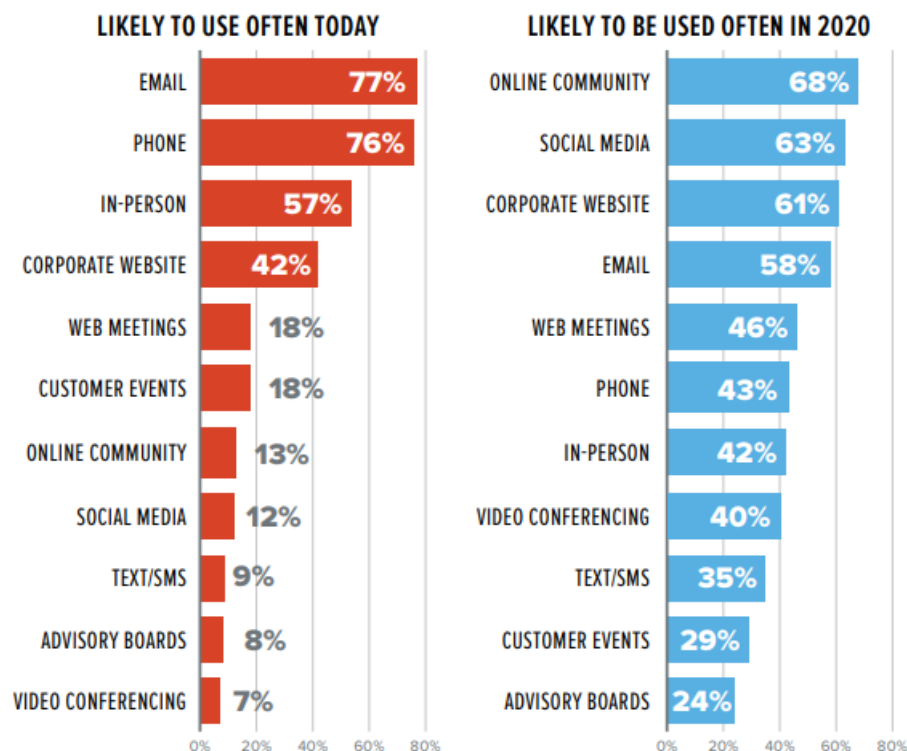

Figure 4 Communication channels - Today and in 2020? (Walker Information, 2013)

In today's business environment the majority of B2B customers use touchpoints that has a higher grade of interaction, such as in person, email and phone calls. Even though customers like human contact, the trend is going towards a more electric interface. With the likelihood that the communications are going to be in social medias or online communities means that companies must be prepared to deliver a consistent and high-quality experience across a multitude of platforms. Figure 4 Communication channels - Today and in 2020? shows clearly that in 2020 the likelihood to use emails have fallen to 58% compared to having the highest likelihood of 77% in 2013 (Walker Information, 2013).

To enhance communication management following strategies may be implemented:

- **More interactive communication**

  Sending emails usually result in communication errors, because there are no guarantees that the reader will understand it. Interactive dialogues enable the possibility to assess the situation. (Hall, 2019)

- **Adopting a communication plan**

  Having a general communication plan in place for the whole team, having requirements over question such as what kind of communications are needed in meetings, reports, with colleagues, customers and other stakeholders (Workfront, 2019). While all projects share the need to communicate project information, the information needs, and methods of distribution may vary widely. In addition, the methods of storage, retrieval, and ultimate disposition of the project information that needs to be considered, but not limited to: (Project Management Institute Inc, 2013)

    - Who needs what information, and who is authorized to access that information

    - When will they need the information

    - Where the information should be stored

    - What format the information should be stored as

    - How the information can be retrieved

- Whether time zone, language barriers, and cross-cultural considerations need to be considered

Also having channels and a frequency in meetings can be beneficial to enhance communication in a business:

- **Online review and Approval process**

  Having a program that streamlines the review and approval process. Stakeholders such as colleagues and clients can share content, leave feedback, edits and approvals, from a range of different devices. (Workfront, 2019)

- **Regular meetings**

  Having every member to be comfortable communicating will give the team a more professional environment, regular meetings for example weekly will give plenty of space for every team member to talk openly about related topics.

3.6   Net promoters score, NPS

Because the net promoters score is the way how the customer satisfaction surveys are measured means that it is in a central role in this thesis. Enhancing customer experience should also result in a higher net promoters score.

Net promoters score is a way of measuring customer experience and used as a tool to predict business growth. The NPS have transformed the way businesses operate and is the core of customer experience management. Like it is possible to see from Figure 5 NPS scale NPS is given straight from the customer who gives a number between 0 and 10. Score 0-6 is detractor which are unhappy customers who can have a negative impact on your business through negative word of mouth. Passives scores between 7-8 which are customers who are pleased with the relationship but are open to other businesses possibilities. Score 9-10 are classed as promoters which are defined as loyal customers who will keep buying and referring it to others. (Satmetrix, 2017).
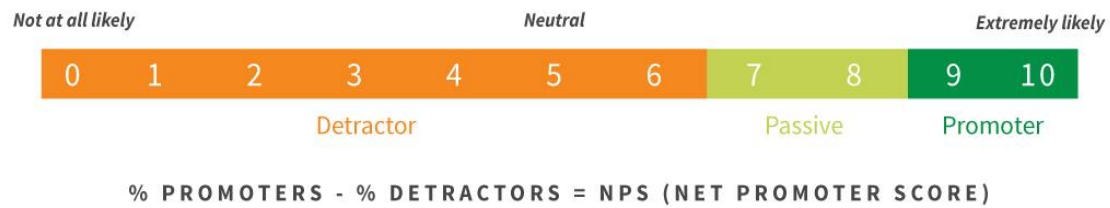
Figure 5 NPS scale (Satmetrix, 2017)

Calculating NPS is a simple equation where the percentage of promoters is subtracted with the percentage of detractors. That means the range of NPS is -100 to +100. Passive customers are not included in the equation because they do not influence a potential new customer's decisions. Because promoters are the most loyal customers they will be vocal and almost make it their mission to protect one's brand, detractors on the other hand is also vocal and share their experience publicly. (Keck, 2017)

The goal is to have a NPS over 0 because that means that more businesses are promoting your company than detracting it. However, there are official definitions over what is good and what is world class. They are categorized as Danger Zone -100-0, Good 0-50, Excellent 50-75 and World Class 75-100 (Keck, 2017). The NPS should also be compared with businesses in the same industry, internet service providers have an average NPS of -1 but department stores have an average of +62 (Satmetrix, 2018). It is important to keep in mind that the NPS is not perfect. Because its simplicity it can be vague and will not give details over what is good or bad (Collomb, 2018).

4 Method

This chapter will introduce to the way methods of gathering the information used as reference to the research. The method is meant to help with reaching good results, as well as fulfilling the purpose and goal. Firstly, the choice of method be explained, and then the way of working.

4.1 Choice of method

The choice for the method in this thesis is to use the feedback given from Wärtsilä's customers, given the fact that this is about increasing customer experience. Therefore, the customer satisfaction and site management surveys have been the main source of information, also by interviewing the people responsible for the surveys and tracking how the results are being used. It was also made possible to visit a customer that would sit down and discuss about the aspirations that they want from Wärtsilä, in a broader spectrum, not only about one project.

4.2 Interview with Operational Excellence

The Operational Excellence team in the project management organization is the team who oversee the customer satisfaction surveys. From the operational excellence team participated the senior quality manager and a quality engineer whose main responsibility is the customer satisfaction survey. They are almost every time present when an CSS interview is conducted. The ambition for this interview was to find out about the Customer Satisfaction Surveys:

- how does it work in practice?

- where is it stored?

- what metrics do they use?

- how is it being used and shared?

- Lessons learned by project members?

4.3   Customer Satisfaction Survey

Before the project transitions into gate 3, also known as the warranty period, the operational excellence team conduct an interview with the project manager and the customer where they have a dialogue what the customer found out to be positive and negative. As it is possible to see from Figure 6 Overview of customer satisfaction with the scores being the average for 12 months rollingthese interviews result in a summary where different metrics and important points are revised, the most important being the net promoters score and satisfaction. The target for the 2019 NPS score is 55. They also publish every month a report over all the surveys conducted during the past month, giving an overall picture where the trend is moving. The surveys also result in cases that will be followed up on, the terms are then revised in the report, stating what the feedback was that lead to the follow up, the status of the action plan, who is responsible and the deadline

There was also the possibility to attend these interviews as silent participants to see how these turn out to be in practice, this gives valuable input because sometimes not everything gets down on paper.
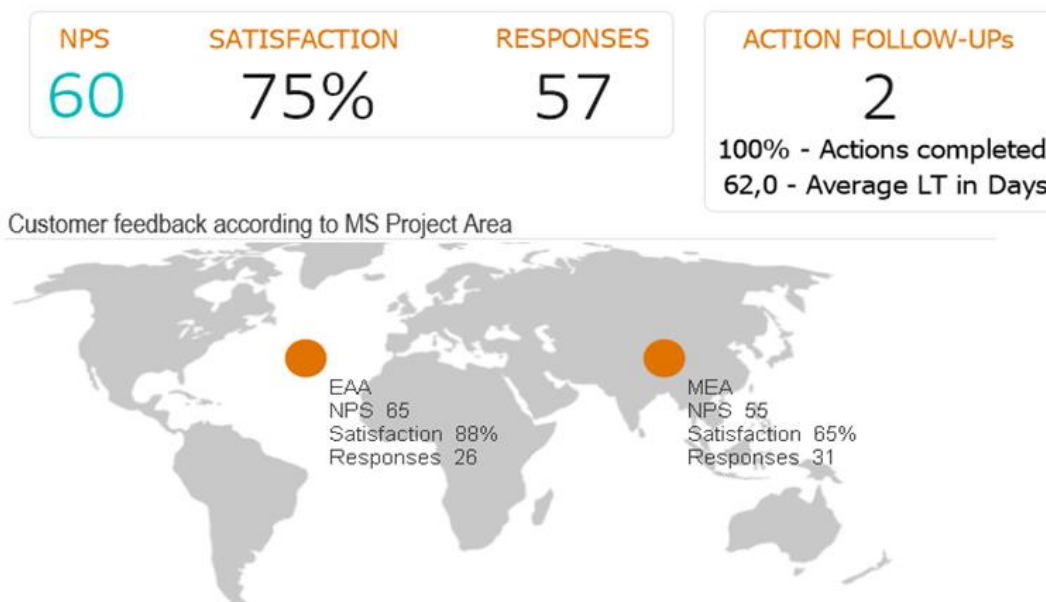

Figure 6 Overview of customer satisfaction with the scores being the average for 12 months rolling

The surveys are stored in salesforce where it is possible to easily export one survey, or several surveys compiled in one excel. For this thesis the CSS data is gathered from a total of 560 different surveys. However, these surveys are for the whole project, not only commissioning. The surveys were then read through and if there was mentions regarding commissioning or site management they ended up in a second document, where they were kept stored to use as reference in the results. The reason behind why these years are used is because the current way used is starting from the year 2016 and earlier material is not stored in salesforce. Of course, there have been a lot of developments during these years, however many of the topics still occur.

Are you satisfied with Wärtsilä's overall performance?		Neutral	
Effectively informs and communicates / What is the primary reason for your answer?			Neutral	Important
How likely would you recommend Wärtsilä to your peers? / What is the single most important thing Wärtsilä can do to meet or exceed your expectations?	2		
Meets your business needs / What is the primary reason for your answer?			Neutral	Important
Wärtsilä is easy to do business with / What is the primary reason for your answer?			Slightly dissa	Important
What suggestions, if any, do you have for improving your experience with us			

Figure 7 Topics discussed in the CSS

The interviewer lets the customer have the word, by this the customer will mention the most important subjects for them. Even if the survey is an open discussion it always comes with two mandatory question which are "How likely would you recommend Wärtsilä to your peers? / What is the single most important thing Wärtsilä can do to meet your expectations" that gets a numerical answer that will define the NPS and "Are you satisfied with Wärtsilä's overall performance" which will in this case give the satisfaction percentage.

4.4 Interview with Site Management

Site Managers are the permanently established at the ship yard and are highest authority at the yard representing Wärtsilä. The site manager is responsible to plan and coordinate all site activities for the entire Wartsila scope. The culture for site managers have changed greatly during these last years. Customers are getting more demanding, hoping for repetitive ways of working, smooth processes and high-quality products.

Sitting down with the general manager who built the site management program that is used today and oversee the global site surveys. In hope of getting the knowledge on:

- Normal day in the life of a Site Manager
- How has it changed
- The background behind Global Site Surveys
- General process of Global Site Surveys
- Data available, where are the surveys stored

4.5 Global Site Survey

Due to the ongoing projects with the biggest shipyards, Wärtsilä have a year-round site manager stationed that works as a contact between the customer and project manager. The Global Site surveys are conducted regularly, usually at the end of a project, these interviews are kept face to face at the yard. Like it is possible to see from survey there are thirteen questions with a, b, c answers, where a is "agree", b is "neutral" and c "disagree". The last question is an open question where the customer is free to comment regarding their opinions about Wärtsilä's Site Management. The global site surveys have a maximum point of 100 points, with every answer of "a" gives 7,7 points, "b" 4,6 points and "c" 3,9 points. The target for each site surveys is 80 points.

The surveys were initiated three years ago at Fincantieri Shipyard to prove the customer that Wärtsilä is compliant and is collecting feedback to improve. When Wärtsilä started conducting these surveys there were circa 25 change orders per ship, nowadays it is down to 3-4 per ship. 99% of all issues are also solved before sea trials.

According to the survey, there is a 100% success rate if the Site Manager gives added value to the daily work at the shipyards. Internal case studies have also shown reductions in nonconformity and warranty costs.

A total of 11 global site surveys has been made between the years 2016 and 2019. These surveys were given by the general manager of Site Management. The surveys were then revised in an excel where it was easy to see what score every project had and what was the score per question. If there was written answers, they were stored in the same excel.

1. The product/s that you receive at the Shipyard, is protected and finished in accordance to the standards and specifications requested?

   a) The product/s is/are always corresponding
   b) The product/s is/are partially corresponding with minor non-compliance
   c) The product/s has/have non-compliance which need to be resolved during the commissioning

   (Comments in case of answer b/c)

2. Do you notice any problem in the conservation and preservation treatment that Wärtsilä applies?

   a) We never noticed problems related to the conservation and preservation treatment
   b) The equipment is generally sufficiently protected but sometimes you notice minor problems
   c) The equipment is not in compliance and we had some problems with the preservation and conservation issues

   (Comments in case of answer b/c)

Figure 8 Example of questions found in the global site survey

4.6   Visiting Arctech Helsinki Shipyard

The scope of this thesis does also include a visit to a customer, it was the luck of the draw because it was the only Wärtsilä project in Finland that was in the commissioning phase of the project. After speaking with some of the project engineers working at Wärtsilä it came to knowledge that Wärtsilä had supplied for this project, which was the only one in Finland at the time being. After contacting the project manager from Wärtsilä's side and explained the background of the thesis, he agreed to contact the ship yard for a possible visit. During this visit we met with the head of commissioning and with the head designer of the machinery, where the interview went through project specific questions from the customer with Wärtsilä's project manager and senior E&A design engineer. Afterwards there was a tour of the vessel and then the interview used for this thesis. The main idea for our visit was to get hands on experience how the ways of working are at the yard, and the possibility to get face to face time with the customer regarding their aspirations and expectations while working with Wärtsilä.

Topics discussed were picked from the trends found from the CSS and GSS, for example:

- What is most important for the customer?

- Handling of deliveries

- Competence of Wärtsilä Field Service Engineers

- Sufficiency in IPI and CM

- Overall SOLAS and HSE

Arctech is a Russian owned shipyard stationed in Hietalahti, Helsinki. They specialize in icebreakers. During the visit, Arctech was building the NB 515 vessel, also called MT Yuriy Kuchiev. The vessel is an an icebreaking gas condensate tanker with a length of 230 meters and a beam of 32,5 meters. It is the first tanker built at Arctech. This project includes 2x W16V32, 2x W14V32 engines and one W4L20. The construction time was close to an end with only cleaning and sea trials left.

Figure 9 Archtech NB515 aka. MT Yuriy Kuchiev

5   Result

This chapter will present what has been found from the interviews, surveys and visit.

At the moment the site management surveys have an average over the last three years of 84 points out of 100 and the customer satisfaction surveys has a NPS of 60 and a satisfaction of 75%, which has steadily increased during the last years.

5.1   Interview with Operational Excellence and Customer Satisfaction Surveys

While interviewing the operational excellence team it came across that the customer satisfaction surveys were monthly shared as a power point and also stored in salesforce, however, the feedback given was not necessarily brought up during a project's closing meeting where they take up lessons learned. The operational excellence team takes the feedback and make action plans out of it. Handing them to departments who are responsible. While exporting the surveys to excel, a total of 500 surveys came across, which in case resulted in 3500 rows worth of data. A total of 45 answers were found where the ship yard was disappointed regarding commissioning.

Example answers from two different projects:

- "Yard highlights that the amount of modifications performed during commissioning is higher than earlier (trend getting into negative direction). Additionally, the info sharing has not been optimal on Wärtsilä side, as during different phases of the project, different Wärtsilä people has had different information regarding needed modifications during commissioning. On a general level yard highlights the good co-operation with Wärtsilä during commissioning. However, as a complaint to commissioning, yard considers that Wärtsilä is changing too frequently the Service engineers performing the actual commissioning work. It would be beneficial to have the same doers from the beginning to the end (especially regarding automation). Best would even be to have the same engineers, which were doing the same work for a sister vessel."
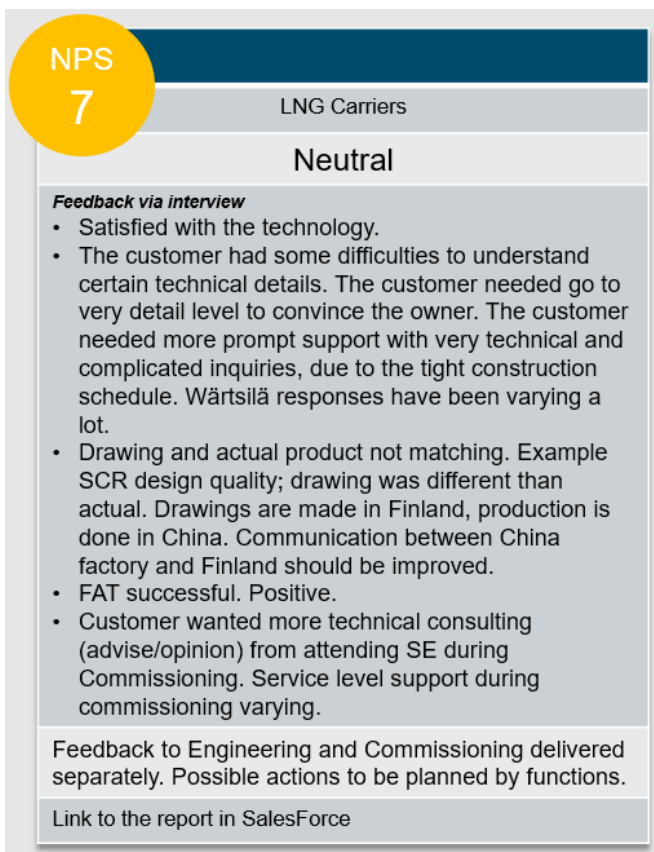- "For coming new project there must be back up for key persons (to PM)."

Figure 10 Example of a Customer Satisfaction Survey

Feedback	Status of Action plan	Resp.	Status	Deadline	To be communicated
As a typical example from punch list items is **Solas heat shields**. In this specific vessel there has also been some modification needs around these. Yard highlights the importance of these, as it is very challenging to get these fixed at yard before commissioning starts and to get also approvals for class societies. Additionally it is also a **regulatory / legal safety issue** to be under control before commissioning starts.	Measurement methods reviewed at DC's and JV's As next step measurement process to be aligned per product / per factory in regards to: • Inspection frequency • Procedure • Acceptance criteria • Reporting RDE investigation still ongoing (design guides, coverage of improved insulation box design, how this will be taken into account in W24 / W31 / W46TS etc.)	Global Manufacturing	Execute	Q1 2019	Yes

Figure 11 Example of an action plan

Big part of the customer satisfaction surveys was focused on communication, man days, modifications and nonconformities. Customer thought that Wärtsilä is a very rigid organization that was not at all flexible, and it could take weeks to get an answer, especially technical questions. From the interview a lot of good advice came on how to easily find commissioning related answers and gave the idea what to expect, and their vision over what areas I will come across. However, the amount of commissioning and site management related topics in the surveys increased a lot during the years I checked, the

reason behind this is that commissioning has started to include one question regarding the execution of commissioning.

5.2 Interview with Site Management and Site Surveys

Starting from 2016 there are 11 site surveys made, because each survey is from the same template it will be easy to compile every survey into an excel and look which topics has what scores and comments. The Site Survey template can be found from the appendix and the table below is a summary over each question. As it is possible to see from the table below, some of the question had big differences. From the site surveys it was possible to see that some areas were worth of developing, such as:

- Question 1: The product/s that you receive at the Shipyard, is protected and finished in accordance to the standards and specifications requested?

- Question 6: The answers that you expect from Wärtsilä are given in a reasonable time?

Question	1	2	3	4	5	6	7	8	9	10	11	12	13
A	5	8	7	10	7	4	11	5	4	8	6	8	5
B	6	3	4	0	4	7	0	4	5	3	5	3	6
C	0	0	0	1	0	0	0	0	0	0	0	0	0

Table 1 Summary of Site Survey

Example of comments found in the survey:

- Wartsila is flexible, but it is always complicated when you have a big equipment delivery. But when you have delivery of the total package this should be easier to coordinate.

- Response from different organizations is not always as fast as needed.

The global site surveys gave a good insight over what does work and what does not work in site management, however to get more accurate results more surveys should have been conducted. The most fascinating part about site management is how big of an impact it has economically on a project. The results from the global site surveys correlates very much with the findings from the customer satisfaction surveys. Where the questions with lowest points being quality, communication and delivery related.

5.3 Interview with Arctech Helsinki Shipyard

The visit to Arctech gave a lot of input regarding the whole project management input, I have summarized the notes from the visit and excluded topics that does not comply with the limitations of this thesis.

Reporting:

- Daily work reports for Arctech 515 were made frequently, but only distributed to Wärtsilä Project Team, not to the customer. This is clear that this was a miss in communication on the practice of these daily reports from Wärtsilä.

- When a Wärtsilä Project Engineer updates a new revision to documents i.e. Installation Planning Instructions (IPI) or Commissioning Manual (CM), Infoboard does not send automatically the updates to the customer, but it sends a notice of the update to the PE and it is on their responsibility to inform the customer of the update to new rev. and what the change is.

Commissioning:

- Shipyard finds it best if the same FS engineers would be there the whole project, preferably the same from earlier projects

- Health, safety and environment is good according to Shipyard

- Wärtsilä team found improvement suggestions regarding safety in Vessel

Quality:

- The customer wants the design to be completed faster, with as few revisions as possible as the amount of revisions heavily reflects on the construction at the yard

- Non-conformities consume hours of Shipyard and Wärtsilä personnel

Factory Acceptance Test:

- The process should be clearer and more rigid in line with the customer

- Concrete steps shown: Pre-check, run, alarms and shutdown

- The invitation to FAT could include an agenda over what tests will be accomplished, thanks to this, all stakeholder participating would be on the same page

    - Before customer arrives

    - With customer

    - After customer departs

- SOLAS matters could be solved at the same time as the FATs

- Many things related to hot spots can be taken care of prior to FAT. If there are remarks there will be needed additional checks at the shipyard/vessel. If found at as late as FAT, then these should be fixed and corrected before product is mounted to the vessel. This is considered to be extra work for the shipyard and should be avoided when possible.

6 Analysis

This chapter will present the analysis of the research. Each topic has been revised with what the customer found and how it could be further developed.

6.1.1 Communication

Communication was mentioned in the lead time may be long on answering questions from the customer. Also, the progress internally is slower than what it should be when the questions and answers bounce back and forth different departments. Not only that but new revisions and reports may also not reach the customer. During different phases of the project, different Wärtsilä people has had different information regarding needed modifications during commissioning. The shipyard usually would like to see Wartsila acting more as a partner with the yard towards a joined customer, instead of a supplier. Resulting that the answers given to the end user is aligned between Wärtsilä's and the ship yards opinion.

To enhance a clearer communication, the commissioning team should establish clear rules over communication at the project kick off meeting. According to the PMBOK, clear schedule is needed to be set, along with tools that will give every stakeholder a clear responsibility, such as a RACI.

6.1.2 Authorization of the Site Manager

According to the feedback, the customer gets the feeling that the site managers authorization is not enough, meaning that from the customers point of view, the quick responses and actions are not as applicable as they should be.

The main idea for the Site Manager for Wärtsilä is to be the link between the ship yard and Wärtsilä. Enabling the customer with quick reactions and technical support. Which means that the supervisors should empower that the "let me ask my boss" mentality should not be applied in a site managers day to day business.

According to the book Riv Pyramiderna! An employee that is in direct contact with a customer, which in this case is the Site Manager can make decisions if it is a positive one,

without consolidating a superior, however if it is a negative one, they need to contact their superior for advice.

6.1.3   Reporting

When Wärtsilä commissioning team has ordered very quickly some additional spares to be on safe side with possible issues. However, the challenge is how can the ship yard receive components properly, if they don't even know what has been ordered, by whom and with which purchase order. This increases a risk over disagreements who is the paying party.

Also having a consistent schedule over when the reporting should be shared, whether it is daily, weekly or monthly should be considered, thus, making it easier for all stakeholders to plan ahead. Following for example the list found in Chapter 3.5 – Communication Management

Reporting is a topic that also needs to be taken up at the external kick of meeting, which means the meeting that starts the project with the customer, setting clear rules when they will be submitted and delivered to the ship yard. Using a standardized way of reporting that include only the information needed. A good report should concentrate on the big picture and include:

- **Work completed,** what has been done the since the last report, scaling the progress accordingly and having a good insight in what happens next.

- **What is next,** focusing what will happen before the next report is written.

- **Obstructions,** if there are any issues, it should be included in the report with an action plan. These matters could be solved at the back offices during off hours at the yard. If it can be solved without help from the offices, one could easily find these in the future if similar problems occur.

- **Trendlines,** how is the project coming along? Is it in the given timeframe and if not, why?

6.1.4 Quality

Nonconformities are issues that occurs in every project. These can be both minor and major, or even critical. Wrong parts may have been ordered, may have been damaged during transportation or fabrication errors. Nonconformities does not only have a big economic impact on the budget, but also contributes in delays at the ship yard. There is also a significant amount of modification needed at site for each project.

Every time a nonconformity also known as a WG notification is submitted to SAP it is stored in the system, this data can easily be retrieved and shared with the concerned stakeholders.

Furthermore, implementing a lean process such as the eight disciplines of problem solving would be beneficial for finding the root cause of a nonconformity. Having a quality team created who would include controllers, engineers, coordinators, staff from the factory and suppliers who would find the roots and finding a permanent solution backing up from an economical point of view. From the lessons learned, preventing future problems becomes easier.

7 Conclusion

The purpose of this thesis was to find out what the customer experience is at Wärtsilä and what should be done to improve it. The scope was to look at the ways of working from the customers point of view, to help with that I used customer satisfaction surveys and global site surveys between the years 2016-2019 as well visiting Arctech Helsinki Shipyard, the surveys also included an interview with the team/person that is in charge of maintaining the surveys. The findings from the surveys were then used as inspiration at the topics discussed during the customer visit.

After refining the customer satisfaction surveys, I had a long list of answers regarding commissioning and site management where the customer was not satisfied with the way Wärtsilä has handled the case. Also, for the global site survey I had a clear picture which questions had a lower score that others. From the customer visit I got pages worth of notes that was rewritten to match the format of this thesis. This was then presented with recommendations that has come up while reading literature for this thesis.

Customer may in some extent expect nonconformities, and general bumps along the way, but the most important aspect from a customer's point of view is how Wärtsilä is handling the problems that occurs. If there is a fabrication error how quickly is it fixed, and how much pain and suffering does the customer have to go through. If the communication is good and the reactions quick, it will give the customer the experience that Wärtsilä truly cares about the project.

The obstacle that took the longest to overcome in this project has been the ability to grab something to hold on, because the subject is so big, it can be very hard to scale it down to fit the scope of a thesis. However, after coming up to speed and as I learned more about the subject I realized it maybe would have been better to take the thesis in a different direction and not digging up a bunch of feedback, rather making a customer journey map or something concrete in that sense.

In that sense I propose for further research that there would be a customer journey map made, going through every touchpoint between the customer and Wärtsilä. Secondly, I propose that the commissioning development team takes my findings in account while searching for coming operational excellence waves and start to deepen over how these

areas could be implemented in practice. During the time I have been writing this thesis several non-commissioning and site management related issues have come up from the methods used. Therefore, I'll also propose that a similar analysis would be made but from a project management point of view.

To wrap up my thesis I would like to show my deepest gratitude to everybody that has been involved in this interesting thesis. A special thanks to Fredrik Hansten at Wärtsilä for being a great mentor and for being at my disposal for all the discussions and wonders. Lastly a big thank you to Mikael Ehrs at Novia University of Applied Sciences for being a great supervisor from the school's side, contributing to hours' worth of feedback and support.

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Appendix

Global Site Survey Questionnaire

1. The product/s that you receive at the Shipyard, is protected and finished in accordance to the standards and specifications requested?

   a) The product/s is/are always corresponding
   b) The product/s is/are partially corresponding with minor non-compliance
   c) The product/s has/have non-compliance which need to be resolved during the commissioning

2. Do you notice any problem in the conservation and preservation treatment that Wärtsilä applies?

   a) We never noticed problems related to the conservation and preservation treatment
   b) The equipment is generally sufficiently protected but sometimes you notice minor problems
   c) The equipment is not in compliance and we had some problems with the preservation and conservation issues

3. The service assistance that Wärtsilä provides for the commissioning of the engines/equipment is in compliance with the requirements and established?

   a) The service is in accordance to the requirements and requested
   b) The service is partially in accordance to the critical and improvements to be implemented
   c) The service is very bad and does not correspond to the standards required

4. How do you judge Wärtsilä regarding the management of operational flexibility during the commissioning?

   a) Wärtsilä is flexible respecting as much as possible to our needs
   b) Wärtsilä is partially flexible
   c) Wärtsilä is not flexible at all

5. The level of technical support you receive from Wärtsilä is in line with your expectations?

   a) The level of technical support provided by Wärtsilä corresponds to our expectations
   b) The level of technical support provided by Wärtsilä has some discrepancies and sometimes is not able to handle the situation
   c) The level of technical support provided by Wärtsilä is below our expectations

6. The answers that you expect from Wärtsilä are given in a reasonable time?

   a) The answers come in always a reasonable time
   b) The answers come with some delay to the expectations or as agreed
   c) The answers come after many reminders and late in respect to the expectation

7. The Site Manager, recently introduced by Wärtsilä at your production site, represents for you an added value?
   a) The Site Manager is an added value to our daily work
   b) The Site Manager is an added value, but the modus operandi is to be implemented
   c) The Site manager does not give us any advantage

8. The management of problems and operational support to the commissioning, compared to your previous experiences, has been improved?
   a) Much improved
   b) The same
   c) Worsened

9. The administration concerning the categorization of man-days to be charged/allocated, compared to the previous experiences, has improved?
   a) Much improved
   b) The same
   c) Worsened

10. Shall the reports and the communication methods used by the Site Manager meet your needs?
   a) Definitely yes
   b) Yes, but they can be implemented
   c) Definitely no

11. How do you evaluate the management of the technical changes agreed and / or mandatory to apply during the commissioning?

    a) Well organized and do not affect our activities
    b) Well organized but must be synergized with our activities
    c) Poorly organized and not in line with our production requirements

12. How do you evaluate the management of eventual non-conformities recorded in Wartsila during the commissioning?

    a) The non-compliances management is in line with our expectation
    b) The management of the non-compliances should be improved
    c) The management of the non – compliances is poor or not properly carried

13. How do you judge Wärtsilä as a solution supplier regarding the commissioning support compared to your suppliers of equal rank?

    a) Better
    b) Equal
    c) Worse