VALUE CO-CREATION IN A SERVICE CONTEXT

- A Case Study of Value Co-creation Between Trackunit and Mitsubishi

SERVICE MANAGEMENT

COPENHAGEN BUSINESS SCHOOL

MASTER'S THESIS

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117 PAGES – 252,124 CHARACTERS – SUBMISSION DATE: 15 MAY 2018

Abstract

Purpose: This thesis is a qualitative study that aims at developing theory by focusing on understanding value co-creation in a service context. A central notion in the service management literature is companies' increased focus on developing combined products and services together with customers. This latter point is known as co-creation which focuses on companies and customers becoming value co-creators.

Design and Approach: Through an in-depth case study of two companies the research explores how the companies co-create value when developing a product service system. The point of departure is an understanding of value co-creation in a service context to which we apply the hermeneutic scientific paradigm and qualitative methods.

Findings: The research shows that the companies collaboratively created a service oriented product service system and the co-creation process created value. The value of the solution relates to it being an integration of product and services, while the value of the collaboration relates to the co-creation theory of how the companies engage with each other. The issue of using the co-creation theory is its conceptual nature, thus proven challenging to apply in practice. The research shows that value can be explained by three forms as presented in the service management literature. We raise the question of the co-existence of the value forms and if some may precede in time. The value of the collaboration is illustrated by the interviewees from which we remain critical as to whether the value is reciprocally created.

Originality: This thesis contributes to an enhanced understanding of value co-creation. The findings allow for a revision of the original DART framework, by adding three additional building blocks. Another contribution is illustrations of the value from the collaboration. The findings show that although value is perceived and described differently, there are similarities to how the value is experienced, and this allows us to present an illustrative synthesis. Additionally, we generalise the findings of this thesis into six propositions which can be used by companies who wish to engage in value co-creation in service contexts.

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Chapter 1: Introduction

1.1. Motivation

> *"There are always more smart people outside your company than within it"*
>
> - Bill Joy, founder of Sun Microsystems.

Once, there was a time, where things were much simple. Some companies produced physical products such as cars, trucks and similar, while other companies provided a service for example repairment. It used to be possible to keep a division between these two categories: companies operated either in goods or services (Vandermerwe & Rada, 1988).

During the 1970s, 1980s and 1990s, the service marketing literature maintained the view that services and goods were different, and services were often defined by comparing them with goods. Today, more and more corporations throughout the world are adding value to their core offerings through services. The trend is pervading almost all industries, it is customer demand-driven, and perceived by corporations as sharpening their competitive edges. Services are no longer a separate category for managers to consider, but rather an all-pervasive part of their strategic mission and corporate planning (Marks et al., 2011; Neely, 2009; Vandermerwe & Rada, 1988). As Evert Gummesson notes:

> *"(Customers) buy offerings which render services which create value"* (1995:250 in Grönroos, 2008).

With this increased focus on the integration of services and products, the concept of servitization developed. The word servitization has been around since the late 1980s when it was first coined by Sandra Vandermerwe and Juan Rada (1988). At that time, the authors provided the definition of servitization:

> *"The increased offering of fuller market packages or "bundles" of customer focused combinations of goods, services, support, self-service and knowledge in order to add value to core product offerings"* (Vandermerwe & Rada, 1988:314).

There have not yet been established a broad-based consensus on the core concepts and definitions deployed by servitization scholars, so terminology and usage often seem ambiguous. Recent literature has provided a variety of definitions, amongst others by Desmet et al. (1998), Slack (2005), Ren and Gregory (2007) and Baines and Lightfoot (2009) (in Marks et al., 2011), and what unites all these definitions is

their focus on the provision of additional services to complement a tangible product in order to increase value, what has come to be known as a Product Service System (PSS). A PSS is a special case in servitization, which focuses on asset performance or utilisation rather than ownership and achieves differentiation through the integration of product and services that provide value to the customer (Baines, Lightfoot, Smart, & Fletcher, 2013). The shift to incorporate solutions in terms of product service systems is important because it means that the interests of customers and companies are much more closely aligned. Servitization has a strong customer centricity (Baines, Lightfoot, Peppard, et al., 2009) because services involve interaction (Marks, 2007 in Marks et al., 2011).

Vargo and Lusch (Vargo & Lusch, 2004, 2008) presented the Service Dominant Logic (SD Logic). It is a thinking framework at a pretheoretic stage that conceptualises business exchange from a service-based perspective (Winklhofer, Palmer, & Brodie, 2007). It represents a broader perspective of markets than the traditional perspective that focuses on the exchange of goods (Neely, 2009; Oliva & Kallenberg, 2003; Vargo, 2008). Although SD Logic operates at a paradigmatic level, it is not a paradigm or a worldview as such, in that it does not provide concepts or models. The issue of value creation has become a central issue in the discussion of service as a perspective or logic. Therefore, the role of service is that of a mediating factor in the value-creating process, where it may be a unit of analysis in the development of understanding value creation (Grönroos, 2011). This interaction with customers has in recent literature been defined as the concept co-creation. The firsts to introduce co-creation in relation to value creation were Prahalad and Ramaswamy (Leclercq, Hammedi, & Poncin, 2016; Prahalad & Ramaswamy, 2004c). In line with Prahalad and Ramaswamy's focus on value co-creation, no other SD Logic topics have attracted so much attention as co-creation of value (Vargo, 2008). The central tenet of value creation under SD Logic is that value is always uniquely and phenomenologically determined by the customer:

> *"The customer is always the co-creator of value"* (Vargo, 2008:8).

The co-creation of value has become an increasingly common practice in B2B contexts because companies collaboratively develop new service offerings while at the same time create value (Kohtamäki & Rajala, 2016). Especially in recent years, there has been an interest in the processes and mechanisms of value creation across firm boundaries (Kohtamäki & Partanen, 2016; Lambert & Enz, 2012 in Kohtamäki & Rajala, 2016). Co-creation processes may invoke positive outcomes, such as the creation of more suitable services for customers. The value is created *with* customers instead of *for* customers (Prahalad & Ramaswamy, 2000). As the exchange focus shift from goods to services it is necessary to reexamine the

traditional system of company-centric value creation; instead, what is needed is a new frame of reference where value is co-created (Prahalad & Ramaswamy, 2003, 2004b).

By making the customer an essential part of the value creation, SD Logic adopts a process orientation rather than a traditional output orientation. This process requires the involvement of the customer in the co-creation of value, and goes beyond the provider's output, be it either products or services and includes the resources of both parties (Merz et al., 2009; Moeller, 2008; Vargo and Lusch, 2008 in Edvardsson, Tronvoll, & Gruber, 2011). Galvagno and Dalli (2014) claim that 85 percent of co-creation research is theoretical (Jouny-rivier, Reynoso, & Edvardsson, 2017). Most empirical research on co-creation focuses on the advantages and disadvantages of co-creating new services in B2C contexts (Payne, Storbacka, & Frow, 2008) but to a lesser extent B2B settings (Chebbiyam and Joshi, 2011; Forsström, 2004; Ng et al., 2010 in Jouny-rivier et al., 2017). Collaborations with customers in B2B contexts will enhance the value of new service offerings, and we therefore find it interesting how companies can commit to co-creation activities with other companies to improve their service offerings and increase value for all. This is supported by the statement from Hans Seijger, VP Sales and Marketing, Mitsubishi Caterpillar Forklift Europe (MCFE):

> *"So the need for co-creation with the right suppliers will be growing, it is growing all the time. And you need to work with specialised companies to create a product that is modern and suits the need of the customers"* (IV1, Appendix 1).

As his statement says, co-creation is important for companies in today's business world, and since there is relatively little empirical research in the field, this thesis aims at contributing by investigating an empirical case. We do so with the study of the value co-creation process in the collaboration between the telematics company Trackunit and the construction equipment company MCFE. In 2016, the two companies started a collaboration where they developed a telematics solution to the forklift market which gather information of usage of vehicles. The solution is mainly created for MCFE's customers, the dealers who purchase vehicles from MCFE. The information from the solution can help dealers to improve and optimise their businesses by lowering their costs, and so they have more efficient use of the vehicles. The aim of the co-creation process is to create value for both companies. The collaboration between Trackunit and MCFE is an interesting and pertinent case because it represents the complexity of the theoretical framework while it also represents an empirical ground for exploring value co-creation in a service context.

1.2. Problem Statement and Research Questions

This is a qualitative study applying the hermeneutic theory of science which in its approach is focused on understanding. Thus, we propose the following problem statement and research questions:

> *How do Trackunit and MCFE use co-creation to create value, which forms of value do they create and for whom?*

(A) What is a product service system?

(B) What is value co-creation from the perspective of the DART framework?

(C) What forms of value can be identified in the service management literature?

(D) How can the product service system developed by Trackunit and MCFE be characterised?

(E) How is value co-creation from the perspective of DART represented in the case of Trackunit and MCFE?

(F) What forms of value can be identified in the collaboration between Trackunit and MCFE?

1.3. Delimitations

We have made a number of delimitations to focus the thesis and its problem areas. The thesis investigates value co-creation in a service context in a collaboration between two companies. We do not look into all kinds of services or the development of related concepts. Rather, we are motivated by the rising trend in product service systems, and we, therefore, apply related concepts which we later use in the analysis.

Furthermore, the thesis does not include value co-creation outside this scope of a collaboration in a B2B setting. This means that we do not include other theories or concepts related to that of value co-creation, as it is the value co-creation concept developed by Prahalad and Ramaswamy including their DART framework from which we seek to explore the stated problem statement and research questions. We do not apply the theory to a B2C setting to which the theory mostly draw conclusions. The choice of the B2B

focus rather than B2C is that we have a greater interest in the processes and mechanisms of value creation across firm boundaries rather than company to end-consumer interactions. We focus on the two companies; Trackunit and MCFE. Thereby, we acknowledge that other service companies could have served as an empirical foundation for demonstrating the complexity of the theoretical framework, but we choose to focus solely on these companies due to our contact with Per Stjernqvist from Trackunit. The aim of the thesis is to investigate the value co-creation process, and so only interviewees who have been engaged throughout the process are relevant to the thesis.

Our rather narrow conceptualisation of value co-creation, and not other related concepts, reduces the broader evaluation of a range of articles in the literature, as we do not touch on many different aspects of the phenomenon. We choose this small focus because we find value co-creation to be a large theory that to details is unexplorable within the scope of this thesis and by limiting the conceptualisation, we are sufficiently confident to have analysed value co-creation as the phenomenon we intend to do.

Lastly, as we will discuss in more details, value is an ambiguous term which can be defined in many ways. Important to note is that we do not take the stance of book value, market value of the solution, cash value or other interpretations. The choice of concepts to analyse value is based on those presented in the service management literature. Likewise, this narrow conceptualisation is chosen to ensure sufficient analysis.

Although the theoretical field provides literature on the challenges of implementing the service mindset when combining products and service, this conflict is not of focus in this thesis (Neely, 2009; Oliva & Kallenberg, 2003). Alternatively, topics such as organisational culture and business models could have been interesting theories to include and discuss in relation to the subject field of the thesis. However, to maintain an in-depth analysis, we have chosen not to include other theoretical perspectives than those mentioned.

1.4. Methodology

This section deals with the hermeneutic theory of science. With this section we seek to provide a description of the philosophical approach of this study, which allows the reader to understand the research procedures subsequently taken (Ghauri & Gronhaug, 2010 in Yin, 2009).

1.4.1. Theory of Science: Hermeneutics

Hermeneutics as a theory of science evolves around understanding how individuals experience phenomena and events from a contextual perspective which influences the way individuals experience and perceive the world (Egholm, 2014). Within this role of theory the focus is on actions of the individual and so true knowledge is not possible, as knowledge has to be viewed in relation to the subject view of the individual. The domain of hermeneutics is human's and the individual's understanding and so an objective understanding of a phenomenon cannot be obtained (Bryman, 2015; Saunders, Lewis, & Thornhill, 2009). Key concepts within hermeneutics are preunderstanding, prejudices, fusion of horizons and the hermeneutic circle, and these will be used in understanding the phenomenon of value from co-creation in relation to the case of Trackunit and MCFE. We do not use hermeneutics as a methodological research tradition, but as a position that is able to provide a philosophical and scientific basis for the qualification of the qualitative tradition (Fuglsang, Olsen, & Rasborg, 2014).

Hermeneutics involves a broad interpretation of reality, taking into consideration earlier activities, experiences and other things which seem relevant in understanding a phenomenon, which in this study is value co-creation. This becomes an active part of the knowledge that is produced in the thesis and is not something that is sought to be eliminated or minimised. With a philosophical hermeneutical analysis we are very aware of our role as researchers in the process, meaning that everything that makes sense is meaningful to the researchers due to our prejudices and horizon of understanding. In other words, we acknowledge that we are the producers of data and therefore the research result of this thesis will be the result of our mutual interaction with the subject field. Besides being embedded in a historical and cultural context our prejudices and pre-understandings are based on our theoretical, conceptual and professional culture within the master programme of Service Management at Copenhagen Business School which affect the research design and findings of the thesis. Thus it was a personal passion and knowledge that led to the choice of the service field and interest in understanding companies' value creation in order to co-create solutions to solve their challenges. When the literature proposed that co-creation is an emerging notion in the service field and an actual knowledge gap was detected, research on co-creation in the service field was an ideal topic. When entering the research process this influenced us.

Humans are self-interpreting, historical beings whose tools for understanding are conditioned by tradition and historical life. As Gadamer is known for saying:

> *"Understanding depends on prejudices"* (Gadamer in Højberg, 2014).

Using hermeneutics as a condition for the human recognition process, existence and experience involves the hermeneutic circle. This represents a circular interaction that takes place between part and whole, meaning that the whole can only be understood by virtue of the parts, and the parts can only be understood when integrating the whole. The hermeneutic circle is at the same time characterised by an infinite process where one cannot observe a beginning or an end, thus we are always part of the process (Højberg, 2014). The hermeneutic circle is seen as an ontological principle in the manner of Gadamer's philosophical hermeneutics (ibid). With this interpretation is not a method, but a way of existing, and the use of certain methods is not a way to obtain true knowledge or true recognition. Instead, the object of this thesis in terms of the value co-creation between Trackunit and MCFE cannot in itself contain a meaning. It is in the meeting between the researchers and the object investigated that meaning is created as it will always be based on the researchers' contexts and earlier experiences, i.e. our previous work with value in a service context (Fuglsang et al., 2014; Mantzavinos, 2016). The hermeneutic circle illustrates the interaction between us as researchers and the theory and empiricism. With this the circular movement, illustrated by the hermeneutic circle, becomes guiding for our thesis as we work in a continuous process between part and whole for making sense (Højberg, 2014). The circular interaction between part and whole denotes the fusion of horizons that occur in our meeting with the object. Therefore, we do not argue that there is a consensus but rather that our circular expansion of knowledge makes us better able to conceive and understand the meaning of the object (ibid), i.e. value co-creation between Trackunit and MCFE.

1.4.2. Role of Theory

The abductive approach seems to capture the research practices of this thesis, using both a deductive study as well as an inductive study, because it uses existing theories and apply these to the case of value co-creation in a service context between Trackunit and MCFE. However, the theory is also redefined based on observations from the collaboration context. The core idea of the abductive approach is that the researcher moves between the theoretical and empirical worlds and accepts the incompleteness of thoughts and taking non-linear approaches throughout the research to deepen both theoretical and empirical understanding (Dubois & Gadde, 2002a). The abductive approach attempts to understand the theory in order to gain pre-understanding and to generate a conceptual framework that constitutes the foundation of the study and can lead to understanding of the phenomenon in a new way, matching the hermeneutic research philosophy. In this thesis existing theory has been examined and this constitutes the basis of the

analysis and thereby, it is a deductive approach because the phenomenon, value co-creation, is seen in the context of the included theory. Yet, the theory is adjusted based on the analysis of the collaboration of Trackunit and MCFE where new empirical aspects are taken into account, and so an inductive approach is also used (Saunders et al., 2009). This study started with some preconceptions and exploration of theoretical knowledge about product service systems, co-creation and value. While exploring the literature, we also gathered empirical evidence, i.e. real-life observations. This is part of the creative iterative process (Kovács & Spens, 2005; Taylor et al., 2002 in Saunders et al., 2009) in which current theory is used to understand the empirical phenomenon of value in a co-creation process, and the empirical phenomenon is used to understand the theory. Thus, this study moves between the theoretical and empirical worlds and accepts the incompleteness by taking a non-linear approach in order to deepen both a theoretical and an empirical understanding of value co-creation in a service context (Dubois & Gadde, 2002b).

1.5. Introduction to Theory

In the initial phase of writing this thesis, we conducted a literature search of the concepts of value co-creation and servitization, to define the knowledge gap and to detect current literature, frameworks and models. Having found a large amount of articles and materials written on the subjects individually, we searched for both concepts for us to be able to position our thesis field in the context of what had already been investigated in prior research. This gave a very limited number of results, of which only two of the results were empirically tested data, the rest remaining theoretical discussions where new concepts or ideas were presented based on earlier work. However, from the literature on servitization it was evident that the concept of product service system is a special case in servitization and appeared in much of the relevant literature. Therefore, we decided to change the direction slightly to focus on product service systems and not servitization. With this literature search, we could better identify which contribution our thesis would give to the existing body of knowledge. Our study is highly relevant since the sphere of testing value co-creation within a service context, on an actual business case, seems rather small and unexplored.

This thesis' theoretical framework constitutes the theories of product service systems, value co-creation and different forms of value. This thesis builds on theories that challenge the traditional view of the

market as a place where a company creates value by its output and that products in themselves can be carriers of value. Instead, we claim that value creation takes place in the interaction process between company, customer, or communities (Prahalad & Ramaswamy, 2004b; Varnes, Christiansen, & Lefévre, 2008). Thus, the theories applied argue that the customer and company together play a role in the value co-creation process and interaction is key, as it changes the fundamental value of the offering because value is determined by the respective interaction at a given time, in a specific context.

1.6. Thesis Structure

The methodological choices of the chosen research perspective are elaborated in chapter two. These entail qualitative methods applied to an empirical case study. Equally presented is the data collection in terms of semi-structured interviews and we present the analysis methods to which we evaluative the assessment criteria of the quality of the study.

The succeeding three chapters introduce the theoretical framework which forms the later analysis. The first research question involves what a product service system (PSS) is, and this is answered in chapter three. Thus, chapter three entails an introduction to how services are understood and defined. This is followed by the theoretical notions of the combination of products and services, the definition of what a PSS is and the five classifications. The second question involves what value co-creation is from the perspective of the DART framework, and this is answered in chapter four. The chapter, therefore, defines value co-creation according to Prahalad and Ramaswamy's original idea including the DART framework which facilitates value co-creation. The third question relates to what forms of value that can be identified in the service management literature. This is answered in chapter five, after having started with a presentation of the elusive nature of value as a concept. Due to the intangibility of value, we present three forms of value: value-in-exchange, value-in-use and value-in-context.

After having presented the theoretical chapters, we introduce the empirical field of the companies Trackunit and MCFE and the collaboration. We find this case interesting and pertinent because it represents the complexity of the theoretical framework and an empirical ground for exploring value co-creation in a service context.

The thesis then moves to the analysis of the empirical field. The fourth question of how to characterise the product service system developed by Trackunit and MCFE is answered in chapter seven. This chapter is

the starting point of the analysis and forms the basis for the later chapters on value co-creation and forms of value. Chapter seven deals with the service context in which the collaboration takes place and what PSS the companies develop to create value. The chapter concludes that the solution is a service oriented PSS which is affected by operational integration and customisation. The fifth question involves how value co-creation from the perspective of DART is represented in the case. This is answered in chapter eight as it analyses the value co-creation process according to the DART framework: dialogue, access, risk assessment and transparency. The findings show that all buildings blocks are present and that additional three building blocks are important for the value co-creation in this specific case. The chapter ends with a revised framework for value co-creation introducing the building blocks: organisational mindset, participation and time, where the latter is divided in collaboration time and development time. The sixth question of which forms of value can be identified in the collaboration is presented in chapter nine. Thus, the chapter analyses the value from the collaboration according to the three value forms. The findings show that these three forms can describe the value. Furthermore, the findings show that value is experienced on different levels and we, therefore, conclude that value is not reciprocal. The chapter follows with the interviewees' illustrations of the value, and these lead us to present Synthesis 1 followed by the improved Synthesis 2.

Emerged from the findings and Synthesises 2, follows chapter 10 that presents six propositions. These aim at generalising the findings so they can be used by companies who wish to create value by engaging in co-creation collaborations in a service context.

We then proceed to chapter 11 in which we discuss and take a critical stance on the three main areas concerning whether the theoretical framework is aligned with the empirical findings. We conclude that the theory of value co-creation is conceptual and difficult to apply empirically. Furthermore, we question if value can be reciprocal in general. Lastly, we conclude that the three forms of value can co-exist, however, value-in-context precedes value-in-use and value-in-exchange. In essence, this chapter shows that theory and empiricism correspond; however, complete alignment between theory and practice is not possible within the scope of this thesis.

In chapter 12 the conclusion answers the problem statement guiding the thesis. Afterwards, we present managerial and theoretical implications and suggest a number of issues for further research.

Chapter 2: Methods: Research Strategy and Data Gathering

The purpose of the empirical part of the present study is to explore the value co-creation in a service context. We approach the research problem by applying the theoretical framework of co-creating value in a service system to an empirical case of co-creating value in the collaboration between Trackunit and MCFE.

The purpose of this chapter is to present methodological choices of the chosen research perspective, present the data collection and analysis methods to which we evaluative the assessment criteria of the quality of the study.

2.1. Qualitative Methods

Within certain research circles, the qualitative method is considered non-scientific because it is not subject to the same validity and reliability requirements as the quantitative method. Within qualitative methods, it is difficult to meet requirements such as generalisability, testability and verification. However, these quantitative requirements cannot be measured in qualitative methods as it involves different forms of knowledge, knowledge gathering and machining. Qualitative analyses aim at the unique, context-dependent, meaning-oriented and understanding-oriented (Fuglsang et al., 2014).

To establish understanding and clarity about the value co-creation in a service context, by using an empirical enquiry collaboratively with the case is a social action; therefore we work within social sciences. This kind of research activity would be difficult, if not impossible, to conduct had we taken an approach from natural sciences, which claims to be logical. Therefore, the ontological assumption of this thesis is that research into social actions takes place in authentic situations, which means that reality and research cannot be separated and is therefore inevitably subjective (Creswell, 1994 in Saunders et al., 2009). Accordingly, the epistemology behind this study is interpretivist, so we interpret situations and social roles with our set of meanings, related to the hermeneutic research position that we adopt (ibid). The interpretive epistemological position stresses the understanding of the social world, which we do when examining the interpretation of specific participants. In this case, we examine the management team members of Trackunit and MCFE and their thoughts and reflections on value when co-creating in a service context.

2.2. Case Design

This thesis investigates the value co-creation in a service context. Therefore, we choose a case study approach as a research strategy because it allows for focusing on understanding the dynamics present within a single setting (Eisenhardt, 1989). In this thesis, the collaboration between Trackunit and MCFE is the selected case and the case study functions as a concrete illustration, documentation and deep-drilling thematisation of theory and practice.

A case study is fundamentally found in qualitative hermeneutics and serves as an exemplary illustration of different theoretical points. A case study is a method of practical demonstration of theory, and it is a way of concretising knowledge through practical studies of individual cases. A case study is an advantage to use when we investigate a single case, a single phenomenon that cannot be understood or explained from the context in which it occurs (Yin, 1999 in Nielsen, 2009). Furthermore, in contrast to multiple case studies the advantage of using a single case study is that it can offer a better empirical ground for a deeper understanding of the phenomenon that needs to be studied in-depth (ibid). A case study uses several sources for data collection, and this thesis uses interviews and secondary documents as sources to explore value from co-creation in a service context.

2.3. Data Collection

We divide the data used in this thesis into primary and secondary data. The secondary data includes data from the companies' websites, press releases and annual reports. Within secondary data, we used primary documents in terms of confidential material of the collaboration including personas and information about workshops and the telematics solution. It is primary documents because these documents were created for a limited set of actors in a closed setting and not for the public (Brinkmann & Tanggaard, 2015). The secondary data was mainly used to establish knowledge about the companies and the case context and assess the relevance of the theory in relation to the specific case. The secondary data functioned as a basis for the primary data, the interviews. Our primary data is the five interviews we conducted with members of the management team of Trackunit and MCFE, and they are the foundation of the later analysis.

The data used to cover the different elements of the thesis is illustrated below.

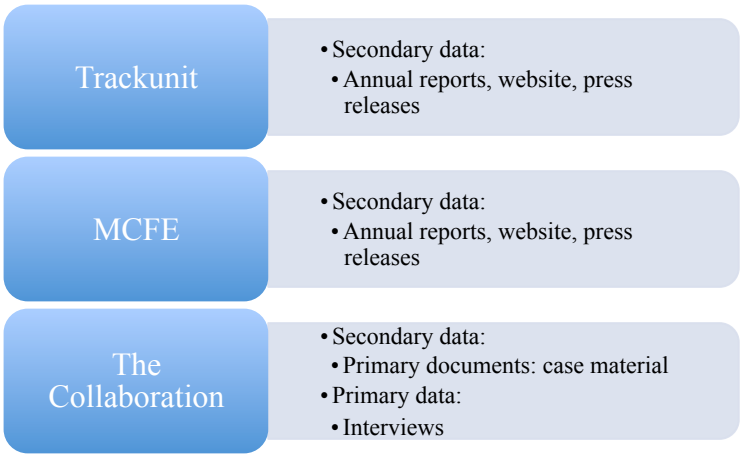

Figure 1: Own figure. Data used in the thesis.

Brinkmann and Kvale (2015) present two types of interviewers, which illustrates two different epistemological concepts of the interview process concerning the gathering of knowledge and the construction of knowledge: 'the mineworker' and 'the explorer' (Brinkmann & Kvale, 2015). The mineworker sees knowledge as something that can be dug up, often in static environments. On the other hand, the explorer looks for subjective, authentic meanings by speaking to different people and interpret these meanings into an understanding which is differentiated and developed through interpretations by the explorer. These interviewer metaphors represent ideal types of interview knowledge as either given or constructed. The mineworker seeks a given place for retrieving valid data such as documents, and the explorer seeks interviews and analyses and sees them as interwoven phases that constitute knowledge construction. For this thesis, we take on the role of both the mineworker and the explorer, in that we are the mineworker when we analyse secondary data in terms of document materials, but we are the explorer when analysing primary data, i.e. the interviews.

2.4. The Interview Process: Guide and Technique

We prepared the interviews in an idealised manner by defining it in seven phases according to Bourdieu's post-hoc description of an interview process (Bourdieu, 1999 in Brinkmann & Kvale, 2015). This approach is tied to the specific project and supports a dynamic and flexible approach to interviews (ibid). Although this section of this thesis may imply that the process has been a logical, linear and structured

one, it is not the case in reality. The reason for this presentation is of didactic considerations, as it is a more ideal and formal manner of presenting the process. We chose to follow the approach by Bourdieu because, as Brinkmann and Kvale state, the better prepared, the better the quality of the interview and hence a higher quality of knowledge. The approach is presented in table 1, and the remaining paragraphs follow the structure of the phases: thematising, design, interview, transcription, analysis, verification and findings.

<table>
<tr><th colspan="3">Thematising</th></tr>
<tr><td colspan="2">Value Co-creation</td><td>Value</td></tr>
<tr><td colspan="2">Purpose of the study is to analyse value co-creation in the Trackunit/MCFE case.
Semi-structured interviews are used to achieve the intended knowledge and answer the stated problem statement and research questions</td><td>Purpose of the study is to analyse the value creation in the Trackunit/MCFE case.
Semi-structured interviews are used to achieve the intended knowledge and answer the stated problem statement and research questions</td></tr>
<tr><th colspan="3">Design</th></tr>
<tr><td colspan="3">Five respondents. Three from Trackunit and two from MCFE.
All interviews conducted in the mid of March</td></tr>
<tr><th colspan="3">Interview</th></tr>
<tr><td>Case context</td><td>Co-creation</td><td>Value</td></tr>
<tr><td colspan="3">Five semi-structured individual interviews (two face-to-face and three via Skype) lasting 45-50 minutes recorded on iPhone</td></tr>
<tr><th colspan="3">Transcription</th></tr>
<tr><td colspan="3">All interviews were transcripted equalling 50 pages</td></tr>
<tr><th colspan="3">Analysis</th></tr>
<tr><td colspan="3">Thematic coding of concepts that we interviewed from combined with the overall themes we noted during the interviews. Top-down primarily but also bottom-up</td></tr>
<tr><th colspan="3">Verification</th></tr>
<tr><td colspan="3">The reliability and the validity was controlled throughout the project</td></tr>
<tr><th colspan="3">Findings</th></tr>
<tr><td colspan="3">The findings made up the foundation of this thesis' analysis and discussion</td></tr>
</table>

Table 1: Own table. Overview of the interview process for this thesis.

2.4.1. Thematising

The thematising phase is concerned with formulating the problem area which for the thesis is value co-creation in a service context. This we decided to investigate through qualitative interviews. As stated, qualitative research method is used to understand the world from an inside perspective as it gives descriptions of the human world, thus interviews provide well-informed knowledge of human

conversationality (Kahn and Cannell, 1957 Saunders et al., 2009). This means that the researcher must seek to study the subjects from their realities and contexts. To understand how individuals construct the world it is useful to conduct interviews because an interview is a conversation allowing individuals to interact and learn about each other's world, in that an interview is a constructed conversation:

> *"[...] where knowledge is constructed in the inter-action between the interviewer and the interviewee" (*Kahn and Cannell, 1957:1 in Saunders, 2009).

The choice of qualitative interviews and the fact that knowledge is constructed in the interaction mean that there is no objective truth. This aligns with the hermeneutic approach where an absolute truth cannot be obtained, neither is it the goal, just as objective truth is not the aim of this thesis. There are various forms of qualitative interviews, however, to answer the problem statement and research questions, the interviews were conducted as individual semi-structured interviews. The semi-structured form allows the interviewer to get insights into the world of the interviewee in a purposeful way (Kvale, 2007), which will be elaborated.

2.4.2. Design

Based on the confidential case material provided the initial plan was to interview the persons that appeared in this. However, we discovered that these persons only participated in few workshops, so we changed course because we were informed of other people who had been engaged in the process, and we decided they were more relevant to the scope of this thesis. This led us to a total of six possible interviewees who were relevant for discussing the value creation since they are part of the companies' management and therefore those with the main influence on and information about the collaboration. All of them were contacted, from which five responded they were willing to conduct an interview. The selection process of respondents is illustrated in the below figure 2.

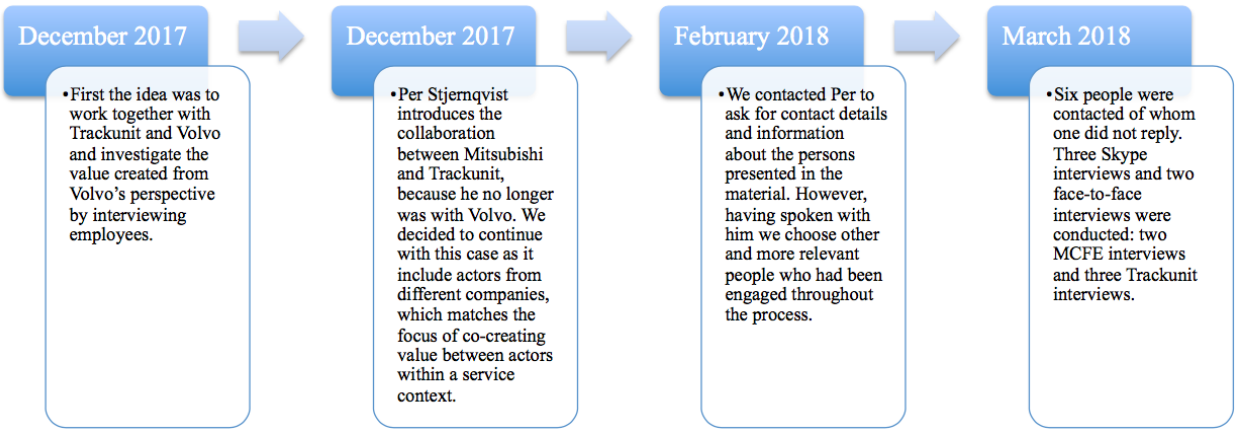

Figure 2: Own figure. The selection process.

Thus, the final group of respondents is presented in table 2, which shows the interviewee references and the appendices where the transcriptions appear. The interviewee references will be used throughout the thesis when quoting the interviewees. It is our assessment that the selection of respondents is sufficient to provide us with the necessary answers to our problem statement and research questions.

Name	Interviewee reference	Appendix	Position	Company
Hans Seijger	IV1	Appendix 1	VP, Marketing & Sales	MCFE
Gerdrik Pongers	IV2	Appendix 2 + 6	Country Manager, NL	Trackunit
Willem de Jong	IV3	Appendix 3 + 6	General Manager, Equipment	MCFE
Jacob Zimmer	IV4	Appendix 4 + 6	Senior Software Manager	Trackunit
Per Stjernqvist	IV5	Appendix 5 + 6	VP, Servitization & Solutions	Trackunit

Table 2: Own table. Interviewee reference and appendix reference.

The key interviewee for this thesis is Per Stjernqvist. Besides a formal interview in March, we held explorative phone conversations with Per, two in December and one in February, from where he provided the confidential case information which is used as secondary data. Per was initially contacted because of his special knowledge on cases within the areas of product services systems and co-creation, and the talks with him helped guide the direction for this thesis. Important to note is that key figures tend to think and

act strategically from an overview of organisational interests when they pass on information (Høgsbro, 2008). We know that he may not have been able to give us the full scope of information; however, we have used the information from him to establish an understanding of the case. We do not classify the early talks with Per as interviews, and we do not base the analysis on information provided in these.

2.4.3. Interview

The semi-structured interviews seek to acquire descriptions of the interviewees' world to interpret the described phenomena. This means that we investigate value co-creation in a service context based on the thoughts and reflections of the participants engaged in the collaboration. To do so, we created a sequence of topics to be covered as well as suggestions for specific questions in an interview guide (appendix 7).

The interview guide was prepared beforehand with a more or less set order of 15 A-questions with supporting B-questions but these varied depending on the flow of the conversation. Additional questions were asked when necessary to explore the problem statement and research questions fully. The questions were divided into three areas: first, general questions related to the case context. Second, questions related to the theory of value co-creation, and last, questions related to the theory of value and how the respondents experience and illustrate this. These questions served as a guideline, and it is important to stress that the interviews aimed to get insights into the interviewees' thoughts and reflections. Therefore, the flow of the interview questions varied and did not follow the set sequence of the interview guide and some questions were even omitted. This is especially related to the questions regarding the DART framework since these building blocks overlap, both according to the theory of value co-creation and in practice, and we, therefore, preferred to have a conversation with the interviewees and let them speak, rather than following a stringent plan. We are aware that by not following the interview guide this could result in not getting the information relevant to this thesis; however, we preferred having the flow of conversation guiding the information we retrieved.

We conducted additional interviews with the same interviewees in April to test the validity of the analysis' findings. The interviews were with four of the interviewees as one did not respond to our second request. This approach is in line with one of the hermeneutical principles of continuous processing back and forth between parts and whole, a consequence of the hermeneutical circle (Brinkmann & Kvale, 2009; Højberg, 2014; Mantzavinos, 2016).

Before the interviews were conducted we sent an information letter (appendix 8) to each of the participants informing about topic, structure and practicalities such as language, time and recording. The participants were informed that the interview would be about the Trackunit and MCFE concerning value co-creation. Thereby, the interview participants had the opportunity to think about the subject and the possibility of investigating the theoretical framework before the interview, which may mean that there has been a greater mutual understanding of specific words and meanings. In the interview situation we did not elaborate on the practicalities, rather we initiated the interview with a briefing on the three areas of the interview. When asking questions related to the theory of value, we found it relevant to define value based on how it is viewed in this thesis to create a shared understanding of the concept and get more precise answers and illustrations.

Due to geographical distances, three interviews were conducted via Skype which is synchronous communication in time but asynchronous communication in place (Opdenakker, 2006). Although this was generally a positive experience allowing us to get the perspective of someone who was not easy to access in other manners, the main disadvantage was the reduction of social cues. The used medium did not support visual graphics, so facial expressions, body language etc. could not be used as a source of extra information. Instead, we had social cues such as voice and intonation available to help interpret the situation and the interviewee. A disadvantage of asynchronous communication is that the interviewer does not know the situation of interviewee, and so the interviewer has fewer possibilities to create a pleasant interview ambience. As we experienced there was a greater need for creation of a good ambience than anticipated. We deliberately did not plan to ask about the interviewees' position, educational level or years within the company, as we wanted to spend time most efficiently, and this information was available to us from desktop searches (such as LinkedIn and Google). However, this changed once we got started with the interviews, as it created a better atmosphere to begin with a presentation of the interviewers and interviewee. The good atmosphere has a positive effect on the level of trust and answers to our questions (Brinkmann & Kvale, 2009).

The remaining two interviews were conducted face-to-face since time and geography allowed for this. These are synchronous communication in time and place. It enables us to take advantage of social cues such as body language etc., and this provides nuances to the verbal answers and the interpretation of the conversation in the specific interview. This is considered very important for interviews where the focus is on understanding the interviewee's feelings and thoughts on a subject (ibid).

A philosophical hermeneutical analysis is created by dialogue and conversation because it is in this mutual interaction between the social actors that understanding and meaning arise. It is crucial that the conversation is driven by an open-minded researcher who engages in the conversation with the expectation that what the other says is meaningful and truthful. However, a discussion arises as to whether it is possible to create an open and equal dialogue in interviews. Gadamer's requirements for conversation we question as we do not immediately accept the premise that a conversation is open and equal. Instead, the situation is characterised by an asymmetric structure and a power relationship between the researchers and interviewees. On the one hand, the researchers are in a position of power, being the ones who control the actual conversational situation and what is being spoken. On the other hand, the interviewee holds knowledge that we as researchers want access to but the interviewee can withhold or share as they find suitable.

2.4.4. Transcription

All the interviews were recorded and transcripted and constitute the main data used in the analysis. The interviews were transcribed to ensure data documentation and transparency for the reader. The transcribed interviews are in appendix 1-5. The appendices make it possible for the reader to view how the interviews proceeded, the questions asked by the interviewers and the phrasing of the questions. Thereby, the reader can evaluate whether they would reach the same conclusions as we did or if the reader would deduce another meaning from the interviews. Furthermore, the transcriptions are the starting point for coding of the interviews which will be elaborated later.

The interviews were also transcripted with the goal of enhancing our understanding of the data. By transcribing them, we got deeper insights into the interviews, and this created a better basis for the analysis. We split the act of transcription between us, so one transcripted two interviews and the other three interviews. We used the same procedure for transcription, so it was easy to make cross-comparison of the interviews despite being transcripted by different researchers. This procedure entailed leaving out stutters, pause for thoughts, emotional tones in the interaction, speech impediments and alike disruptions of meaning; nevertheless, the transcription process was done with high loyalty to the respondents spoken language. Thereby, the written text resembles the spoken language because we were mainly interested in the actual context of the interviews.

Despite the fact that we as researchers tried to stay as faithful to the spoken language in the transcription process, the transcripts are not the rock-bottom data of interview research; instead, they are artificial constructions from an oral to a written mode of communication (Brinkmann & Kvale, 2009). The interviews took place in a social context containing body language and vocal pitch. However, these elements were excluded in the transcription process and so every transcription from one context to another involves a series of judgements and decisions and so the final transcripts are decontextualised conversations (ibid). Even though these elements were left out of the transcripts, they have still unconsciously influenced us when moving into the analysis.

2.4.5. Analysis

Applying a qualitative content analysis approach the data was first coded and categorised to form common themes using the NVivo11 qualitative software. The coding was conducted on the transcripts of the interviews to identify keywords and phrases that would give insights and meaning to the data.

The purpose of the actions was to code and categorise the empirical findings for knowledge transferability and calibration of these in the next stage of the study, i.e. the analysis (Brinkmann, 2013a). We used a top-down approach where the empirical data was read through and organised into categories and subcategories based on themes related to the problem statement and research questions. Additionally, a bottom-up approach was used as we saw patterns in the interviews during the coding practice that needed to be included in the analysis as well. This coding technique was a method for us to organise and categorise complex data chunks, thereby making it easier understandable and accessible (Miles, Huberman, & Saldaña, 2014) We coded 2.5 interviews each until the researcher felt that no new concepts emerged. Hereafter we swapped the interviews, and the coding was revisited by each of us individually. This was done for three reasons: 1) to see if there were overlaps where we agreed on the same coding, 2) to scrutinise for any information that might have been overlooked in the first coding, and 3) that the significance of the information identified was strong enough, thereby strengthening the arithmetic intersubjectivity (Brinkmann & Kvale, 2015). Finally, these concepts were compared with existing theory and literature to build the analysis and discussion.

2.4.6. Verification

2.4.6.1. Reliability

Reliability relates to whether the study can be replicated by alternative researchers and reveal similar information (Saunders et al., 2009). The interactive nature of the communication in a semi-structured interview causes a lack of standardisation of the interviews which limits the reliability because the analytical process of understanding the interviewee can never be grasped exactly by different people. Thus, the interaction that takes place cannot necessarily be captured and recreated by others (Saunders et al., 2009). This is because what is being told and what is understood will always be constructed in the conversational interaction of the interview. Therefore, the findings from the interviews are not necessarily repeatable since they reflect the opinions and thoughts of the interviewee and the interpretation by the interviewer at the time the information was collected, which is in a situation that may be subject to change (Saunders et al., 2009). Even though we are aware that others might not come to the same conclusion as ours, we argue that the reliability is strengthened because of the in-depth presentation of the reflections and choices of the investigation.

2.4.6.2. Validity

Bryman (Bryman, 2015) argues that validity:

> *"[...] refers to whether a measure of a concept really measures that concept"* (Bryman, 2015).

The questions in the interview guide all relate to the three main areas of this thesis, and so the interviewees' answers correspond to the problem statement. Thereby, the validity is strengthened because there is coherence between the problem statement and the research questions and the focus of the investigation. The validity is further strengthened since the findings are tested in a dialogue with the interviewees which Kvale presents as communicative validity (Kvale, 1995).

In terms of constructing validity, we have used the approach of triangulation (Saunders et al., 2009). This approach aimed at validating and increasing the credibility of the data collected, since we have used more than two sources to verify the data. Using multiple sources allow for the higher possibility of the sources clashing, and thereby we can be more confident with the results, and it gives a greater hope of the researchers overcoming inherent biases (Yin, 2009). We have done so by using multiple theories and

concepts, interviewing people and using different empirical materials. The purpose of triangulation has not been to check results but about grasping the complexity of a specific context (ibid).

Since we have conducted qualitative interviews, we as researchers have the monopoly of interpreting the statements of the subject, that is, we have the exclusive privilege of understanding and reporting what the interviewee meant. We can only make informed judgements based on our pre-understanding which is accounted for by our hermeneutic perspective and the chosen analysis strategy, in which we do not reflect reality but depend on the reasoning that forms the basis of our interpretations (Brinkmann, 2013b). With hermeneutics, knowledge is not a requirement for objectivity meaning that it is appreciated that there is a diversity of interpretations. This serves as a support for the validity of this thesis' data processing and analysis (ibid).

We are aware that there is an asymmetric relationship between the researcher and the interviewed subject and this might influence the validity. The dialogical intersubjectivity determines whether there is a communicative validation between the researcher and the subject, as an interview is a conversation between these two (ibid). To ensure this, we looked into the interviewees' academic background and found that most had an MSc or similar degree. This gives a sense of strength for the dialogical intersubjectivity in the interviews, as we take into consideration that the interviewed people and we as researchers have similar knowledge perspectives.

This chapter has covered the applied methods, and the following three chapters present the theoretical framework for this thesis.

Chapter 3: Product Service System

The chapter presents the theoretical aspects of services used in this thesis followed by the theoretical framework of product service systems. It seeks to provide the reader with an overview of the theoretical concepts applied throughout the thesis. In this chapter we answer the following research question:

- What is a product service system?

This chapter starts with an introduction to how services are understood and defined in this thesis. This is followed by a section on theoretical notions on the combination of products and services which leads to a definition of what a product service system is and the five classifications.

3.1. Adding Services to Create Value

There are many definitions related to the term service, especially in the field of distinguishing services and products. There are various definitional problems, which is an issue outside the scope of this study. To add clarity to the concept, we illustrate the classic distinction and their key elements (Mont, 2002 in Ceschin, 2014):

- Products: the tangible artefacts of the system
- Services: includes services that make products available (sales services, renting, sharing, etc.) and services to manage products in the use and end-of-life phases (maintenance, upgrading, take back, etc.).

Today, this conventional definition of companies operating in either product or service industries no longer applies, especially due to advanced technology and other trends. It has become obvious that there is an inseparability between goods and services (Baines, 2013a, 2013b; Vandermerwe & Rada, 1988). As Vandermerwe and Rada note:

> *"It is no longer valid for either industries or individual corporations to draw simplistic distinctions between goods and services or assume they can do one without the other. Most firms today, are to a lesser or greater extent, in both. Much of this is due to managers looking at their customers needs as a whole, moving from the old and outdated focus on goods or*

> *services to integrated 'bundles' or systems, as they are sometimes referred to, with services in the lead role"* (Vandermerwe & Rada, 1988:314).

Our take from this that more and more corporations are adding value to their core offerings through services. In this process many industries and firms experience a shift in their core business and revenue generation so that services no longer is a separate category for managers to consider, but rather an all-pervasive part of their strategy and corporate planning. Various authors (Baines, Lightfoot, Benedetinni, & Kay, 2009; Payne et al., 2008; Vandermerwe & Rada, 1988) highlight that the best companies of the future will be those who find ways of developing services to create and keep customers and thereby sustain a competitive advantage.

Grönroos (2011) and other scholars (Neely, Benedetinni, & Visnjic, 2011; Vandermerwe & Rada, 1988; Vargo & Lusch, 2004) stress the process nature of services, arguing that there are at least three different aspects:

1) Service as an activity

2) Service as a perspective on the customer's value creation

3) Service as a perspective on the provider's activities.

The first aspect, service as an activity, is what is traditionally meant by the word service implying a process where someone does something to assist someone else in daily practices, be it either activities or processes (Grönroos, 2008). The second and third aspects relate to what can be applied as a foundation for customers' purchase and consumption processes and organisations' business and marketing strategies, respectively. The service concept is more important for businesses as a perspective rather than as an activity only, as Bo Edvardsson notes (Edvardsson, Gustafsson, & Roos, 2005):

> *"Service is a perspective on value creation rather than a category of market offerings"* (Edvardsson et al., 2005:113).

Therefore, this thesis relates to the second and third aspect when dealing with services since it is a perspective on value creation and business activities.

3.2. The Combination of Products and Services

Looking more into the combination of products and services, various authors have given different perspectives and definitions to this. One author who provides a definition of this topic is Andrew Neely (2009):

> *"It is a transformation process wherein product companies embrace a service orientation and/or develop more and better services, with the aim to: (i) satisfy customer's needs; (ii) enhance the firm's performance; (iii) achieve competitive advantages"* (Baines, 2013b; Marks et al., 2011; Neely, 2009).

This definition emphasises that the fundamental principle is to understand how the customer will use the combined product or service in a way that increases value. Furthermore, we interpret that this definition implies that services are not a static dimension of the business, but rather a dynamic and improving activity. Additionally, this definition highlights that competitive advantages and superior performance are rooted in customer insights. These insights form the basis for a customer relationship that develops from being solely a supplier to being a strategic partner.

3.3. The Concept of Product Service System

Tim Baines conceptualises the combination of products and services, which he calls a product service system (PSS):

> "*It involves the innovation of an organisation's capabilities and processes so that it can better create mutual value through a shift from selling a product to selling Product–Service Systems*" (Baines, 2007 in Baines, Lightfoot, Peppard, et al., 2009:554).

With this formulation, he proposes that companies should focus on selling combined solutions because it is the combination that delivers value (Baines, Lightfoot, Peppard, et al., 2009). Other authors have defined the concept of PSS in different ways which range from a sole focus on market and competitive aspects to include sustainability aspects as a part of a business model (Ceschin, 2014). We rely on Fabrizio Ceschin's definition of a PSS:

> *"An integrated system of products and services, delivered by one or more socio-economic actors, and designed to fulfil a specific customer need"* (Ceschin, 2014:24).

In this definition the word system refers to both the system of products and services designed to fulfil the need of a customer but system also covers the system of actors that produce and offer the combination of products and services. Hence, PSS is a specific distinction of value proposition which aims at satisfying the customer through the actual delivery of solutions instead of selling a product or service (ibid).

3.4. Product Service System Classifications

Hockerts and Weaver (2002) describe different types of PSSs (Hockets and Weaver, 2002 Ceschin, 2014) by putting forward three distinctions: 1) product oriented PSS, 2) use oriented PSS and 3) result oriented PSS. The product oriented PSS entails that the ownership of a tangible product is transferred to the customer whereas any additional services that contribute to the life cycle performance of the tangible product are provided by the manufacturer (Neely et al., 2011). A use oriented PSS offers the customer access to the product that enables the customer to get the wanted result. Thus, the company has ownership of the tangible product, and the customer receives the desired utility, the service of the product (ibid). With the result oriented PSS the company offers a customised mix of services to provide a specific solution which satisfies the customer. The mix of services is not owned by the customer, the company still maintains ownership and is paid for providing the agreed results (ibid).

In 2008, Neely added two more PSS classifications based on the argument that some companies have pursued different strategies to create a combined solution, strategies which do not fall within the areas of the original three classifications (Gaiardelli, Resta, Martinez, Pinto, & Albores, 2014). Thereby, he added the following two distinctions: 1) integration oriented PSS and 2) service oriented PSS. Integration oriented PSS implies a downstream move by adding services through vertical integration. The customer still receives ownership of the tangible product, but the supplier moves into other areas. The products are added as a service on top of the original product. Service oriented PSS incorporates services into the product itself thereby the product and service are coupled. The customer still obtains ownership of the tangible product, but services are offered as an integral part of the offering and add additional value. An example of this is health usage monitoring systems which utilise data collection and analysis techniques to help ensure availability, reliability and safety of vehicles (Wikipedia, 2017).

Product service systems have two key dimensions: 1) the degree of integration and 2) the degree of customisation (Krishnamurthy, Johansson, & Schlissberg, 2003). The degree of integration refers to how products and services need to be integrated into ways that add value to customers since the degree of integration across products and services is a key determinant of the value of the solution over the sum of individual parts. The value derives from two sources, marketing integration and operational integration: marketing integration across the entire customer decision-making and buying cycle, while operational integration refers to how the solutions work together. The degree of customisation refers to how the context rarely is identical for any two customers, and it is difficult to create a one-size-fits-all solution. Thus, the value of a solution stems from the fact that it is customised to the specific customer segments, or even the specific customer. The solution's value is also dependent on the value that the customers place on customisation (Krishnamurthy et al., 2003; Sawhney, 2006)

This chapter has presented the combination of products and services, and how companies have increased focus on this. The combination is defined as the concept of a product service system. A customised and integrated PSS delivers additional value, unlike stand-alone products or services. With a PSS, companies are more involved directly with the customer, and this interaction between the provider and the customer is a typical difference between respectively selling and buying a product or a service, and instead integrating products and services in one. Thus, a PSS forms the basis for a relationship where companies work together, and this relates to the next chapter which more clearly defines the value co-creation theory.

Chapter 4: Value Co-creation Based on the DART Framework

The chapter presents the theoretical framework of value co-creation as explained by the DART framework. The chapter seeks to provide the reader with an overview of the theoretical concepts that will be applied. In this chapter we will answer the following research question:

- What is value co-creation from the perspective of the DART framework?

This chapter starts by defining value co-creation, where we state that this thesis adheres to Prahalad and Ramaswamy's original ideas. Included in the authors' notion of value co-creation is the four building blocks that facilitate value co-creation, and so these will be presented.

4.1. The Concept of Value Co-creation

In their foundational paper, Prahalad and Ramaswamy define value co-creation as:

> *"A collaborative initiative in which all actors create value together"* (Prahalad & Ramaswamy, 2004 in Leclercq et al., 2016:30).

Although co-creation has various definitions, there are similarities in how the definitions should be understood. Leclerq, Hammedi and Poncin also expands the theory of value co-creation by providing the definition:

> *"A joint process during which value is reciprocally created for each actor (individuals, organizations, or networks)"* (Leclercq et al., 2016:30).

The word reciprocally is not meant as a noun in the sense of classical mathematics but as an adjective that denotes that value should be equally created for the actors (Cambridge Dictionary, 2018). This is supported by Vargo and Lusch (2011) and Truong (2012) whose works we draw on later in this thesis. In essence, we understand value co-creation as being a joint process where value is reciprocally created for each actor, whether it is individuals, organisations, or networks.

Payne (2008) and Grönroos (2008) further argue that value co-creation as a process also includes the exchange of resources. This exchange of resources is also expressed by Leclerq, Hammedi and Poncin (2016):

> *"Actors engage in the process by interacting and exchanging their resources with one another. The interactions occur on an engagement interface where each actor share its own resources, integrates the resources provided by others, and potentially develops new resources through a learning process"* (Leclercq et al., 2016:30).

From this, we understand that the authors conceptualise value co-creation as a process in which actors exchange resources, either physical or knowledge, and jointly create value. We will draw upon this conceptualisation when examining the value of co-creation in the case.

Many concepts are linked to value co-creation, but this thesis will only use value co-creation to avoid any ambiguities. The main concept that is often used in accordance with co-creation is co-production. Two elements distinguish co-production from co-creation, which we highlight to stress that we do not speak of co-production. The first element is that value co-creation requires the generation of value for all engaged actors, whereas co-production does not include any such constraint (Vargo & Lusch, 2004, 2008). The second element is that co-production is limited to collaboration among actors during the development stages, while value co-creation involves a much comprehensive scope and also includes interactions during the use of the offering (Leclercq et al., 2016; Vargo, 2008). Furthermore, we distinguish value co-creation from concepts such as value co-destruction and open innovation. Value co-destruction implies a shared use of resources and refers to practices which lead to a decline of value for at least one actor (Plé and Cáceres, 2010 in Leclercq et al., 2016). Value co-creation implies the shared use of resources, and so does open innovation. Open innovation refers to internal and external ideas which converge to create organisational and shared value through the innovation process (Chesbrough, 2010; Lee et al., 2012 in Leclercq et al., 2016). The difference between open innovation and co-creation is the underlying approach. Open innovation describes a process where involved actors are a priori determined, and there is a strong focus on innovation purposes. Value co-creation does not have a determined set of roles and includes a broader range of activities regarding value generation (Roser et al., 2013 and Enkel et al., 2009 in Leclercq et al., 2016)

In their works, Prahalad and Ramaswamy (Prahalad & Ramaswamy, 2004a, 2004b, 2004c), proposed and popularised value co-creation as a business strategy. This contribution builds on what Prahalad and Ramaswamy regard as observations of changes in the customer-firm relationship. The customer's role in the value chain has changed because there is better access to information and enabled networking between stakeholders. Value co-creation theory views the market as a forum where dialogue among customers, the

firm, and network of firms can take place. The market as a whole becomes inseparable from the value creation process (ibid). As Prahalad and Ramaswamy note:

> *"When perceiving the market as a forum, the company and the consumer converge, thereby making the relative role of consumers and companies at any given moment unpredictable, which is the reason for the constantly shifting pattern of roles for individuals and firms"* (Prahalad & Ramaswamy, 2004c:134).

Taking this into consideration, there are no longer predefined, distinct and separate roles of players in the system; instead, roles may be temporary and shift as circumstances change. This new frontier of co-creating value is equated as Company = Competitor = Partner = Collaborator = Investor = Consumer (Prahalad & Ramaswamy, 2004c:135). Additionally, customers should no longer be divided into B2*B* or B2*C* customers, because every individual who interacts with a firm is a customer. Thereby, individuals are both collaborators and competitors, in that they are collaborators in co-creating value and competitors for the extraction of economic value (ibid). It does not automatically lead to value co-creation that actors interact and exchange resources and provide technologies and infrastructures. Rather, it requires that they address the challenge of generating participants' engagement and maintains this over time (Nambisan and Baron, 2009; Brodie et al., 2013; Kumar et al., 2010 in Leclercq et al., 2016).

With the varying definitions of value co-creation, we find Prahalad and Ramaswamy's to be the one that provides a tool for analysis of a value co-creation process. This tool has interaction as the central focus and dialogue, access, risk assessment and transparency are building blocks for understanding how interactions impact the value co-creation process.

4.2. The Building Blocks of the DART Framework

Prahalad and Ramaswamy present four building blocks of interactions to facilitate a co-creation process. The framework was originally developed to focus on the facilitation of value co-creation between firm and consumer. In this thesis, we apply the framework to a B2B context, and so the theory is presented with this in mind. The building blocks focus on interaction challenge the way companies traditionally have handled dialogue, access, risk assessment and transparency. In a co-creation process, the four building blocks often blend an some building blocks will be inherent, while others may be evolving (Prahalad &

Ramaswamy, 2004a, 2004b, 2004c). These building blocks are constituted in the DART framework: dialogue, access, risk assessment and transparency, these are presented in the following four sections and illustrated in figure 3.

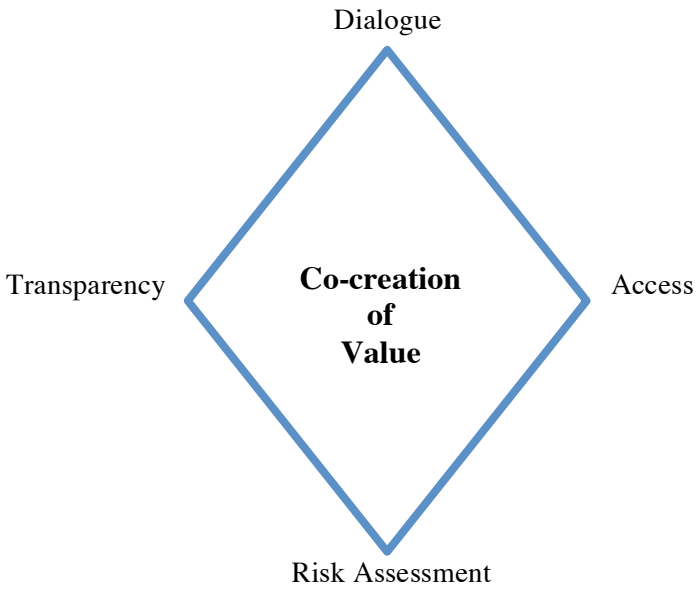

Figure 3: The DART framework. Recreation of original figure (Prahalad & Ramaswamy, 2004b).

4.2.1. Dialogue

Dialogue implies interactivity, deep engagement and a willingness from parties to engage in the co-creation process. It implies shared learning and communication between two equal problem solvers, and it requires a forum in which the dialogue can take place. Dialogue must encapsulate both's interests, and the customer and the firm must have clearly defined rules of engagement. Dialogue is not just listening to the customer and sharing knowledge but indicates qualitative new levels of understanding between the parties (Prahalad & Ramaswamy, 2004b, 2004c).

4.2.2. Access

The DART framework does not give much on how to define and operationalise access because it is summarised as:

"Access begins with information and tools" (Prahalad & Ramaswamy, 2004a:7).

It is expected that getting access to and using the knowledge and other resources from firms can result in new services that improve value for all engaged stakeholders, including financial value (Jouny-rivier et al., 2017). Therefore, the view we apply for this thesis is that access is the emphasis on the availability of information and knowledge. This challenges the traditional notion that value can be experienced through ownership of products or services. Instead, companies can broaden their business opportunities if they focus on uncoupling the notion of access from ownership and thereby emphasise access to multiple points of interactions. Thus, interaction provides access to knowledge, tools and information, and this influences the value co-creation process.

4.2.3. Risk Assessment

This building block relates to the probability of harm. Traditionally a company produced goods to be sold in the market, and so the company assumed it was better at assessing and managing the risks than those buying the products. Thereby, when communicating with another actor, the focus was mainly on the benefits and not the risks. When companies start to co-create value, the emphasis is on the consideration of the trade-off between risks and benefits between involved actors so they can make an informed choice. The parties should have a dialogue about the risks and also make considerations of who shoulder responsibility for risks. When verbalising the risks in a co-creation process, this can create new levels of trust between actors (Prahalad & Ramaswamy, 2004a, 2004c).

4.2.4. Transparency

Transparency focuses on information symmetry so that everyone gets comprehensive, timely and accurate information. Previously, firms benefited from the information asymmetry between firms and customers. Companies should have information infrastructures which are centred around the customers and encourage active participation in all aspects of the co-creation process, such as information search, the configuration of products and services, fulfilment and consumption. Furthermore, transparency of information is also important to establish trust between individuals and companies (Prahalad & Ramaswamy, 2004a). The removal of information asymmetry must be a voluntary act by the companies

and is closely linked with the willingness of access, and creating high levels of transparency is increasingly desirable for companies (ibid).

To sum up, Prahalad and Ramaswamy provide the DART framework as a tool to analyse a value co-creation process; nevertheless, they do not go into details with how they view value in the value co-creation process. Thus, value co-creation remains an intangible and slightly fluffy theory, and this influences the determination of the value created. Therefore, the following chapter will provide concepts to understand exactly this value from a value co-creation process.

Chapter 5: Three Forms of Value

The chapter provides the reader with an overview of the theoretical concepts related to value within the service literature, which will be applied throughout the thesis. The previous chapter elaborated on value co-creation on a conceptual level and did not further elaborate on what value actually is. Therefore, this chapter elaborates on what value is and presents three forms of value. In this chapter we will answer the following research question:

- What forms of value can be identified in the service management literature?

In this chapter we start by presenting the elusive nature of value as a concept. Due to the intangibility of the value we draw on concepts from the service management literature and present three forms of value: Value-in-exchange, value-in-use and value-in-context.

5.1. Can Value be Defined?

Value is perhaps the most ill-defined and ambiguous concept in service marketing and management (Sánchez-Fernández & Iniesta-Bonillo, 2007; Woodall, 2003). According to Khalifa (2004), the concept has become one of the most overused and misused in the social sciences in general and in the management literature in particular. Often value implies some form of assessment of benefits against sacrifice, meaning that the essential part of value is the optimisation of trade-offs that the parties make between the invested resources and the expected benefit that they will gain (Sheth and Uslay, 2007; Nambisan and Baron, 2007; Roberts et al., 2014 in Kohtamäki & Rajala, 2016). A commonly cited definition of value is given by Zeithaml (1988) who expresses value as a trade-off between:

> *"[...] the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given"* (Zeithaml, 1988:14).

Grönroos (2011) supports this when he argues:

> *"Value creation is a process through which the user becomes better off in some respect or which increases the customer's well-being"* (Grönroos, 2011:282).

Defining value as something that gives a user a feeling of being 'better off than before' and as a trade-off is a simple definition but it indicates the focus of the process of value creation. However, value to the individual can differ, and therefore it is an elusive concept perceived in an individualistic way.

A perspective to view value creation is as a joint integration of resources by multiple actors associated with an exchange. Specifically, SD Logic emphasises value as created by multiple actors, rather than as created by a single actor (Chandler & Vargo, 2011; Vargo & Lusch, 2004, 2008). Various scholars point out that the discussion of value dates back to Aristotle, who distinguished between use value and exchange value (Dahlgaard-Park, 2015; Grönroos, 2011). The primacy of use value was widely accepted among early authors and in the development of economic thought, especially by Adam Smith's early distinction between 'real value' (use value) and 'nominal value' (exchange value, e.g. money). However, much of early economic theory was based on exchange value, mostly as a matter of convenience (ibid). Recent years have represented an important shift in the phenomenological nature of value (Edvardsson et al., 2011), which is captured by the concept of value-in-use and later extended by the concept of value-in-context (Chandler & Vargo, 2011; Vargo & Lusch, 2008). The latter implies that value may be generated from indirect sources, such as the influences of other users and that value is co-created within a context (Buchanan and Dawson, 2007; Kates, 2004; Merz et al., 2009; Vallaster and von Wallpach, 2013 in Leclercq et al., 2016)

We choose to use these forms of value because they assume that value occurs between several actors, while the latter two value forms assume that value is co-created when all participating actors derive value from their interactions. Therefore, this thesis adheres to value as based on these three forms when exploring the stated research questions.

5.2. Value-in-exchange

Value-in-exchange embeds value in products that are outputs of companies' manufacturing processes (Grönroos, 2008). The conventional value concept is value-in-exchange which focuses on the price obtained by the seller, and value is created by the firm in the form of a valuable good that is exchanged in the marketplace for money or other goods. Thereby, value is defined and measured by this exchange transaction (Vargo & Lusch, 2004).

We find that in the service management literature value-in-exchange is often mentioned as a contrast to the two other forms of value; therefore, it provides fewer descriptions of the concept. This means that a short description of the concept is provided here since we use the service management literature as the basis for this thesis.

5.3. Value-in-use

The concept of value-in-use implies that value creation occurs through usage. A resource in itself does not have intrinsic value but when it is applied and integrated it becomes valuable for an actor (Vargo & Lusch, 2008). As Vargo and Lusch note:

> *"Value is perceived and determined by the consumer on the basis of 'value-in-use'"* (Vargo & Lusch, 2004:7).

The primary unit of exchange comes from the usage of a good or service, and this implies that value and value creation is viewed from the perspective of a customer, or any other user, and not the provider. With this form of value, the roles of producers and consumers are not distinct, meaning that value is always co-created in interactions between providers and beneficiaries through the integration of resources and application of competencies (Vargo, 2008). Thereby, Vargo and Lusch argue that the customer plays a vital role and become a co-creator. The authors also argue that value is a result of a beneficial application of operant and operand resources in the process (Vargo & Lusch, 2004). The authors describe the distinction between operand and operant resources where operand resources are physical, e.g. natural resources, while operant resources are processional or non-physical, e.g. knowledge and skills (Vargo, 2008; Vargo & Lusch, 2004, 2008).

Value-in-use is defined from a customer's point of view where they independently can create value (Grönroos, 2008, 2011; Grönroos & Voima, 2013). Companies, on the other hand, cannot independently create or deliver value; instead, they can create value propositions, and these can be offered to the customer. If the customer accepts these value propositions, then the two actors can collaboratively create value in the interaction between the customer and the company (Vargo, 2008). A customer co-create value by using the value propositions provided by the company and combining these with individual skills, and this combination creates value-in-use (Grönroos, 2008). Thereby, these value propositions act as potential value for the customer (Vargo & Lusch, 2011). Grönroos (2008) agrees with this by arguing that a

company's resources can be used as a value foundation which can facilitate customers' fulfilment of value-in-use, and he calls this fulfilment real value. This means that a company's activities such as design, development, manufacturing and delivery are all value providers which act as facilitators of the real value created. These activities do not create value, but they supplement the customer's possible value-in-use (Grönroos, 2008, 2011; Grönroos & Voima, 2013). This Gummesson (2007) (in Kohtamäki & Rajala, 2016) agrees with by arguing:

> *"Value is actualized in the customer usage process rather than in the supplier value chain"* (Kohtamäki & Rajala, 2016:6).

Simply put, it can be stated:

> *"Basically, production is generation of potential value, whereas usage is generation of real value"* (Grönroos, 2011:283).

Thereby, companies should focus on assisting a customer's value creation by supplying goods and services that support the customer's creation of value-in-use (Grönroos, 2008).

We use value creation spheres to describe the interaction between the provider and the customer. This consists of three spheres which can lead to the creation of value-in-use: 1) provider sphere, 2) customer sphere and 3) joint sphere. We illustrate this is in figure 4. 1) The provider sphere represents the production of resources and processes for a customer's use, which facilitates the customer's value creation, and in this sphere, the firm provides potential value-in-use. 2) The customer sphere is closed to the provider, and the customer creates value as value-in-use independently of the provider. 3) The joint sphere lies between the provider sphere and the customer sphere. A customer can choose to engage with the company, and thereby the value creation starts in the joint sphere where the two actors interact. This joint sphere is a value creation opportunity for the firm. According to the value-in-use concept, the customer is in charge of the value creation, but by moving into the joint sphere and interacting with the company, the company may influence the customer's value creation process (Grönroos, 2011).

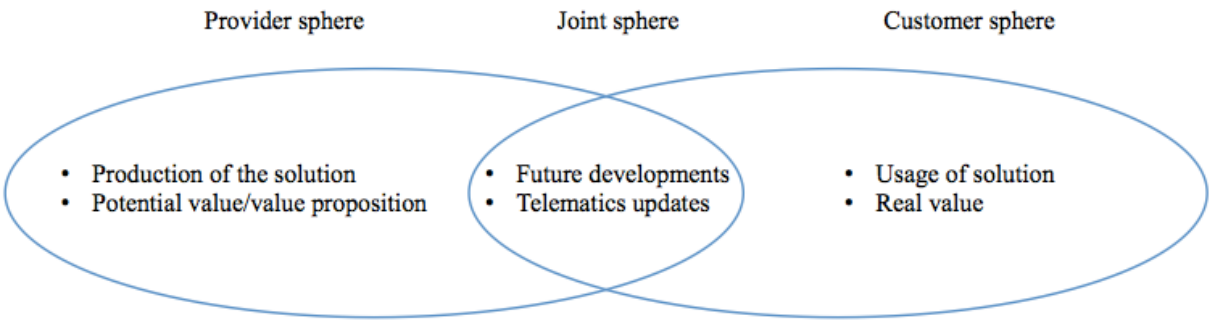

Figure 4: Own figure. Value creation spheres based on Grönroos, 2011; Grönroos & Voima, 2013.

5.4. Value-in-context

Value-in-context is a broader and more general concept which includes both value-in-use and value-in-exchange, and so value-in-context encapsulates both the customer-centric view (value-in-use) and the provider-centric view (value-in-exchange) (Gummesson & Mele, 2010). Value-in-context includes a network aspect which relates back to Prahalad and Ramaswamy who argue that value creation is supported by company networks (Prahalad & Ramaswamy, 2004b; Vargo & Lusch, 2011). Chandler and Vargo (2011) provides the following definition:

> *"[...] the context is a unique set of actors with unique reciprocal links among them"* (Chandler & Vargo, 2011).

Various authors have recognised value as created in context (Chandler & Vargo, 2011; Vargo, 2008) whether it is in social contexts (Edvardsson et al., 2011), in experience (Ramaswamy, 2011) or in practice (Holttinen, 2010; Korkman, 2006 in Grönroos & Voima, 2013). The notion of value-in-context stems Vargo and Lusch's argument that value is uniquely and phenomenologically determined by the beneficiary (Vargo, Maglio, & Archpru, 2008). With this view, the context of value creation is as important to the creation of value as the competences of the participating parties. The human experience of a service is based on the integration of resources and the activity of the actor in a specific context (Löbler & Hahn, 2015). Actors thereby ascribe value to the parts of context they experience as important. Löbler and Hahn (2015) argue:

> *"All resource-integrating activities are performed in a specific context and therefore the value co-creation process is context-dependent"* (Löbler & Hahn, 2015).

Resource integration is an on-going process by an actor because it is a series of performed activities (Payne et al., 2008). This correspond with value co-creation because value co-creation cannot be separated from the resource integrating activities performed by an actor (Löbler & Hahn, 2015). Furthermore, many actors and links may constitute one specific context, while two actors and few links may constitute another context. Thus, it is the combination of actors in a network and their competencies and resources that are determinants of value-in-context. With the varying sizes of contexts, the resources and services will be different. Additionally, the actors, links, and contexts are complex because links between two actors can affect other actors or links in the context and vice versa. This is because each actor, be it an individual or a company, is connected to many other actors (Chandler & Vargo, 2011).

Chapter 6: Introducing the Empirical Field: Trackunit and MCFE

This thesis employs a case study approach in which two companies are the central players: Trackunit and MCFE. The companies will be presented in the following paragraphs. The company descriptions are short introductions since the pivotal point of analysis is the process of the collaboration, and not the companies' products and activities. Thus, companies within another industry or with another product portfolio could likewise have served as the object of this case study, as discussed in the methodology section. Therefore, this chapter aims to provide the reader with an understanding of the context these two companies operate in individually and thereby, also the context they are engaged in collectively and from which the process of investigation springs.

The chapter presents the companies Trackunit and MCFE and ends with an introduction to the collaboration as the empirical field.

6.1. Trackunit

Trackunit develops innovative telematics[1] and software solutions for companies within building, construction and industry. The company provides solutions for stakeholders in the supply chain such as machine manufacturers, machine dealers, machine landlords, contractors and operators (PWC, 2017). These solutions are services that connect machinery within construction (Trackunit, 2017, 2018b), what is often referred to as tracking devices. With these tracking devices, Trackunit wants to change the way telematics traditionally have been used as backwards-looking data gathering. Instead, Trackunit collects and analyses real-time machine data so companies can extract proactive and predictive information and use this to improve their business foresight (ibid). The company wants to create services that connect the entire ecosystem within construction (Trackunit, 2018b). The design and development of the solutions (software and hardware) are carried out at the headquarter while the production has been outsourced to BB Electronics in Horsens, Denmark (ibid). Trackunit's headquarter is located in Aalborg, Denmark, with 110 employees supporting customers in more than 65 countries, and the company has subsidiaries in Sweden, Norway, France, Holland, Germany, England and the United States (ibid).

[1] Technopedia's definition of telematics: "Telematics encompasses all tools and technologies that are built by integrating telecommunications and information and communication technologies. Telematics is used to create and manage holistic communication system via the ability to send, receive and process information between remote devices, objects or entities.

6.2. Mitsubishi Caterpillar Forklift Europe

Mitsubishi Caterpillar Forklift is a threefold corporation consisting of 1) Mitsubishi Caterpillar Forklift America Inc., based in Mentor, Ohio, 2) Mitsubishi Caterpillar Forklift Asia Ltd., based in Singapore, and 3) Mitsubishi Caterpillar Forklift Europe B.V. based in Almere, the Netherlands. This thesis deals with Mitsubishi Caterpillar Forklift Europe which covers the European, African and Middle East markets (Reuters, 1992). MCFE designs, manufactures, sells and distributes a range of high-quality, innovative counterbalance (IC engine and electric) trucks, warehouse trucks and automated guided vehicles (AGVs) along with intelligent solutions and customer-focused services (Bloomberg, 2018; Wikipedia, 2018). MCFE's vision is to create 'the best user experience in the market' which includes involvement of customers in the process with the aim of creating a better global society by providing innovative materials handling solutions. MCFE has sales and distribution offices in Finland, Denmark, Russia, France, Germany and Dubai and the company engage approximately 600 employees (MCFE, 2018).

6.3. The Collaboration

At the end of 2016, Trackunit and MCFE started a co-creation process with the aim of developing a telematics solution, one we later characterise as a product service system, which is expected to create value for both companies. The focus of this thesis is not on the technical specifications of the solution, but rather how the companies have co-created and how and in which ways value has been created for the parties.

The reason for developing a telematics solution is that the forklift market is a competitive environment and the development of intelligent forklifts is one key trend that will gain traction. Such advancements in technology make it possible to integrate forklifts with sensors and other components. The sensors transmit signals which include collision detection, speed control to ensure safety, and maintenance reminders which also improve fork speed optimisation (Technavio, 2017). Trackunit develops the devices that make it possible to monitor equipment remotely, which is what MCFE needs to stay ahead in the competitive market. When the collaboration started the advanced solution that connects the fleet owner, the operator, the service engineer, and others, and harvest data from the ecosystem was not in place. For this to happen,

the companies need to work together so they can increase the quality of the solution and fit it to the specific context of MCFE (IV1, appendix 1; IV4, appendix 4; IV5, appendix 5).

The main actors in the collaboration are Trackunit and MCFE; however, the telematics solution also influenced other actors in the ecosystem. These include, but are not limited to, dealers, operators, service engineers and warehouse managers.

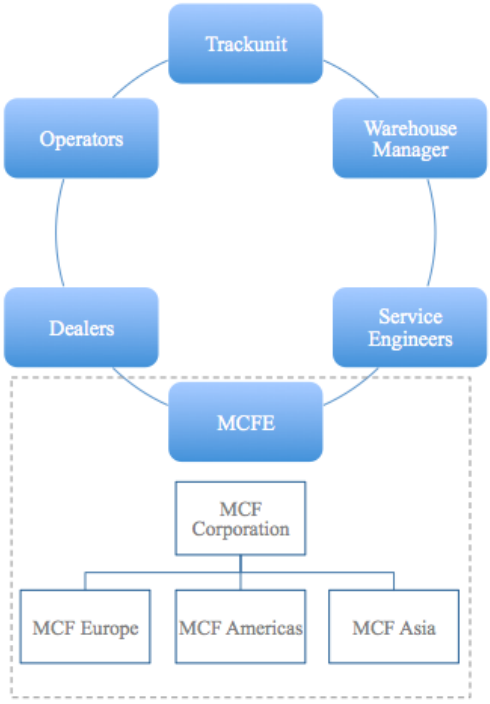

Figure 5: Own figure. The main actors involved.

The collaboration between Trackunit and MCFE is an interesting and pertinent case because it represents the complexity of the theoretical framework while it also represents an empirical ground for exploring value co-creation in a service context.

Chapter 7: Product Service System in the Empirical Field

The previous chapters of this thesis have presented the problem statement with research questions and methodological reflections associated followed by a presentation of the applied theory and the empirical field. This will allow for the implementation of one of the identified theoretical frameworks, product service system (PSS). To clarify, the term PSS is throughout the thesis used interchangeably with 'solution'.

This chapter is the starting point of the analysis and forms the basis for the later chapters on value co-creation and forms of value. We seek to provide the reader with an understanding of the service context in which the collaboration between Trackunit and MCFE takes place and where the solution is created. The chapter deals with the importance of services and how operational integration and customisation are relevant for a service to create value for companies. Thereby, we will in this chapter answer the following research question:

- How can the product service system developed by Trackunit and MCFE be characterised?

The chapter starts with an analysis of the telematics solution and ends with classifying the solution as a service oriented PSS.

7.1. The Telematics Solution

It is relevant to briefly start by explaining the solution although it is not the aim of this thesis to investigate the exact features and technical specifications. We do so because it is relevant for the later analysis of the PSS.

The solution gives a full and in-depth overview to manage a vehicle fleet because it serves as an online information and knowledge hub that brings together data on the entire fleet to streamline operations and increase productivity. It works within three areas: incident monitoring, machine diagnostics and operator efficiency. The incident monitoring allows for tracking of failed inspections, damages and shocks, in which the latter is an essential part, as the shock absorber on a truck ensures stability and safe usage (Monroe Australia, 2017). The machine diagnostics can inform about activity peak, inactivity and general machine health, which will prolong the machine's lifetime. The operator efficiency provides data on active operators and the operators' performance as well as performance breakdown and missing

inspections. With other words, the telematics solution offers intuitive damage reporting for streamlining the service and usage.

7.2. Service Oriented Product Service System

The PSS classification that best characterises the case of Trackunit and MCFE is the service oriented PSS, where service is incorporated into the product itself meaning that the product and service are coupled (Neely, 2009). With a service oriented PSS, the customer obtains ownership of the tangible product, but services are offered as an integral part of the offering and add additional value (ibid). The collaboration aims at providing the best service and support by utilisation of digital solutions, for which each company needs each other (Trackunit/MCFE, 2017a, 2017d).

In this case, the dealers obtain ownership of the solution, where the services incorporated add additional value because the telematics solution will add value in the form of services (Trackunit/MCFE, 2017c, 2017d). MCFE wants to have an app in place that is able to track trucks and drivers but Trackunit did not have the proper solution in place before the collaboration, as in, the hardware was in place, but the rest of the technical specifications to match MCFE's requirements were not (IV2, appendix 2; IV5, appendix 5). In the co-creation process, a created solution has the ability to utilise data collection- and analysis techniques to help ensure availability, reliability and safety of vehicles. This role of remote services characterises the creation of additional services and product-independent services which facilitate customer integration of the PSS. This means that Trackunit and MCFE developed a service oriented PSS, from which MCFE can implement remote services based on the information from the telematics solution. Integrating these services in the product differentiate the offerings by creating customer-specific product service solutions, which enable a closer relationship between Trackunit and MCFE, and generate a higher value than a pure product offering (Wise and Baumgartner 1999; Cusumano, Kahl, and Suarez 2015 in Jovanovic, Engwall, & Jerbrant, 2016). One interviewee from Trackunit states:

> *"The value lies in the services that you can build on these data"* (IV4, appendix 4).

From this, we interpret that there is an increased demand for integrated solutions of product and service, in that both companies are not interested in the product or service itself, but rather the integrated solution to a problem. An interviewee from MCFE supports this:

> *"[...] service and distribution wise there is a bigger difference, but that is not in the traditional domain of the product"* (IV3, appendix 3).

When he speaks of the big difference it is meant in terms of the engagement in the co-creation process because the engagement creates value which is not experienced when the offering is a single product. Another interviewee adds to this:

> *"Products have always been a prerequisite, but once the product is a ticked box, then it really starts to build up a lasting and fruitful customer relationship"* (IV1, appendix 1).

Our interpretation of his statement is that products are prerequisites for offering a PSS but once the product is created the service is the value enabler. This supports our claim that it is not the product or the service per se that creates value, it is the integrated combination, i.e. the service oriented PSS.

As presented in the theory section, a PSS has two dimensions, the degree of integration and the degree of customisation. The following elaborates on these dimensions in the telematics solution developed by Trackunit and MCFE. One of the interviewees mentions:

> *"Everything is evolving more around the services rather than the product itself"* (IV4, appendix 4).

With this, it is our interpretation that there is a need for an operational integrated offering of service and product, rather than a stand-alone product. The service oriented PSS makes it possible to track machines and monitor driver behaviour on a specific machine, when and where (Trackunit/MCFE, 2017a, 2017c, 2017d). One of the interviewees elaborates on this:

> *"The end user will have better driver user behaviour, so they will have a better productivity, and they will also have better safety and better driving behaviour because they know that they are followed"* (IV2, appendix 2).

This quote shows that the end user, the operator, will have better user-, safety- and driving behaviour, and thereby higher productivity because of the ability to track the operator. In accordance with the theory, the service oriented PSS provides market opportunities and improved strategic positions for Trackunit and MCFE, as it offers an integrated solution which adds value to the customer. Based on this we argue that the degree of integration in the telematics solution adds value because the value offered by the solution is more than the sum of the individual parts.

The development of the telematics solution requires high flexibility and customisation because the solution needs to correspond to the rapidly changing market and MCFE preferences. The situation is rarely identical for any two customers, and it is difficult to create a one-size-fits-all solution. As one of the interviewees argues, when discussing the customisation of services, it is important to tailor the products to the customer needs and to create the value for the customer:

> *"It is always about selling and customer requirements and how you can tailor your products to what the customer needs and to create the value for him"* (IV1, appendix 1).

Another interviewee explains that solution is customised to MCFE as a specific customer:

> *"Our core services, we wanted to bring them into the MCFE world, but with an MCFE skin. So it's kind of, you know, we grabbed the products that we were developing at that time and brought them into the world of MCFE [...] so it kind of, you know, fit into the MCFE ecosystem"* (IV4, appendix 4).

We interpret that the value of the solution stems from the fact that it is customised to MCFE. From the findings, we argue that the service oriented PSS allows both firms to create added value and increase competitiveness, in an integrated and customised manner.

To sum up, the interviews and secondary materials has us arguing that Trackunit and MCFE create a service oriented PSS. With this type of PSS, the dealers obtain ownership of the solution, where the incorporated services add additional value. The PSS has a degree of operational integration of product and services because it can extract data from vehicles on usage and placement, while being customised to match the requirements of MCFE's context. The following chapter of the analysis will investigate the co-creation process in which the PSS is created.

Chapter 8: Value Co-creation Based on the DART Framework in the Empirical Field

This section of the analysis relates to how value co-creation based on the DART framework occurs in the collaboration, and so the chapter includes an analysis of the co-creation process. The DART framework builds on the interplay of its elements, where the four building blocks facilitate increased value co-creation. Our research focuses on understanding the interplay of the DART framework in the case of Trackunit and MCFE. In this chapter we will answer the following research question:

- How is value co-creation from the perspective of DART represented in the case of Trackunit and MCFE?

This chapter starts with an analysis of the four building blocks: dialogue, access, risk assessment and transparency. The analysis of the building blocks leads us to propose the need for a revised DART framework to this case, and so the chapter ends with a revised framework for value co-creation.

8.1. Dialogue

This building block relates to interactivity and engagement between the actors, and in this case the actors are Trackunit and MCFE. Dialogue implies shared learning and understanding between two equal problem solvers, it encapsulates both's interests and it requires a forum where the dialogue can take place (Prahalad & Ramaswamy, 2004b, 2004c). When looking into the dialogue in this collaboration, we are interested in the frequency and forums for interaction, if everyone had the opportunity to be heard and if they reached a mutual understanding through this interaction.

8.1.1. The Dialogue Process

In the very start of the collaboration, the dialogue started on an executive level between Per Stjernqvist, VP of Trackunit, and Hans Seijger, VP of MCFE. Per initiated it, and this was followed by face to face meetings between the management teams from Trackunit and MCFE. Since the strategic focus of the companies seemed to be in line, the companies entered into a collaboration (IV1, appendix 1; IV3, appendix 3; IV5, appendix 5). One interviewee says:

> *"In the beginning, we sat up the frame of how this should work […]"* (IV3, appendix 3).

Another interviewee follows:

> *"[…] and before all this stuff happens, there is the business development, where they build up the value proposition and how do we plan to monetise this for MCFE and for Trackunit"* (IV4, appendix 4).

From these statements, we infer that in the first phase of the collaboration the dialogue was mainly related to the frame of the collaboration and the overall business plan such as value propositions, goals, vision and how the companies should monetise from the telematics solution. Our general interpretation of the dialogue, in the beginning, is that it was frequent and mainly included the two management teams.

After the start-up phase, the dialogue began to include more employees and departments from both companies, and one interviewee describes:

> *"Basically, the partnership started at the top and it trickled down from there"* (IV1, appendix 1).

Based on the interviews it is our understanding that the dialogue started to spread in the organisations so that the involved employees in this part of the process engaged in the dialogue (IV1-IV5, appendix 1-5). In terms of the content of the dialogue, it included employees from Trackunit and MCFE who sat down and created the first prototype (IV2, appendix 2; IV5, appendix 5). One of the interviewees describes:

> *"They made mock-ups of the functionalities (…) this was the functionality that we wanted to have, actually, we designed and co-created the design"* (IV2, appendix 2).

The interviewee's statement of co-creating the design supports the understanding of the interactivity and engagement to be high where both companies' interests were included in the development of the prototype. Based on all the interviews it is our understanding that the dialogue continued throughout the collaboration; however, the two companies and the employees mostly interacted in the beginning of the collaboration. This is most likely due to this being the design phase, and thereby the fundament of the later created service. It might also be because this is the phase where the companies need to figure out if they shall proceed or not with the collaboration.

As the collaboration proceeded and entered the execution phase, infrastructure in both companies was put in place, as indicated in the following two statements:

"[…] we developed a little infrastructure in MCFE and Trackunit did the same as part of the project so that people had a counterpart in Trackunit for their specific assignment. So both organisations know each other pretty well by now" (IV1, appendix 1).

"[…] but after that some structure start to appear and it becomes clear how these people need to interact" (IV3, appendix 3).

The infrastructure included employees from sales, logistics, accounting and customer service (IV1, appendix 1), and can be seen as a way to maintain an easy line of dialogue where employees across the companies easily can reach out to their counterpart when needed. It is our understanding that all the interviewees agree that the dialogue overall was good, and this is supported by the statement:

"[…] from there it is a very healthy discussion" (IV3, appendix 3).

One interviewee says that if problems occurred during the collaboration, they did not shout at each other, as they would have done, had the problem occurred in other settings. Instead, they were aligned and worked like colleagues, making the attitude:

"[...] let's just solve the problem instead of fighting" (IV5, appendix 5).

Thereby, employees from Trackunit and MCFE worked like colleagues, and it supports our understanding of employees being engaged, which resulted in good dialogue.

8.1.2. How They Engaged in a Dialogue

One of the ways Trackunit and MCFE interacted was in workshops which took place four times. One workshop included the dealers; the remaining four Trackunit and MCFE. The purpose of the workshops was for each of the companies to bring information and present interviews previously conducted with members of the ecosystem such as dealers, warehouse managers, service engineers and forklift drivers (IV2, appendix 2; IV5, appendix 5; MCFE Birmingham). In the first workshop, dealers were invited and presented with the vision of the service and products, since the purpose was to have them on board:

"There was a big kick-off proposed by us to really get on board with different stakeholders and the objective of the first workshop was 1) from our side to having them on board from a wider perspective and 2) getting a lot of information" (IV2, appendix 2).

The reason for having the dealers on board is they own MCFE and therefore they need to buy into the idea because the dealers are the ones who will pay for the solution and have it installed in their equipment (IV1, appendix 1). The workshop aimed to validate the solution prototype and get feedback, so MCFE and Trackunit could go back and make adjustments to the solution (IV4, appendix 4; IV5, appendix 5).

During the collaboration, the companies interacted through weekly calls (IV1-IV5, appendix 1-5). These included employees and managers from the different departments and members of the two management teams (IV2, appendix 2). The weekly calls were held to keep each other in the loop of the process and align things (IV4, appendix 4), and we argue that this is an expression of the companies' engagement, which had a positive impact on the dialogue. This is supported by the statement:

> *"The project […] is much more in the daily dialogue, when teams talk together and how frequent and weekly calls might be quite boring but it requires discipline to do that"* (IV3, appendix 3).

Thereby, this statement emphasises that weekly calls were important for the good dialogue. Additionally, board meetings took place when the project reached what one of the interviewees calls 'important milestones' (IV2, appendix 2). At the time of data gathering the companies were launching the solution, so from the interviews, we understanding that they will continue to have weekly meetings and calls to follow up on the solution (IV3-5, appendix 3-5), to which one states:

> *"[...] there is still a need for having these calls"* (IV4, appendix 4).

8.1.3. Opportunities to be Heard and Reach a Mutual Understanding

To reach shared learning and understanding it is important that those engaged in the dialogue have the opportunity to be heard and is heard (Prahalad & Ramaswamy, 2004b, 2004c). All the interviewees believed that the people engaged had the opportunity be heard (IV1-5, appendix 1-5). This is expressed in the following:

> *"The classical structure of these meetings was that everyone had two to five minutes of speech time to get their latest updates to the tables so everybody had a chance to get heard"* (IV4, appendix 4).

Another interviewee elaborates further:

> *"Yes, we had a very structured approach when it comes to these workshops to secure everybody is heard. All ideas come to the table and we priorities them because of course not all ideas are good, but we also try to group them. And that is actually the whole purpose of these workshops, to tap the brains of everybody in the room, so we have a process for that. It's not about who shouts the loudest"* (IV5, appendix 5).

Thereby, the actors enhanced their mutual understanding by getting a better understanding of the solution they were creating and each other's businesses, because all ideas and opinions came to the table to make sure it was not the opinions and ideas of a few. It is our understanding that this approach contributed to reaching a good mutual understanding of the wanted outcome and facilitated a good value co-creation process. In all, the interviewees gave the impression that there was a shared understanding; however, one of the interviewees believed the dialogue could have been better in the beginning. He argues that MCFE believed one of the product features could provide more meaning and data than it turned out (IV3, appendix 3). This will be elaborated further in the transparency section.

8.2. Access

The building block access implies offering the right tools for communication to facilitate value co-creation. The view we apply for this thesis is that access is defined as the availability of information and knowledge. Our general understanding and interpretation of access follow Prahalad and Ramaswamy's understanding that as much information as possible must be accessible to both parties.

8.2.1. Access or Not?

Having access to each other's information is a matter of trust and having an inter-organisational relationship allows for an easier value co-creation process (Jouny-rivier et al., 2017). Trustworthiness among the partners in the collaboration results in a positive outcome because when partners can trust each other, it creates a feeling of security and produces a supportive climate of getting access to each others' information. One interviewee expresses the trust:

> *"Of course, there was a willingness from both sides to work with partners, and to really partner up in this, and that is more a feeling than anything. It is a matter of trust and confidence"* (IV1, appendix 1).

He elaborates:

> *"I mean, it may sound a trivial thing but when you know your business partner and you trust him, you seem to be aligned and you have a vision, then it is actually not so difficult to just put it all on the table like it is. I mean this is not a strategic game where you try to outsmart your partner or anything, I mean either you go in with your eyes open, both sides, or you don't"* (IV1, appendix 1).

It is our understanding that both Trackunit and MCFE state interest and willingness to engage in this co-creation process, which means that no specific information was withheld, which had a positive effect on the access to each other's information. Since Trackunit and MCFE focused on trust from information and knowledge sharing by giving full access to the companies' information, it led to a positive perception of the collaboration regarding the companies becoming partners rather than being locked in traditional roles of supplier and buyer. A statement from one of the interviewees supports this:

> *"As soon as you define some kind of partnership, then you do not sit against each other on opposites of the table, you sit next to each other, literally. Also in the process that is happening, you really start to partner up and cooperate"* (IV2, appendix 2).

Based on the interviews it is our understanding that Trackunit and MCFE build a trustful relationship resulting in access to information and knowledge. This brings the companies closer together as partners. We argue that this inter-organisational relationship had a positive effect on the co-creation of the telematics solution.

Having access is a way to ensure that everyone had the same understanding of the wanted outcome because everybody had access to the same information. Surely, the knowledge level was not the same, because actors had different areas of expertise, in that the C-level managers did not have the same insights as an employee in the marketing department. One of the interviewees explains that the companies each had to teach the other of their respective situation and needs:

> *"Trackunit has expertise on their side and MCFE has expertise on our side, so Trackunit has the expertise towards the telematics solution, MCFE towards the vehicles. This needs to be installed on. The expertise simply is either at Trackunit or MCFE"* (IV3, appendix 3).

We interpret that despite different knowledge levels, the shared project information, was accessible to both in equal terms, and this meant that there was equal access to the material so everyone could reach the same understanding. We argue that Trackunit and MCFE integrate operand resources by giving access to each others' materials and information resources in the delivery of co-created outcomes. Further to the application of the operand resources is the need for alignment of the operant resources to achieve the expected outcome. The companies put in place structures and processes to ensure alignment of informational resources, i.e. access to information and knowledge, thus facilitating the integration of operant resources.

8.2.2. How Was Access Given

In terms of accessing materials, the companies use Confluence, a document sharing and collaboration system which stores minutes, documents, roadmaps and other relevant materials (IV5, appendix 5). One interviewee notes:

> *"It's very very important to share all documents and progress structurally"* (IV5, appendix 5).

Using this system meant that both parties had easy access to information when they wanted it and were alerted on updates. In terms of the accessibility of information, one interviewee states that the information definitely was provided and everyone had the opportunity to request the information (IV4, appendix 4). Nevertheless, we remain sceptical as to using such software, since it requires that one actively choose a document and upload, thereby being selective in which information that can be accessed. Rather, we argue that the dialogue and media used for this are equally important for all actors to access the information. Since Trackunit and MCFE gave access to each other's information and processes at multiple points of interactions, this challenges the traditional notion of value being experienced through ownership since this broadened access increased the experienced value (Prahalad & Ramaswamy, 2004c).

8.3. Risk Assessment

The third building block, risk assessment, relates to the probability of harm. When actors co-create value, it increases the need for considering the risks. The actors should take into considerations the trade-off between risks and benefits so they can make an informed choice. They should have a dialogue about risks and also make considerations of who shoulder responsibility (Prahalad & Ramaswamy, 2004a, 2004c). Yet, Prahalad and Ramaswamy do not in more details elaborate on how to operationalise risks, and therefore we define it as whether sufficient information is given to assess risks and if risks are considered.

8.3.1. The Approach to Risk Assessment

Based on the interviews, it is our understanding that risks were not something the two parties paid much attention to. Especially Trackunit seemed to have a laissez-faire approach to risks and when one of the interviewees from Trackunit is asked if they had any thoughts on the risk of sharing information he replies:

> *"To be honest, we didn't think about it because we did not see an issue in the risks"* (IV5, appendix 5).

Another Trackunit interviewee likewise says that he did not think about the risks (IV4, appendix 4). We argue this is because he was not a part of framing the collaboration as he joined later on in the process. This relaxed approach to risks is supported by the previous analysis of the companies' trusting relationships. An additional reason is that both companies had a non-disclosure agreement (NDA) which made it safe to exchange information so that neither would use the information for other parties. One interviewee says that MCFE was less concerned with Trackunit taking the solution to MCFE's competitors or that it would leak to the competitors (IV1, appendix 1). We interpret this is because MCFE's competitors own their distribution and MCFE does not. Thereby, the competitors are not potential customers for Trackunit who provides a distribution solution to independent dealers. This contributed to MCFE feeling safe; therefore, this might be a reason for why the risks were not considered.

We argue that the actors consciously or unconsciously had already made a risk and benefit trade-off when they entered the collaboration. The potential risks (e.g. disclosing trade secrets) were outbalanced by the view of the positive outcomes, such as suitable offering for end users, improved collaborative methods, tools and processes, and essentially the realisation of monetary and productivity gains. From our findings,

neither MCFE or Trackunit experienced any risks of opportunistic behaviour or in terms of performance, and therefore no sacrifices were made, and so the companies were committed to the co-creation process. Instead, several interviewees elaborate on the potential benefits for Trackunit that collaboration with MCFE might have, due to the organisation's size and scope, not only in Europe but also other regions (IV1, appendix 1; IV2, appendix; IV4, appendix 4; IV5, interviewee 5).

8.3.2. How the Companies Considered Risk Assessment

In Prahalad and Ramaswamy's theory of value co-creation risks are viewed between consumers and companies. Thereby, the consumers want to know the risks of a specific product; they want to consider the trade-off between risk and benefit and make an informed choice. However, in the context of this case the risks do not relate to an actual good; instead, the risks are assessed in relation to the companies' possible opportunistic behaviour. When we ask the interviewees about risks, they do not elaborate on the trade-off between benefits and risks for the solution; instead, they mention the NDA and that this was a necessity when doing business:

> *"[...] it's formality, but quite important*" (IV2, appendix 2).

And

> *"I don't think that is one way or another, I think that people see these NDAs as a necessity, [...] the NDAs are just, yeah"* (IV4, appendix 4).

From this, we infer that to the interviewees the NDA means that the risks are taken care of because any risks are written down in the NDA. Thereby, risks were not considered by the interviewees, as it had been dealt with by legal departments internally. Therefore, the way the interviewees consider risks do not fit with how Prahalad and Ramaswamy perceive risks. The reason to this mismatch between theory and the interviewees' answers can be due to different horizons of understanding between the interviewees and interviewers. We understand risks based on Prahalad and Ramaswamy's framework, whereas the interviewees consider risks from a practical perspective.

8.4. Transparency

This building block represents the idea of resigning from information asymmetry between the actors and having transparency of information. Prahalad and Ramaswamy suggest a motto for smart companies: 'When in doubt, disclose' (Prahalad & Ramaswamy, 2004a:9). We view transparency as the information that the companies disclose to each other.

The transparency level for this case seems to be two-fold. The five interviewees gave different, yet similar perspectives on the transparency throughout the collaboration (IV1-IV5, appendix 1-5). The main impression we get from the MCFE interviewees is that information was transparent to all parties, yet the details of technical specifications were not sufficiently transparent. The Trackunit interviews are more mixed because two interviewees explain that they felt they got full transparency from MCFE; however, they indicate that Trackunit was more strategic about disclosing everything to MCFE. Only one Trackunit interviewee gave a clear yes to whether both parties were equally transparent. The companies' approaches to transparency are presented below.

8.4.1. MCFE and Transparency

When asked about the level of transparency in the collaboration an MCFE interviewee gives the following answer:

> *"Yeah, some was shared less with words"* (IV3, appendix 3).

Later on, when we ask the same interviewee if there was transparency of information, he answers "yes".

Another MCFE interviewee states:

> *"The transparency we were both willing to put into the co-creation was also a real benefit. I think there was very clear understanding of what each party could contribute with"* (IV1, appendix 1).

From this, we interpret that MCFE was willing to be transparent. Although the interviewees do not explicitly elaborate on the transparency, it is our understanding that MCFE believes there was a sufficient level of transparency. Especially, the latter statement indicates that the companies were transparent and knew what they each could contribute with. We argue that the companies were better able to facilitate the process and act as co-creators because of the transparency.

In terms of developing the telematics solution, MCFE needed a high level of transparency from Trackunit's side because the telematics solution was rather new, and Trackunit had the technical expertise over MCFE. This meant that Trackunit had to teach MCFE about the solution and together the companies could explore what the needed requirements for the final telematics solution was (IV3, appendix 3). However, one interviewee expresses that despite the efforts from Trackunit's side to explain what the solution was capable of, the appropriate level of transparency regarding sophistication of the solution was not provided. The interviewee gives the example of the shock reading feature, arguing that the functionality of the shock reading was not as precise as expected:

> *"So the capability has been overstated. Only very late in the process did we realise that it was more difficult than we had hoped and less capable than we had hoped, yet we have a product that more or less work and I think we just need to bluff our way into the market with that solution. We know it is not as sophisticated as we would like it to be. We thought it could provide more meaning"* (IV3, appendix 3).

Our interpretation of this statement is that the level of transparency in relation to the capabilities of the telematics solution has not been sufficient to match MCFE's expectations.

8.4.2. Trackunit and Transparency

One Trackunit interviewee proclaims that there was full transparency and that no information was kept from either side:

> *"Everything that we needed for the project was transparent. There were no barriers at all"* (IV5, appendix 5).

To which he elaborates:

> *"We were 100 percent transparent"* (IV5, appendix 5).

The two other interviewees from Trackunit indicate some strategic thoughts about the transparency level. One of the interviewees is asked if his company withheld any information or was less transparent, to which his answer indicates that there was not full transparency about all aspects:

> *"Well that's a commercial question, you know? I don't think that we really showed all our cards, [...] it's always opportunistic to share everything and we were very open on stuff that we had in place, this was our proposition and we were very proud of that"* (IV2, appendix 2).

From this, we interpret that from Trackunit's side there was full transparency when the company was completely sure of being able to deliver on set targets. This keeps Trackunit locked in the traditional idea of the company and the customer having fixed roles and therefore a need for information asymmetry. However, this interviewee does not think that it had any effect on the collaboration. Again, he refers to the analogy of playing cards where one sometimes has to put them against the chest and wait to play them, and that is just how the game is (IV2, appendix 2). Another Trackunit interviewee gives a less detailed description, but one that supports the previous statement, because this interviewee is slightly reluctant to elaborate on the transparency between the companies:

> *"As much as possible was put on the table"* (IV4, appendix 4).

Based on the above statements we argue Trackunit was transparent up until the level they believed was necessary for co-creating the solution with MCFE. However, due to a strategic aspect, Trackunit was not totally transparent. Lastly, we argue that there is a need to build more transparent processes when engaging in co-creation, for everyone in the companies to agree that the information is transparent, regardless of who is asked.

To sum up, this value co-creation process between Trackunit and MCFE can be analysed based on the DART framework. The main findings show that regarding dialogue the two actors engaged in physical meetings, workshops and weekly calls. This interaction resolved in a good dialogue which is expressed by all the interviewees. During the process, there was room for the involved people to raise their opinions and these were listened to. Thereby, the actors reached a shared understanding where both interests were included. In terms of access, all interviewees state that there was a good level of access to each others' information and resources throughout the collaboration. A sense of trust was created which helped the companies create the feeling of a partnership rather than a traditional supplier/buyer relation. At all times, if someone wanted it, there was the availability to access information; however, there was a degree of selectiveness. In relation to risk assessment, none of the interviewees had thoughts on the risks of the collaboration. The level of transparency has some nuances to it. For both companies, all information was transparent; however, from MCFE's point of view the transparency about the telematics solution was not

sufficient and for Trackunit the transparency involved strategic thoughts, indicating that not everything was shared.

8.5. Revised Framework for Co-creation of Value

From the interviews, we find other themes which influenced the value co-creation process. These, just as the DART framework, had an effect of the collaboration between Trackunit and MCFE. However, we believe they fall outside the DART framework and therefore should be presented as individual building blocks. We call these building blocks: organisational mindset, participation and time where the latter is two-folded in terms of collaboration and development. Within this specific case, these additional building blocks extend the DART framework as indicated in figure 6.

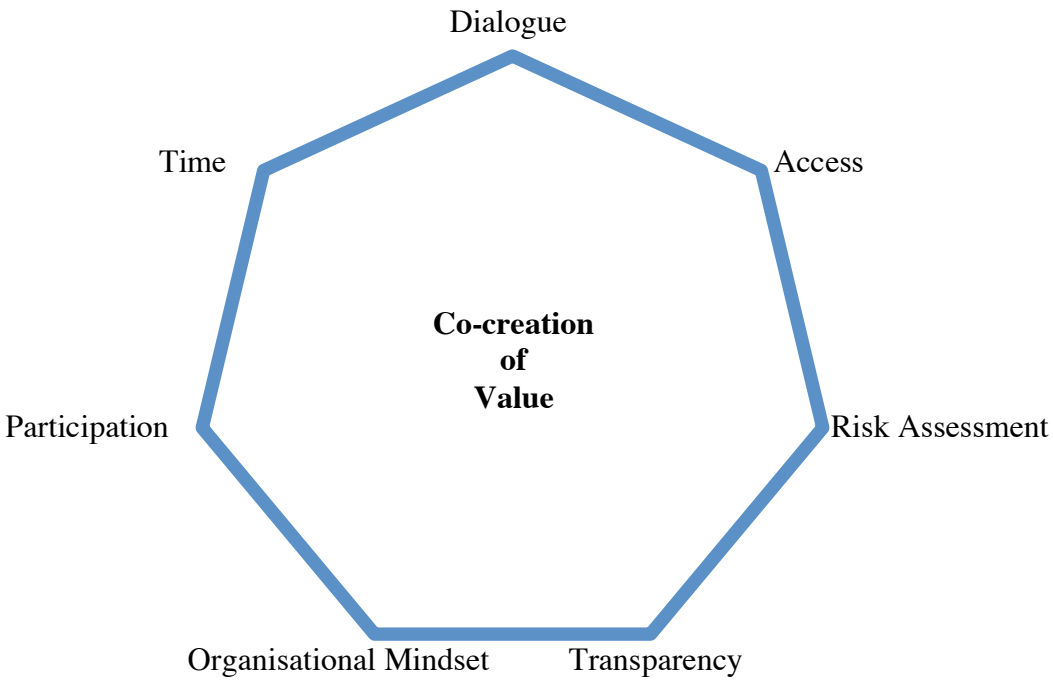

Figure 6: Own figure. The revised framework for co-creation of value in the collaboration.

8.5.1. Organisational Mindset

From the interviews, we find a difference in the companies' organisational mindset which influences on the co-creation process. It is our understanding that this was not directly addressed at the beginning of the process but it became clear during the collaboration for both parties. Interviewees from MCFE and Trackunit experience Trackunit as pushier and fast-moving than MCFE (IV2, appendix 2; IV3, appendix 3; IV5, appendix 5), which one interviewee from Trackunit states:

> *"We were really persistent"* (IV2, appendix 2),

And an interviewee from MCFE supports this:

> *"The Trackunit way in the beginning was perceived as rather pushy by MCFE, so everything was fast-paced and urgent […]"* (IV3, appendix 3).

According to one of the interviewees, at one time during the collaboration it seemed like Trackunit was further ahead in the project because MCFE was not entirely on board:

> *"[...] we kept pushing but there was a certain moment where we said "well we ain't going to do anything anymore because you're not ready". We were two foot ahead and all ready with everything"* (IV2, appendix 2).

These statements show a difference between the two companies. One interviewee elaborates on how he thinks Trackunit is different from MCFE:

> *"I think in the DNA of Trackunit it is very fast moving, like a startup company, with this startup jargon, with the wording in various areas in the project, it sounds more flashy than more traditional companies like MCFE with more traditional brands and slower and traditional ways of working"* (IV3, appendix 3).

His comment indicates that concerning the organisational mindset, a company like MCFE is more traditional since it works with product and brands that take years to develop, which is why the ways of working are slower. One Trackunit interviewee provides a reason for the difference. He says it is because companies like MCFE often want a solid analysis of return on investment before they start a project, and this is complicated to get when developing this kind of telematics solution (IV5, appendix 5). The uncertainty of the analysis is also the reason Trackunit was pushy and fast moving because there was the

possibility that the solution would fail, but if that were to happen, it was important to fail fast, i.e. at the beginning of the collaboration to limit the costs:

> *"It can go through the roof, or it can fail, but let's fail very fast so we limit the costs and we can allow ourselves to fail. This is also why we need to fail as early in the process as possible"* (IV5, appendix 5).

We argue that this fast approach can be a challenge for companies and their management because it requires a shift in organisational mindset from the slower traditional way of doing business to this more fast-moving approach. The approach also relates to the building block time, which will follow later.

Another difference in the organisational mindset between the two companies is about the sharing of created content. One interviewee states that Trackunit as a company has decided not be afraid of sharing ideas, whereas big corporations like MCFE often tends to be more afraid of sharing too much. At Trackunit's website, it says that the company focuses on Open Innovation[2] in relation to sharing internally and externally, because there is an ambition to make innovations public available (Chesbrough, 2011; Trackunit, 2018a). We state that MCFE is more reluctant to share innovation since one of the interviewees mentions that MCFE had exclusivity to the development (IV2, appendix 2), indicating that they prefer a closed approach. Even though MCFE got exclusivity to the solution, Trackunit can still use the functionalities created for their solutions. Thereby, the different approaches to whether innovations should be shared or not is not a deal breaker for the co-creation process.

Based on the interviews we argue that there was a difference between the two organisations' mindset and this influenced the co-creation process. One of the interviewees from MCFE states that it took some time to get used to and decide on how to proceed (IV3, appendix 3). We find that even though both companies managed to work around the differences, the organisational mindset is still an important building block for the value co-creation process. Further, we argue that if this aspect had been verbalised more in the beginning, the companies might have been on the same page earlier, resulting in faster facilitation of the value co-creation process. Thus, this building block must be considered because it has potential to influence the co-creation process.

[2] Henry Chesbrough defines open innovation: "The use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively" (Chesbrough, 2011).

8.5.2. Participation

We argue that participation means taking part and contributing to the process. Participation is not to be confused with the building block dialogue which includes engagement and interactivity. Based on the interviews, we find that even though companies can have a good dialogue, interact and engage in the project, this does not necessarily equal participation and contribution to the collaboration, and thus participation is relevant for value co-creation.

One interviewee states it is important to have 'the right sponsor' on board from the partnering company for the co-creation project to be a success:

> *"Well, when you have a sponsor like Hans Seijger, which was very keen on getting things going, we definitely used his influence in MCFE to get things going and get some traction on it [...] In some cases people will be reluctant when it can feel like Trackunit comes with these things that they may not see why they should use, but when it is a sponsor within the organisation that brings it and says "listen up, there is actually some interesting value in this" then it usually softens up people"* (IV4, appendix 4).

From this, we interpret that having the right sponsor influences the participation level in the collaboration. The interviewee argues that because the VP of Sales and Marketing has influence in MCFE, it made it easier to get the rest of the departments on board and thereby have them participate. Since it is the VP, Trackunit did not, in the same way, have to convince departments and employees to participate in the project. In essence, this means that having the right sponsor makes it easier to avoid situations where employees are reluctant to participate. Despite having the right sponsor on board for the co-creation process, we find from the interviews that there is an uneven level of participation in the collaboration (IV2-IV5):

> *"I think per phase there was an unbalance, sure. Per deliverable there was an unbalance in the effort on both sides, but also related to the tasks which had to be done at the same time to realise that deliverable [...] Trackunit really did a disproportionate effort on their side* (IV3, appendix 3).

Further statements from the interviewees show that Trackunit participated more in the project than MCFE. One of the interviewees from Trackunit states:

> *"I would definitely say that Trackunit pulled a lot of the weight, I would also say that we pulled more than MCFE"* (IV4, appendix 4).

Another interviewee from Trackunit elaborates on how only a few MCFE employees participated in the weekly calls while other times they did not participate at all. This supports the argument of MCFE participating less than Trackunit. This lack of participation is a source of irritation to the interviewee, and it is expressed in the following:

> *"We had weekly meetings where all stakeholders were there, but most of the time only one or two MCFE members were there. And we actually held that against them saying: "Well we are working so hard and you're not there, so we don't bother anymore""* (IV2, appendix 2).

He believes the reason for MCFE's participation level is due to a lack of resources and time, not because they are not engaged (IV2, appendix 2). He argues that after the project was delegated within both companies, there was no internal owner of the project in MCFE because the manager who was delegated the project did not have the time due to an upcoming merger between MCFE and another company (IV2, appendix 2). Thereby, the participation level dropped. When one of the interviewees from MCFE talks about this delegation of the project, he describes that the management team took a step back and were more in the background, so the departments took over who had to do the actual work of developing the solution (IV1, appendix 1). It is our interpretation that MCFE believes it is sufficient to follow the project from the sideline once it was rolling, whereas Trackunit still expected more participation from MCFE and the management team, for example during the weekly meetings. This again shows that the companies had different takes on the needed level of participation.

Another interviewee also gives a reason for why Trackunit participates more than MCFE. According to him, the maturity level has a lot to say in a value co-creation process. By maturity level he means whether MCFE has experience with this kind of collaboration. The interviewee argues that this is not the case:

> *"On the MCFE side, they weren't quite as mature as we would have hoped so that also really induced us to have to spend more time on it than we really wanted it to"* (IV4, appendix 4).

However, he also states that you cannot completely know a company's maturity level beforehand. Even though the interviewees from Trackunit mention this uneven participation and how this occasionally is a source of irritation, they also accept this unbalance. A reason for this several of the interviewees describe. They argue that it is Trackunit's job to actually build the solution because this is Trackunit's competencies

and not MCFE's; hence, this split of tasks is the reason why there is participation unbalance (IV2, appendix; IV3, appendix, appendix 3).

Based on the interviews we argue that participation is a building block that influences the value co-creation process in the collaboration between Trackunit and MCFE. In this case, the participation level is uneven and even though this might not be possible to avoid, being more aligned on what the parties expect when it comes to participation might have created better conditions for the value co-creation process.

8.5.3. Time

In this specific collaboration, another building block influences the value co-creation process between Trackunit and MCFE. This building block is two-folded because it includes time in terms of the collaboration and time of the development of the solution. A reason why we believe this building block is relevant to mention is that despite actors interact and exchange resources, provide technologies and infrastructure; it does not automatically lead to value co-creation. Rather, there is a time aspect to it because it requires that actors engagement is maintained over time (Nambisan and Baron, 2009 in Leclercq et al., 2016).

8.5.3.1. Collaboration Time

The collaboration started in December 2016, and several of the interviewees mention this co-creation process as one that will continue. Thus, it does not end after the launch of the solution in spring 2018 (IV1, appendix 1; IV3, appendix 3; IV4, appendix 4; IV5, appendix 5). One interviewee mentions that long-term commitment is what the companies sign up for when starting a co-creation process because the potential is long-term:

> *"This was always going to be a long-term thing [...] That's why this co-creation is so interesting. At the same time, you can only do it if you both see the long term kind of exponential potential"* (IV1, appendix 1).

Another interviewee agrees with this as he mentions that the collaboration is a process that develops over time and companies do not suddenly have a new product (IV4, appendix 4). Thereby, the collaboration is about more than developing a solution where actors integrate each others' resources and technologies, i.e. the operant and operand resources. One interviewee uses the metaphor that both parties are on a journey which they both learn from:

> *"[...] one of the core elements of co-creation is having a customer or a partner that is interested in becoming a part of the journey, because the journey is not only Trackunit it is also a journey that the customer has, and I think that is a premise for kind of being in this setup of co-creation, you realise that this is a journey, you do not just build something that suddenly you're there and you have a new product"* (IV4, appendix 4).

This notion of viewing the collaboration as a journey supports the argument that value co-creation is dependent on engagement over time. It relates back to seeing each other as partners which have been elaborated earlier.

Another interviewee from Trackunit also elaborates on why the collaboration is meant to continue. He argues that especially within software solutions it is important always to develop new updates and solutions, and this necessitates that the collaboration does not end (IV5, appendix 5). One interviewee agrees with this as he argues that they will engage in further collaboration to finetune the existing solution and make an updated second version with more functionalities:

> *"At least that is my expectation, we will engage in further collaboration to finetune everything"* (IV3, appendix 3).

The statement shows that the content of the solution is dependent on an on-going collaboration between the two companies. Thereby, based on this case study, time is viewed as how long the collaboration lasts and an important building block for the co-creation process and future value co-creation.

8.5.3.2. Development Time

Based on the interviews with Trackunit, it is evident that development time influences the collaboration (IV2, appendix 2; IV4, appendix 4; IV5, appendix 5), and so development time is also a building block of the value co-creation process. One interviewee argues that when a traditional company develops goods, such as a machine, it can take up to six years, however, when developing software and digital solutions he argues:

> *"The cycle is different, and we need to work in another speed [...]"* (IV5, appendix 5).

This statement indicates that development time of the solution is essential. This agile approach, i.e. the emphasis on speed and development time, is most likely the reason why MCFE found Trackunit pushy

and fast moving at the beginning of the collaboration. This refers back to the earlier point of the differences in the companies' mindset. Trackunit was focused on the importance of speed, thus influencing the development time of the solution, since Trackunit wanted to work faster than what MCFE had expected. One interviewee argues that projects with a long development time within digital solutions tend to fail and so Trackunit wanted to avoid having too long a development time:

> *"Time is essential because when you develop or launch digital services we have seen many projects that have totally failed because we used too much time, so when we launch it, the customer is somewhere else, or the technology is obsolete, and so these long projects usually tend to fail"* (IV5, appendix 5).

His statement means that if the development time is too long, then at the time of the launch the technology might be obsolete or the market has changed. The industry of technology and digital solutions is changing fast (Solis, n.d.). Therefore, we interpret that Trackunit wants to develop the solution with MCFE quickly, so they can get it into the market early on and evaluate it to make adjustments along the way. The same interviewee continues as he argues that getting the solution fast into the market is a way of making sure that the solution is relevant and that it stays relevant because then they can twist the next update or solution to meet the needs of market and customers (IV5, appendix 5). We argue that in this specific collaboration, where the solution created consists of digital elements, a focus on shortening the time of the development of the solution influences the co-creation process.

This chapter has analysed the value co-creation process. To sum up on the original framework, we find that the four original building blocks are all evident in this specific case. Some of them match the theory by Prahalad and Ramaswamy better than others, e.g. risk assessment is evident in the case but how it works in practice differs from the authors' take on the building block. We argue that three other building blocks are evident in this case. These are organisational mindset, participation and time, and they are presented in figure 6. In total, seven building blocks influence this specific co-creation process between Trackunit and MCFE. The companies' differences in organisational mindset influence the process at the beginning of the project where the companies have different takes on working styles and sharing procedures. We argue that if these differences in organisational mindsets had been clarified before the collaboration started, the two companies might have been more aligned and faster at facilitating a good co-creation process. The same goes for participation. During the collaboration, there were different

understandings of the needed level of participation and several of the interviewees elaborated on Trackunit participating more than MCFE. Again, we argue that if the companies had been more aligned with the level of participation that they expected, this could have created better conditions for the value co-creation process. The last building block relates to time, in terms of collaboration time and development time. Collaboration time is relevant to the co-creation process because continuing the collaboration is important for the success and relevance of the solution now and in the future. Due to the solution and its digital content, it is important that the development time is relatively short, and so this influences the co-creation process as well. This chapter has focused on the co-creation process; however, when analysing co-creation, it is important to look into the value created from this collaboration. This will be analysed in the following chapter of the analysis.

Chapter 9: Three Forms of Value in the Empirical Field

Up until now, the analysis has focused on the classification of the telematics solution and the co-creation process between the two companies. Derived from this is a focus on *the value* created. The following chapter analyses in detail the value created from the collaboration, and thus the chapter answers the research question:

- What forms of value can be identified in the collaboration between Trackunit and MCFE?

This chapter is structured so that it starts with an analysis of the value-in-exchange, value-in-use and value-in-context followed by a section of whether the value is reciprocally created. To understand the value of the collaboration, the chapter proceeds with a section on the interviewees' illustrations of value which lead us to present Synthesis 1. The chapter concludes with the presentation of Synthesis 2: Value Co-creation in the case of Trackunit and MCFE.

9.1. Value-in-exchange

When value is perceived as value-in-exchange it is embedded in products that are outputs by companies and these products are exchanged in the market. Thereby, value is defined and measured by the exchange transaction usually through an exchange of goods and money. We interpret that all the interviewees talk about value-in-exchange when they elaborate on the value created from the collaboration. In this case, value-in-exchange relates to both the exchange between Trackunit and MCFE, but mostly the interviewees perceive it in relation to the main user, the dealers.

9.1.1. Value-in-exchange Between Trackunit and MCFE

Value-in-exchange takes place between the two companies. Trackunit and MCFE co-create the solution, nevertheless, between the companies value-in-exchange occurs because an output is exchanged and it is measured as a transaction of goods and money. The solution is exchanged in the market between Trackunit and MCFE where Trackunit sells the telematics solution to MCFE, and from this exchange, Trackunit receives payment and MCFE receives the solution (IV2, appendix 2; IV4, appendix 4; IV5, appendix 5). It is our interpretation that the interviewees do not emphasise the specific exchange between

the two companies; instead, their attention is directed towards the exchange between MCFE and the dealers, and thus the monetary value from this exchange.

9.1.2. Value-in-exchange Between the Dealers and MCFE and Trackunit

MCFE and Trackunit are concerned with the exchange of the solution with MCFE's customers because this is how the companies generate revenue from the solution. It is our understanding that all the interviewees emphasise the value of selling the solution to the dealers. This is because the solution is sold as a monthly subscription model which both companies profit from, thus this is what the interviewees mention as an expression of value (IV1, appendix 1; IV4, appendix 4; IV5, appendix 5). One interviewee from Trackunit explains it like this:

> *"But the real value for us is when we see customers buying a subscription because that taps into a subscription with us [...]"* (IV4, appendix 4).

When we ask an interviewee about the wanted outcome, his answer is:

> *"To generate subscriptions and volume, volume, volume. That's our business, the more solutions we can sell with a subscription the more money we can actually earn and increase the value of the company"* (IV5, appendix 5).

We understand this as the value relates to the wanted outcome of generating subscriptions and volume because the more telematics solutions that can be sold with a subscription, the higher earnings it will generate. Thereby, it is value-in-exchange because it centres around profits and earnings from subscriptions. When the interviewees perceive value in regards to the subscriptions, value is viewed in relation to the users of the solution, because without users there will be no subscriptions. These users include dealers, operators, service engineers and warehouse managers; however, the interviewees mainly refer to the dealers as the essential user. Two interviewees argue that it is important that the solution creates value for the dealers (IV1, appendix 1; IV4, appendix 4). The main way the solution creates value to the dealers is through cost savings, as expressed below:

> *"So, in this case, the emphasis with Trackunit was on cost savings [...] the attractiveness is in the potential for cost savings"* (IV1, appendix 1).

Another interviewee supports this:

> *"MCFE they have dealers, and the dealers have rental fleets so when they rent out the machine they get a fixed price on this machine every month. So that's the revenue, and the cost is service and repair. So the whole purpose of getting a profit seen from the dealers' perspective is to get as low costs as possible because they can't increase the price"* (IV5, appendix 5).

This means that dealers have rental fleets where the revenue stems from the machines they rent out to customers at a fixed price per month, and their costs are service and repair. The dealers will not accept an increase in price, and so the dealers' profit can only be influenced by the other variable; cost. A way for saving costs would be if the dealers could reduce the amount of travel for the service technicians as it is costly, or if dealers could fix issues themselves. Thereby, the dealers can reduce their costs by using the solution (Trackunit/MCFE, 2017a). We argue that the potential cost savings for the dealers give an incentive to buy the solution and the subscription, and thus cost savings for the dealers indirectly influence MCFE and Trackunit's value-in-exchange.

One interviewee states that if the dealers believe in the solution being able to create value by reducing costs, it has the potential to become a very successful solution. He argues:

> *"[...] at the end of the day, you need to have a dealer calling and saying "yes, I want 50-100-200 solutions a year to put them in my trucks so I can monitor them and save money""* (IV1, appendix 1).

This indicates that no matter how advanced the solution is it all comes down to the dealers' actions. This aspect of dealers' possible purchase and its great potential indicates that when the interviewees talk about value, this is potential value-in-exchange. Thus, value-in-exchange, in this case, is derived on expectations and holds an element of future and uncertainty because this value has not occurred yet as no dealers have purchased the solution at the time of the conducted interviews. In all, value-in-exchange occurs in the exchange between Trackunit and MCFE. However, there is also value-in-exchange between the companies and the dealers when they purchase the solution and sign up for the subscriptions.

9.2. Value-in-use

When value is perceived as value-in-use, value occurs through usage. Often this is the customer; however, it can be anyone who is a user and so the customer is always a co-creator of value. Within this line of

thinking companies cannot independently create value; instead, they can create value propositions and potential value which can turn into real value if used by the customer who mixes this with his or her operant resources (Grönroos, 2008; Vargo, 2008). When the interviewees talk about the value created in the case of Trackunit and MCFE, we interpret that they talk about value-in-use. However, value-in-use relates to different actors in the ecosystem, in this case, dealers, operators, service engineers and warehouse managers. The following analysis will view value-in-use in relation to these different actors.

9.2.1. Dealers

Many of the interviewees perceive the value created in relation to the dealers. We argue that the solution creates value-in-use for MCFE's dealers. The dealers experience value-in-use when they use the data which can be extracted from the machines they rent out to customers, enabling cost reduction. A large amount of a dealer's costs originates from service engineers hired to make repairs to the machines and keep them running. The data from the telematics solution ensures that the dealers can optimise the output of their service engineers, reducing his costs for delivering services by 20 percent (IV1, appendix 1). Efficiency and productivity can be increased when the dealer sends damage information including pictures at pre-check phase to the service engineer. This enables the engineer to be better prepared when starting a reparation (IV5, appendix 5). One interviewee elaborates as he argues that normally a service engineer drives around in a van servicing between 50-80 trucks in a certain regional area. With this solution the same engineer can service between 100-120 trucks; hence fewer engineers are required. He argues that good engineers are hard to find and expensive. The dealers benefit from the solution as it reduces the demand for engineers (IV1, appendix 1). Thus, the value-in-use that the dealers experience when using the device results in cost savings due to increased efficiency and productivity of the service engineers.

When talking about dealers' value as usage, it is also relevant to mention a specific feature of the solution more in detail as this is likely to influence the dealers' value-in-use. The solution has the functionality of shock readings and according to one interviewee from MFCE Trackunit overstated the feature:

> *"I would say, the functionality of the shock reading, I think has been overstated by Trackunit. So the capability has been overstated* [...] *We thought it could provide more meaning"* (IV3, appendix 3).

We argue that since the feature is not as accurate as MCFE had hoped for, it can potentially influence the value from the co-creation process. The reason is that the current less precise shock feature will affect the dealers' value-in-use because the data they can read on their devices will not be as detailed as hoped for, thereby influencing the value the dealers experience when using the solution.

9.2.2. Operators

The interviewees agree that the end users, the operators, are receivers of value (IV1, appendix 1; IV5, appendix 5). One of the interviewees elaborates further that when Trackunit initiated the idea of the application, it was meant to mainly create value for the operators, e.g. forklift drivers:

> *"When we had the idea of this new application we wanted to run on mobile phones it was very much about connecting the operator to the machine and doing pre-checks"* (IV5, appendix 5).

The operators are the last link in the chain and without them operating the vehicles with the solution installed no data will be created. The solution connects an operator to the machine, and the data can be used for pre-checks such as safety pre-checks (IV5, appendix 5). The operator receives the pre-checks and the information of the specific machine he uses, on his mobile phone, which prevent breakdowns. Hence the forklifts will be better maintained, and the operator will have better use of it (IV5, appendix 5;Trackunit/MCFE, 2017b). Thus, value-in-use is created for the operators.

9.2.3. Service Engineers

Based on interviews and external materials we argue that the service engineers also experience value-in-use from the solution. Through a mobile device, a service engineer has access to information about the vehicles. By receiving a picture, he knows beforehand if a defect is critical or if it can wait until the next service check. An interviewee explains this in the following way:

> *"[...] a picture that the service engineer can see on his mobile phone or in his system and come to the conclusion "that is something I can fix remotely, or I can do the repair the next time I'm there to do a normal service""* (IV5, appendix 5).

Based on the external materials and the interviews, thanks to the solution the service engineer can better plan the required repairs, thus service a customer's fleet with higher efficiency while increasing his own

productivity and improving the customer relationship (Trackunit/MCFE, 2017b; IV1, appendix 1; IV5, appendix 5). The interviews did not provide a more detailed understanding of the service engineers' value-in-use. We argue this because the interviewees perceive the higher efficiency of the service engineers as an expression of the dealers' value-in-use, and so the interviewees are more focused on the dealers' value-in-use and not the service engineers'.

9.2.4. Warehouse Managers

One of the interviewees argues that warehouse managers can benefit from using the solution. A warehouse manager is interested in the data because it can help him to determine causes for any non-fulfilment of a rental agreement. A rental agreement between a warehouse manager and a dealer does not include damages or breakdowns caused by an operator. An example is an operator continuing driving despite an oil leak, resulting in a breakdown of the engine and this is a cost for the warehouse manager. The vehicle maintenance information enables a reduction of the truck handling costs in relation to the defined efficiency output (IV5, appendix 5;Trackunit/MCFE, 2017b), and so he has an interest in the solution's data. Nevertheless, none of the interviewees mentions the warehouse managers experiencing value from the solution. We interpret that the warehouse managers are less relevant for the creation of value-in-use or at least not whom the solution was intended to bring value to.

9.2.5. Potential and Real Value

According to the value form value-in-use, MCFE and Trackunit are in the provider sphere where they create value propositions or potential value to their customers' value creation. Meaning, they both create the solution which is then offered to MCFE's customers. We argue that the main customers are MCFE's dealers; hence, the solution with its different features and devices is potential value that will only become real value if the dealers use the solution. This notion of potential value fits the description of the interviewees' value. The importance of creating value for the dealers pervade the interviews, and many of the interviewees describe the value as being dependent on the dealers seeing potential in the solution and buying it (IV1, appendix 1; IV2, appendix 2; IV4, appendix 4; IV5, appendix 5). One Trackunit interviewee states:

"They were really eager to get this out to the dealers because they were really hoping that the dealers would see this as really promising to the future [...]" (IV4, appendix 4).

From this, we interpret that value to MCFE and Trackunit is only a reality if the dealers accept the solution and themselves create real value from it. The dealers, and the other users, create real value by mixing the potential value, the solution, with their operant resources such as skills and knowledge. If dealers purchase and of course use the solution, then MCFE and Trackunit will have the opportunity to co-create value with the dealers in the joint sphere, which is between the dealers in the customer sphere and the two companies in the provider sphere. We present this in figure 7. We claim that the interaction in the joint sphere relates to future developments and updates of the solution. The updates of the solution created from the interaction with customers will then fit the needs of the dealers and the more indirect customers: operators, service engineers and warehouse managers.

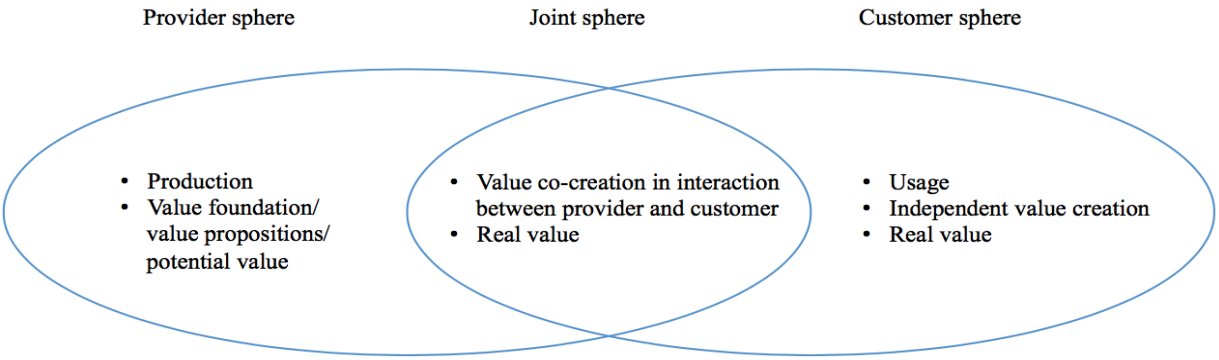

Figure 7: Own figure. Based on Grönroos, 2011; Grönroos & Voima, 2013 applied to the context of Trackunit and MCFE.

To sum up, different actors in the ecosystem experience value-in-use from the solution because dealers, operators, service engineers and warehouse managers are users of the solution created by Trackunit and MCFE. All these actors extract data from the solution and mix it with their operant resources in their individual contexts and derive meaning from the solution. However, all the interviewees mostly mention the dealers as the main receiver of what we argue is value-in-use, and this also relates to value-in-exchange because when dealers use the solution on the precondition of purchase, it creates value-in-exchange for Trackunit and MCFE.

9.3. Value-in-context

Building from the previous parts of the analysis, we now turn to value-in-context as it is a broader and more general concept including both value-in-use and value-in-exchange, and so value-in-context views value as determined in networks. It is the combination of actors in a network and their competencies and resources that are determinants of value-in-context. Within a specific context, actors can experience value differently because they experience the context differently. Actors thereby ascribe value to the parts of context they experience as important. In the interviews, we see some similarities in how value is described as context specific. Therefore, we argue that some of the value created is value-in-context because it relates specifically to this network where Trackunit and MCFE are the main actors. This value-in-context relates to three aspects: the specific companies and their resources and competencies, learnings from the collaboration and future value creation. These aspects are presented below.

9.3.1. The Specific Companies' Resources and Competencies

We argue that the value created is due to the two specific companies and their resources and competencies. The two companies need one and another to create the solution and this influence the solution created. Trackunit interviewees mention that the company needed MCFE because Trackunit had the idea of the solution but it could not be realised without an OEM on board (IV2, appendix 2; IV5, appendix 5). One of them states:

> *"We needed them as a new OEM on board"* (IV2, appendix 2).

Furthermore, MCFE is experts in the forklift truck business and Trackunit needed knowledge about the industry (IV1, appendix 1; IV5, appendix 5). The interviewees from MCFE also mention that MCFE needed Trackunit because of the company's expertise within telematics solutions (IV1, appendix 1; IV3, appendix 3). Especially the fact that Trackunit had the IT infrastructure for collecting and analysing the data which is a big part of the solution:

> *"[...] once you start to collect data you kind of need an IT infrastructure that collects the data, that reports the data, that sends invoices to the customers, and it is a type of infrastructure that we do not have. So the whole IT back office part, that is as much a part of the solution"* (IV1, appendix 1).

None of the companies has the resources and competencies to create the solution on their own; instead, they are dependent on the other company and its resources. Thereby, the solution and the value are dependent on these two specific companies in this context. An interviewee from MCFE even argues that the company could not have created the solution without Trackunit, which only emphasises the actors as important for the specific value creation:

> *"If I (MCFE) had been on my own, I would not have been able to do anything"* (IV1, appendix 1).

Another interviewee from MCFE agrees that the value created is dependent on engaging with Trackunit specifically (IV3, appendix 3). The context specific value, a Trackunit interviewee also refers to when he speaks of the collaboration because he mentions that Trackunit experiences value from this specific context and he concludes by saying:

> *"So that (the collaboration) is really where value is for us"* (IV4, appendix 4).

Based on the interviews we find that the value the companies experience and gain from the collaboration is very much linked to the interaction and exchange of resources. With this integration of resources and competencies follows a closer working relationship between the companies. One of the interviewees mentions that some of the value of the collaboration relates to knowing each other's working styles and who to approach if an employee needs help. He uses the metaphor of a soccer team where team members after a number of training sessions know each other better and know how each other will respond on the field and concludes by saying:

> *"[...] and then you get that 1+1 = 3 synergy"* (IV3, appendix 3).

The same interviewee argues that value lies in the context of co-creating with other teams from Trackunit, and this value is often overlooked because the focus is on the value created for the end user, i.e. value-in-use (IV3, appendix 3). There is also value in educating teams and sharing information and this relates back to the section in the co-creation analysis on transparency. Thereby, this advancement of companies and teams working closer together and the knowledge that comes from it is also value, which is specific to the context of Trackunit and MCFE because it is brought about by the integration and interaction of these two specific actors and their resources.

As a final point, we argue that Trackunit experiences contextual value because of its specific partner company, MCFE. MCFE is a global company and from the interviews, it is clear that Trackunit experiences value because of this specific partner. This is expressed in the following statements:

> *"There is also a different kind of value, and that is that MCFE is a big player in the world of OEMs"* (IV4, Appendix 4).

> *"MCFE are a global corporation that has huge amount of R&D capabilities and technology"* (IV1, appendix 1).

The potential for Trackunit, by teaming up with MCFE as a worldwide company, and sell the solution to other areas of the MCFE corporation, is also mentioned by an interviewee from MCFE. This interviewee states:

> *"There is an interesting spinoff because MCFE is one subsidiary of Mitsubishi Group. [...] So there is a spinoff that we can actually increase the volume through other parts of the Mitsubishi corporation"* (IV5, appendix 5).

There is a possible spinoff where Trackunit can scale the solution to other subsidiaries within the Mitsubishi Group. An interviewee from MCFE follows up by arguing that Trackunit can become the global supplier of this type of solution:

> *"If it is successful it could spread across the globe to our American subsidiary, to our sister company in Europe, to our Japanese R&D department, we are a big company worldwide. This was a local development and for Trackunit there is potential to become the global supplier of this type of solution"* (IV1, appendix 1).

We argue that Trackunit might increase its volume, and experience a greater value-in-exchange, because Trackunit engages in this specific collaboration with this manufacturer, MCFE, and so the anticipated value relates back to this original context. In all, some of the value created is context specific because it is created in the context of the two companies and their resources and competencies.

9.3.2. Learnings of the Collaboration

This thesis' empirical research shows that value-in-context relates to the learnings from the collaboration. Interviewees from both companies mention that there is a high level of learning because they are now at a

different level than before the co-creation process started. Therefore, the value from the co-creation is closely linked to these learnings. This is expressed in the following statements:

> *"[...] both came out of this co-creation smarter than what they came with, so there was a mutual benefit. We learned from them and they learned from us*" (IV2, appendix 2).

> *"We learned from Trackunit and Trackunit learned from us. So there we have really been making steps forward and each step represent value"* (IV3, appendix 3).

> *"I would definitely say that after the MCFE case, we are at another level, there is a lot of learning for us"* (IV4, appendix 4).

One interviewee says that Trackunit has matured because the company has learned which elements are important in co-creation setups (IV4, appendix 4). This means that Trackunit is now at a different level due to these learnings. It is our interpretation that the learnings have occurred due to this specific context and so it is value-in-context.

The learnings from the collaboration have been valuable to MCFE. Now, the company applies some of these learnings, and this is expressed in the following:

> *"We are starting to apply some of the faster thinking Trackunit has taught us, we're applying that already today in our company. So in that sense, it's creating value"* (IV3, appendix 3).

In all, we argue that the learnings of the collaboration are context specific, and so they would have been different if the collaboration had consisted of other actors. Thus, the learnings are examples of value-in-context because they relate to this specific case between Trackunit and MCFE.

9.3.3. Future Value Creation

Value-in-context from the collaboration can be used to create value in future contexts. All interviewees agree that they can take the learnings and knowledge of this collaboration with them into other contexts, thus facilitating value-in-context there as well. One interviewee expresses it in the following way:

> *"So co-creation is not only for the specific customer, but it can help in general to develop for other customers"* (IV2, appendix 2).

We interpret that the interviewee argues that the learnings and knowledge from this context can be used when co-creating with other customers in the future. Another interviewee argues that the specific context

of Trackunit and MCFE allows for future value creation since this collaboration will result in customers contacting Trackunit asking for co-creation. The interviewee says this brings value:

> *"It is a weird thing in this business, because when such a partnership is established and someone spends time on something, it always ends up in the ears of someone and in their pipeline [...] then people suddenly approach Trackunit and call us and say "we have kind of been hearing about your work with MCFE, it sounds interesting, can you do it with us?". And that is kind of the different value, we don't necessarily have to go out and bring this to customers, sometimes they hear of us and approach us"* (IV4, appendix 4).

An interviewee from MCFE continues this line of thinking as he argues that Trackunit can use the functionalities of the solution with other customers who are similar to MCFE, and MCFE can apply the learnings in similar projects to the collaboration with Trackunit:

> *"Trackunit can also use it for future use with other customers who are similar to MCFE. We can apply it also to other projects similar to the Trackunit project [...] So in that sense it's creating value"* (IV3, appendix 3).

From the collaboration Trackunit also learned that OEMs cannot create these solutions themselves and so there is a place for Trackunit in the market where the company can co-create with other manufacturers in the future:

> *"[...] we see more and more OEMs asking for help because now they understand that this is not like developing a new machine, it is completely different. And they look at the organisation and say "we don't have the competence, we don't have the resources, we don't have the processes, help us", so now we are also selling professional services [...] so there was a learning for us, seeing that OEMs can't do this for themselves"* (IV5, appendix 5).

The interviewees' arguments that they can bring the value to other contexts coincide with Vargo and Lusch (2011) who argue that networks are not static but dynamic. This means that value created in one context can be shifted into another network, however, the value itself will change as this will reflect the nature of the new network and these actors. Thereby, we argue that the companies can bring the value-in-context from this specific context to future projects; however, the nature of the value will not be the same in new contexts.

9.3.4. Value-in-context for Other Actors in the Network

Up until now, value-in-context has been viewed from Trackunit and MCFE's point of view. Value-in-context relates to networks as both Prahalad and Ramaswamy and Vargo and Lusch argue, and the network, in this case, includes other actors than Trackunit and MCFE. These actors, whether groups or individuals, are the dealers, operators, service engineers and warehouse managers. The telematics solution by Trackunit and MCFE is created for the dealers and therefore the dealers participated in the workshops where they could give input to possible changes. Thus, the value-in-context is not only determined by the two companies, the solution and value created can be argued to be influenced by the needs and wants of the dealers. Furthermore, based on the secondary materials we argue that the needs of the operators, service engineers and warehouse managers are included in the development of the solution and the value creation (Trackunit/MCFE, 2017b). However, according to the theory, within a specific context, the actors can experience the value differently because they experience the context differently. Thereby, we cannot know for certain whether these actors believe that this is value to them because they are not included in this case study. Instead, the possible value for the actors is viewed from Trackunit and MCFE's point of view. Thus, when the interviewees mention the interaction with the dealers and how the solution will bring value to the dealers, this is an interpretation we make based on the companies' perspectives. To sum up, we argue that it is value-in-context when the interviewees perceive value in relation to the specific companies and their resources and competencies, the learnings from the collaboration and how the value can be brought into future contexts.

9.4. Reciprocally Created Value?

Based on the analysis of the three forms of value we now link this to the analysis of value co-creation presented in chapter eight. We do so, as we seek to understand better *the value* in value co-creation theory and whether value is reciprocally created as stated in the definition in this thesis. Therefore, we proceed to argue whether value is reciprocally created for Trackunit and MCFE. The answer is not straightforward; rather it must be answered on different levels. In overall terms, the analysis shows that the value is reciprocally because both companies experience value-in-exchange and value-in-context. However, when looking more closely at the forms of value, there are differences in how each company experiences these

forms. Thus, we hold that value has been created for both companies, but it is not the same value, and therefore not fully in line it being reciprocally created.

Value-in-exchange takes place between Trackunit and MCFE because both companies experience this form of value when the solution, i.e. the output, is exchanged in a transaction of goods and money. The reason we do not argue that the value is reciprocal is that the solution is exchanged in a marketplace between Trackunit and MCFE where Trackunit sells the telematics solution to MCFE, and from this exchange Trackunit receives payment and MCFE the solution. So the value for Trackunit is monetary, and for MCFE it is the solution, thus not the same, and it cannot be reciprocal value. Additionally, value-in-exchange also occurs between MCFE and the first-hand users, the dealers. Again the value is not the same because the value for MCFE is monetary and for the dealers it is the solution.

The two companies also experience value-in-context because they both get knowledge and learnings from the collaboration. The reason why this value is not reciprocal is exactly because of the nature of value-in-context. Within a specific context, actors can experience value differently because they experience the context differently. Actors thereby ascribe value to the parts of the context they experience as important. The empirical research shows that both companies experience value in the collaboration from the interaction and exchange of company resources. The context related value that Trackunit experience relates to MCFE being a large worldwide organisation and for Trackunit there is a potential for selling the solution on a much larger scale. From MCFE's perspective, the contextual value refers to Trackunit being able to support them in maintaining a strong market position. This indicates that the value is not reciprocally. Whether in terms of technical specifications or knowledge of resources etc., all interviewees categorise the learning outcomes as value. Value as learnings is on different levels. To Trackunit the learnings relate to the construction equipment market and using resources from a large company. To MCFE the learnings relate to working with a fast-paced service-oriented company, and the technical specifications of the telematics solution allowing MCFE to extract data to optimise their customers' businesses. Therefore, we argue that both companies experience value-in-context; however, it is not the same type of value.

This thesis focuses on the collaboration between Trackunit and MCFE, and therefore the value in the collaboration is viewed from these companies' perspectives. However, from the analysis, it is clear that the value created influences more actors than only Trackunit and MCFE. The telematics solution will create value-in-use for the ecosystem, including dealers, service engineers, operators and warehouse

managers as these actors are the actual users of the solution. Thereby, they experience a different form of value than the companies, and this again supports the claim that value is not reciprocally created. Nevertheless, as previously stated, value relates to how the individual views the context, and so we cannot know for sure if it is value to the users because they have not been a part of the empirical study and we do not know how they perceive it.

9.5. Illustrations of Value

Until this point, the analysis has focused on the value co-creation and the different forms of value. Value is an elusive term with various meanings, which is expressed in the interviews, and so we ask the interviewees to illustrate this value. An illustration is an interpretation or visual explanation of a text, concept or process, and the aim is *"to generate expressive images that effectively convey certain information via the visual channel to the human observer"* (Viola & Gröller, 2005:2). Within a specific context, actors can experience value differently, and the interviewees, therefore, ascribe value to the parts of context they experience as important. We believe that when the interviewees illustrate the value, this can help us to understand their perception of the value; aligned with the purpose of this thesis and the hermeneutic approach, i.e. to understand. The five interviewees visualise in a diagram how they experience value from the collaboration. Value is on the y-axis and time on the x-axis, and then they explain to us the feeling of high or low value over time. The interviewees describe the value from their point of view, and this is not influenced by us. When we in the following sections say 'curve' or 'graph' we refer to the line that is drawn, and 'illustration' describes the picture. The following section will go through the value illustrations of the five interviewees in the same order as presented in the appendices.

9.5.1. Interviewee 1, Hans Seijger

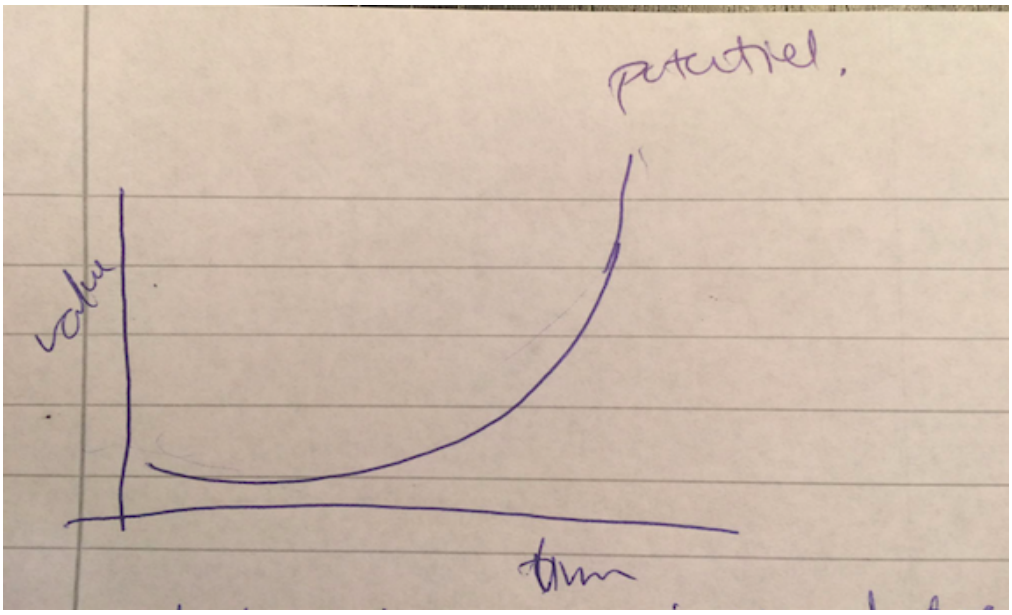

Illustration 1: Hans Seijger's illustration of value.

Hans perceives the value in terms of the sales and end-users usage of the telematics solution, which is not something that has happened yet. Therefore, his illustration is not based on the value he or the company experienced through the co-creation process, he thinks of it in terms of the potential success of the product service system. To him, the expected value is an exponential curve as he says:

> *"If we succeed it will be exponential"* (IV1, appendix 1).

He argues that the solution is the kind of device that has exponential potential because it is a digital solution and if the companies can manage, structure and use the data in the telematics solution to the fullest, the solution can become a success. We argue his description of value is related to his position as VP, Marketing and Sales for MCFE, and to him, value exists when the solution is sold to the dealers. He questions if the companies ten or fifteen years down the line will ever be able to say that they achieved exponential value because the competitors are engaged in similar projects trying to develop their business too. He further states:

"But being able to sustain your position in the market or even grow your position in the market, that will be the indicator of how well we did our job in this respect" (IV1, appendix 1).

Thereby, we interpret this as MCFE has to pursue this vision of the solution if MCFE wants to continue to sustain the company's position in the market or even grow it. As a final point, we find it interesting that Hans does not illustrate the value in terms of the process with Trackunit, even though he was the main sponsor from MCFE, meaning that he was involved throughout the whole process.

9.5.2. Interviewee 2, Gerdrik Pongers

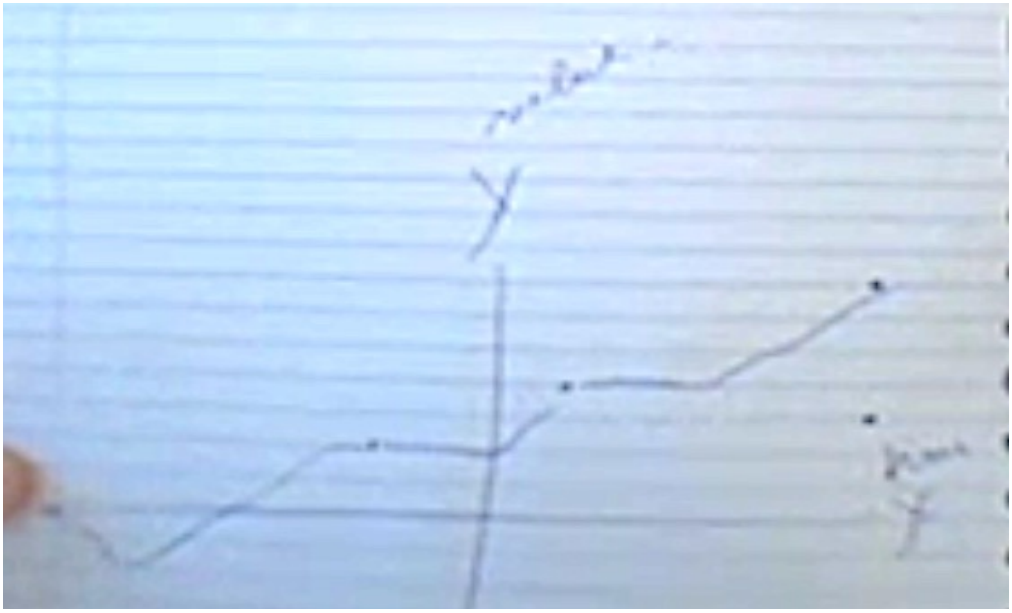

Illustration 2: Gerdrik Pongers' illustration of value.

Gerdrik's illustration and explanation include the whole collaboration process. We argue that his position as Country Manager for Trackunit, where he was involved throughout the process, influences his description of value. He says the value starts at zero and ends at a higher level:

"I think that you will never ever go back to zero because of the fact that the company has got extra value that they will not throw away" (IV2, appendix 2).

We infer from his statement that between these two points value is created and no matter the specific value, the companies experience more value than had they not engaged in the co-creation process. Gerdrik does not see the value as being linear, rather it has to do with the milestones which affect the value, and therefore his illustration is visualised as a staircase:

> *"With more milestones in place you will go to let's say 110, and then with the next milestone it will be 120, so it some kind of a staircase"* (IV2, appendix 2).

He explains that the value starts at zero because at first, the parties do not know each other:

> *"Of course it starts at zero, that is the easy part [...] because first you don't know each other, then you don't understand each other, so the value actually goes below the zero, and they say "well you don't understand this" and we say "you don't understand us" and then you mumble and grumble, which makes sense in a way because you really have to adjust to each other"* (IV2, appendix 2).

When the companies start to interact, he experiences that the value actually drops below zero, because at the beginning of the co-creation process the companies do not understand each other, and they have different takes on the purpose of the collaboration. He believes the below zero point occurs because when companies collaborate they have to adjust to each other and work through the differences and from here the value can start to rise because the parties gain a shared understanding of direction. After this point, more milestones are put in place, and from each of these, the value increases, so it forms a staircase. Each stair represents value where Trackunit or MCFE interact on set targets for the progress of the collaboration. The last point in this illustration is not a point that terminates the process; rather the process can continue afterwards.

9.5.3. Interviewee 3, Willem de Jong

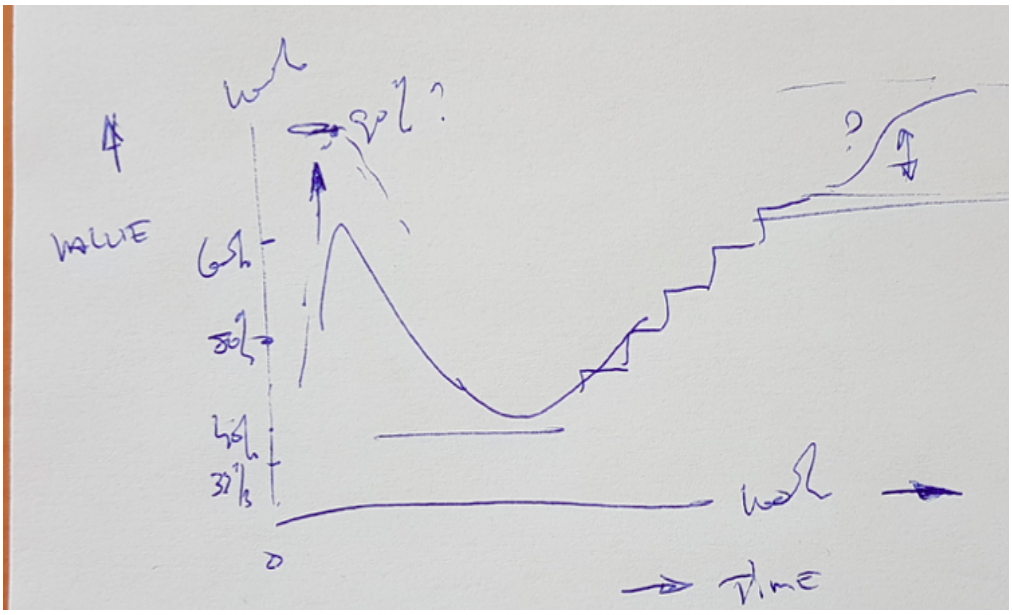

Illustration 3: Willem de Jong's illustration of value.

Willem's position as General Manager means that he is responsible for product and order management, customer relations and technical services among other things. Thus, his illustration of the value represents his participation throughout the collaboration, once it had set off from being initial discussions to being a fully established project.

He says the starting point of value creation is somewhere in the middle of the y-axis. At this point, the relevant people get together and learn what each other have to offer. Therefore, this point already implies that there is some value, which Willem ascribes to being one-third or fifty percent of the total potential value. He states:

> *"In the beginning, we had a big push from management on both sides, I think who tried to inflate this number maybe to 90 percent of the total value, a big push"* (IV3, appendix 3).

We interpret his statement as the management from each company is eager to have a perception of value already from the beginning, which influences how he draws the curve. He further argues that when the technicalities of the solution need to be developed, the value decreases a bit. This decrease depends on

who joins the project because there will be some people who only see the obstacles and the issues. Willem says that this is what some theories call 'The Dark Night of Innovation' where various parties stop seeing the light at the end of the tunnel due to too many obstacles and not enough of the right resources or because the original timeline is too ambitious (Graziano & Miller, 2018). Thus, the original scope may not be realistic and needs to be redefined. He illustrates the value as an increasing ladder where obstacles are dealt with at each step, every time gaining more value:

> *"I think from there on and forward it's bit of a ladder approach or steps where these obstacles are dealt with one by one, every time gaining 10 percent, so we are back towards, right now, the 80 percent, and I think the last 20 percent is really pushing it out to the market and it's where customers have a say in this"* (IV3, appendix 3).

He argues that the last part of the graph relates to pushing the solution into the market where customers have a say. We infer from his statement that the last twenty percent is dependent on the user and we, therefore, argue that this relates to value-in-use and value-in-exchange. Lastly, he comments that whether the value will reach the 100 percent expected or if there will still be gaps, they cannot know for sure.

9.5.4. Interviewee 4, Jacob Zimmer

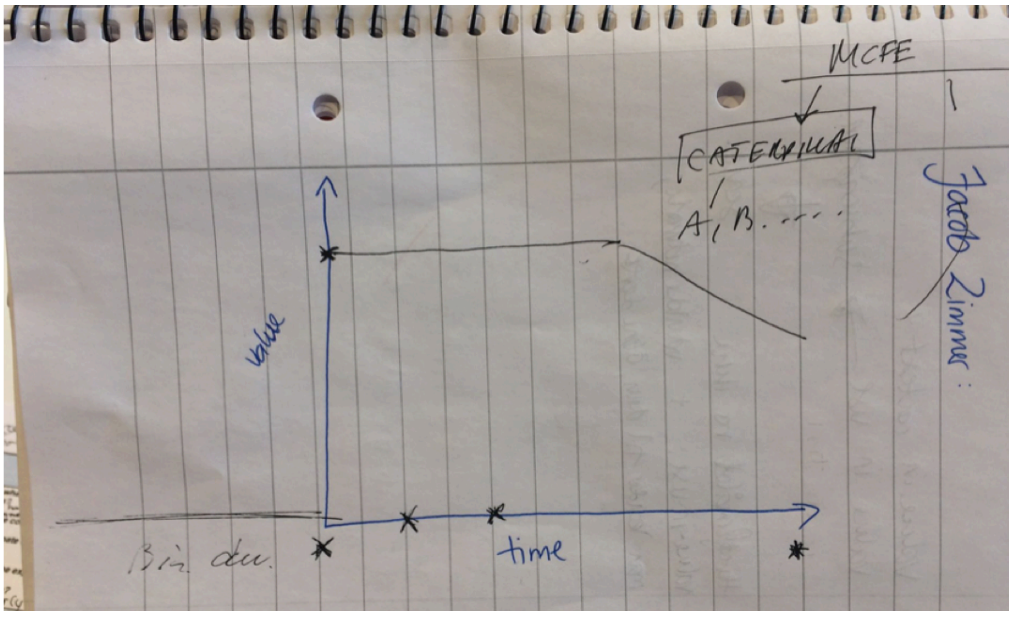

Illustration 4: Jacob Zimmer's illustration of value.

We argue Jacob's perspective on the value creation is limited because he did not participate throughout the collaborative process since his field of expertise is the product development due to his position as Software Product Manager for Trackunit. Jacob took part in the execution phase of the product service solution, meaning that he entered the project in a later phase. Prior to his participation were the building of the project plan, the visions and all of the business development activities. He argues this phase is where the co-creation takes place and the companies explore the potential value for each company respectively. Since all this was prior to Jacob entering the project, his view on the value creation is rather limited in time and content.

Jacob says his illustration of value creation is based on expectations which is the reason for why he starts the drawing above zero on the y-axis. Jacob explains that at the time he entered the project, value was expected to be at a certain level, and from this point in time and until he leaves the project again, the value is linear:

> *"If this is the time where I entered the project, we had an expectation of the value being here, and this is the time where I stepped out of the process, we would be seeing a linear growth but at the end of the project, we would be seeing a bit of a decrease"* (IV4, appendix 4).

Jacob's drawing stops at an unspecified point because he argues this is the exit of the project and this is where both companies need to deliver to determine the value:

> *"Value in this context, as in the MCFE project, it was derived on expectations. [...] But the real value for us is when we see customers buying a subscription because that taps into a subscription with us and this makes it a subscription-based business"* (IV4, appendix 4).

We interpret that he believes value is determined by customers buying the solution, i.e. he argues that value-in-exchange is where the highest value is. It is only when the solution is delivered to the dealers that Trackunit and MCFE find out if customers like it and see it as a potential and exciting product. The reason his drawing ends with a declining curve is that his expectation of the number of customers was higher than what had been realised at the time we speak to him. Although the illustration ends with a declining curve, according to Jacob, the value can potentially go up again.

9.5.5. Interviewee 5, Per Stjernqvist

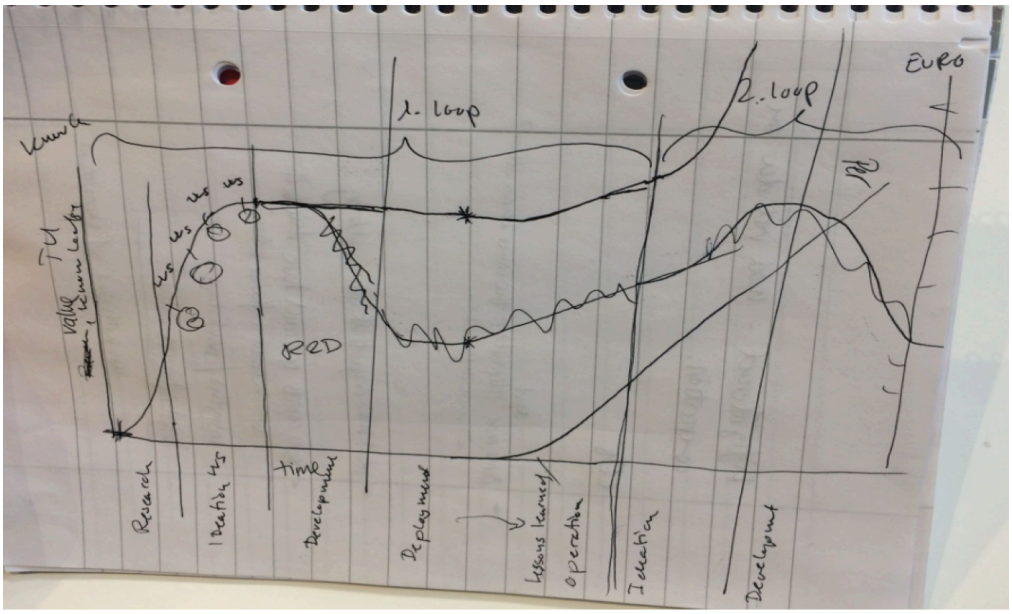

Illustration 5: Per Stjernqvist's illustration of value.

Per holds the position as VP of Servitization and Solutions for Trackunit, meaning that he is responsible for servicing manufacturers of construction machinery with the advanced machine management solutions Trackunit develops[3]. He is not a technology freak and has no interest in the hardware; rather he is interested in the data that can be collected and the value this can bring. Per's illustration describes the whole process. It covers the time from the beginning and up until the point where it is now, while it also includes thoughts on the future. Per is the only interviewee that includes sequences of time in the illustration. We find it interesting that Per starts to draw the illustration in one way which he makes changes to afterwards. We ask about the reasons for his first thoughts, to which he responds that there was a time span during the project where he was not directly involved, and he felt that he did not know what was happening, and, therefore, to him, is difficult to describe and illustrate this point in time. On second thought he is able to explain the whole process and thereby make qualified comments on the curve.

[3] At the time we conducted the research he held this position. In the final phase of writing this thesis, Per told us that he had decided to terminate his position with Trackunit. However, we do not believe that this had an impact on the information and views that he provided.

Per includes two loops in his illustration. Each loop is divided into action phases which Per classifies as the following: research, ideation, development, deployment and lessons learned or operation. The first loop relates to the scope of this thesis, i.e. from the beginning of the collaboration until now. The second loop represents a future interaction between the two companies, which is when the companies take in the knowledge and learnings from the co-creation process and continue to develop from this:

> *"I have been writing two loops. One loop is the one that we are searching on now, the one that is a part of your project. So we are in the deployment phase now, launching the product. And then, I just came up with this idea, the second, third, fourth loop is when we take it in because we have to develop all the time"* (IV5, appendix 5).

Although Per mentions a third and fourth loop he does not elaborate on these nor are they a part of the illustration. It is our interpretation that he mentions them to indicate that the co-creation process will continue in the future with currently unknown scenarios.

He says that the value creation increases in the workshops, which are in the ideation phase, because both companies experience value from gaining insights about the industry, creating ideas and working together:

> *"[...] the value really start picking up, and when we have the ideation, that is really the workshops, then it really takes off, because we get so much value out of gaining insights about the industry and creating ideas"* (IV5, appendix 5).

The workshops are visualised as circled points on the left curve in his illustration, indicating a progressively increase in value. After the workshops the value continues to increase, followed by a point of where the companies accept that this is the solution they will develop. As Per says, this means that the value starts to flatten out:

> *"So I have this feeling that it peaks here, we have maybe one, two, three, four workshops, and it just gets better and better and then it flattens out and we start the development because at some point you need to say "okay, this is the solution""* (IV5, appendix 5).

The development of the solution includes validating ideas with customers. The value is steady because Trackunit and MCFE do not have interactions and since each company works individually, the value does not increase. In the deployment phase, the value is steady as well, which we argue is the same reason; because the companies are not interacting. When the collaboration moves to the lessons learned or operation phase the value starts to increase again because the companies interact again.

Value to Per is a combination of knowledge and revenue, which is the reason for why he adds the second dimension. The illustration includes knowledge as the main value driver, which is the curve that looks like a staircase to the left, while revenue is the curve to the right, occurring at a later point in time and is an exponential curve. As he says:

> *"The revenue starts here in the deployment phase so there is a slow start and then, of course, there will be an exponential growth"* (IV5, appendix 5).

9.6. Five Illustrations in One

The previous sections highlight an interesting point from the empirical research for this thesis. It shows that the interviewees define and illustrate value differently. Value is perceived as knowledge and revenue generated. The five illustrations differ; however, they complement each other. We illustrate differences and similarities in illustration 6, by grouping them in one diagram.

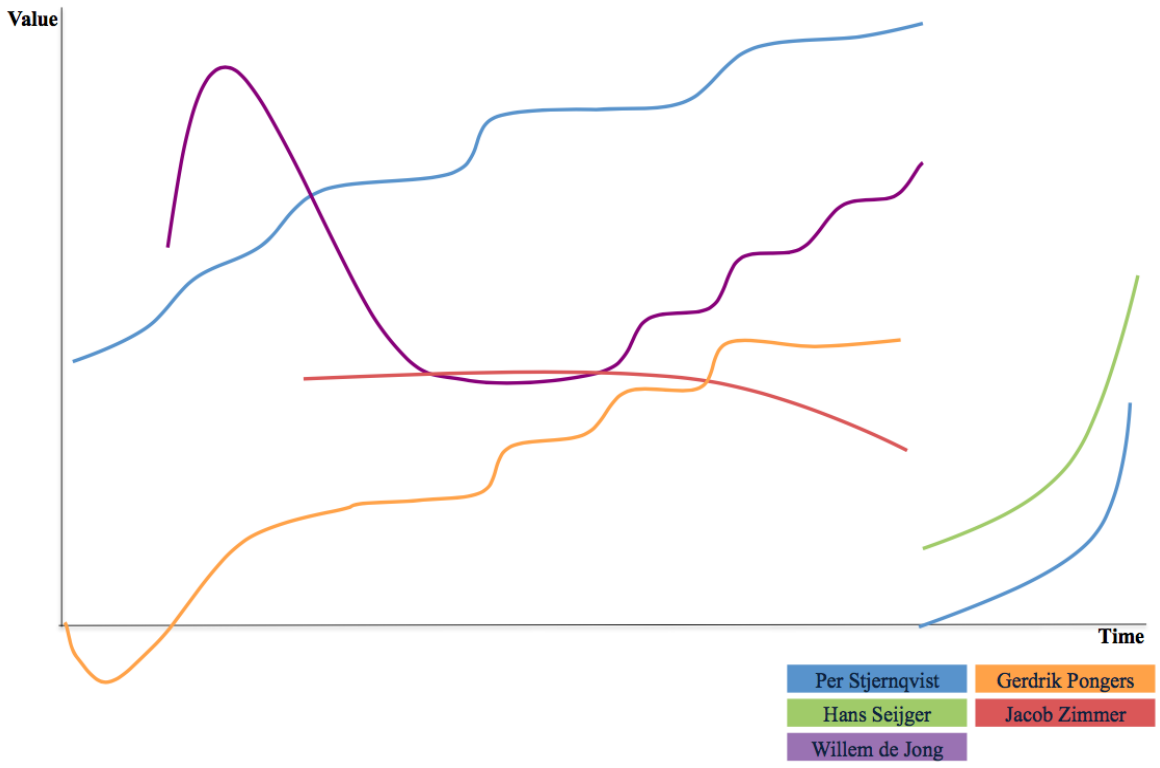

Illustration 6: Own illustration. Five Illustrations in One.

There are differences in the illustrations. Jacob's illustration corresponds least with the other's. He entered at a later point in the collaboration, and his illustration is based on future expectations, and so the curve stagnates during the process ending with a decrease. This decrease is due to the lack of customers he hoped MCFE would have been able to attract. He argues it can increase again depending on how well the solution does in the market, again emphasising that his graph and perception of value is derived from expectations. His curve is less about the learnings and knowledge from the collaboration, which we find that the other illustrations are. Gerdrik and Willem too include decreases in their illustrations of value. These two decreases are not compatible with each other nor with Jacob's decrease. Gerdrik explains that a value decrease happens in the very beginning before the companies gained a shared understanding, while Willem says the value decrease happens when the setup is in place, and the actual work with the solution begins.

Despite the differences in the five illustrations they also complement each other. Except for Jacob's illustration three similarities occur. First, three of the interviewees illustrate an increase in value creation in the beginning of the collaboration. Second, there is a correlation in the way value is illustrated during the collaboration. It takes the shape of a staircase even though the number of steps differs. The last similarity is that value is perceived as the expected revenue, which is mentioned by all the interviewees, but only three of them illustrate it. Both Per and Hans draw the graph exponential, whereas Willem draws it with a less steep rise.

Even though the interviewees describe the value during the interviews in different ways, and we interpret this as value-in-exchange, value-in-use and value-in-context, it is far from all of them that illustrate this value when asked. Examples of this are Hans and Jacob who both during the interviews mention the learnings and knowledge created, however, they do not illustrate this. One reason for this can be that the interviewees find it difficult to illustrate the value which becomes apparent during the interviews and so it is left out. It can also be due to the elusive nature of value as knowledge that simply does not come to mind when they are asked to illustrate it. Lastly, it might be that the interviewees are more caught up in seeing value as a monetary gain because this is how value traditionally is viewed. Exactly the difference in talking about value and the actual drawing of value is an interesting aspect because it becomes clear what meaning the interviewees mostly assign to value.

Based on illustration 6 we find two reasons which affect the value and thus the individual illustrations. The first reason can be ascribed to the interviewees' different level of participation over time. Even though

the interviewees were engaged throughout the process, it is different when they were most engaged, and this ultimately influences how they view the value from the collaboration. Their individual engagement also correlates to the second reason which is the interviewees' positions and areas of expertise. Although all interviewees are in senior positions at Trackunit or MCFE, some are in positions of sales while others are within product development. These different areas of expertise affect how the interviewees view the process and the value created resulting in different illustrations.

9.7. Synthesis 1

From illustration 6, we present an illustration of the value co-creation in the case of Trackunit and MCFE which is illustration 7. We call this Synthesis 1 which visualises two curves: knowledge and revenue.

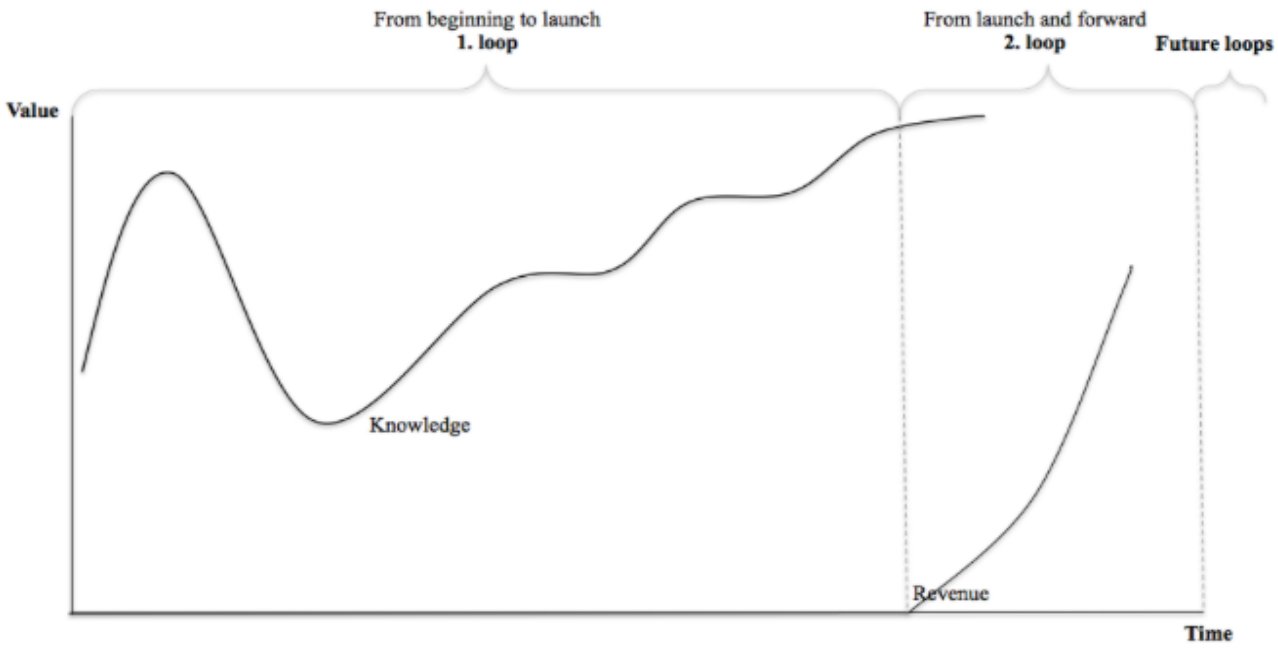

Illustration 7: Own illustration. Synthesis 1.

To validate Synthesis 1 we send it to the interviewees. We send Synthesis 1 without further explanation; instead, we take an open approach and ask for brief comments. These comments are presented in the following, as they are of significant matter to the further development of the synthesis.

Jacob comments on the phases, in that the first phase should be called 'ideation and shaping' to make the phase more concrete than 'from beginning to launch'. Furthermore, he recommends splitting the second phase 'from launch and forward' into two phases, so 'launch' becomes a phase instead of a specific point in time. He elaborates on the reason for this:

> *"I believe many misunderstand what launch is. Many view it as a button companies press and suddenly a product or solution is launched. This is not the case; instead, it is a phase, a process"* [trans.] (IV4, appendix 6).

He thereby argues that launch is not a single point in time, rather it is a phase. He further argues that launch is a difficult and time-consuming phase as it includes that MCFE has to launch it to different customers. In the launch phase, customers experience value because they gain new knowledge, but mainly this is where value as revenue starts to rise. In this phase revenue will not rise as companies tend to expect; instead, revenue starts to take off after the launch phase where it will turn into an exponential rise (IV4, appendix 6). Likewise, the other interviewees comment on the revenue curve. Per also believes it should have a more slow rise at first, which is later followed by a sudden exponential rise:

> *"It (the revenue curve) starts with a slow rise and then the typical exponential rise suddenly happens, in that, a slight rise in the beginning"* [trans.] (IV5, appendix 6).

Willem agrees that the curve is too steep to which he states:

> *"Revenue graph is too steep in my opinion; should be far less aggressive at least for this product [...] While we would like a more aggressive curve, the less aggressive curve is in line with reality as we experience it"* (IV3, appendix 6).

Willem's statement relates back to what Hans mentions in his interview of the potential of the solution. Hans argues that MCFE has to engage in the development of this new telematics solution if the company wants to stay competitive because MCFE's competitors are also looking to creating similar solutions. Since other telematics solutions, which more or less serve the same purpose, are in the pipelines, the revenue MCFE, in reality, will experience might be different from what they hope or expect (IV1, appendix 1).

Despite several of the interviewees in the original interviews give examples of value decrease and even draw the decrease of the curve (IV2, appendix 2; IV3, appendix 3), the curve in the Synthesis 1 cannot decrease. One of the interviewees states:

"You cannot become more stupid" [trans.] (IV5, appendix 6).

We interpret he means that the companies cannot lose the knowledge they have gained already. The interviewees mention value decrease as when they experience obstacles during the process, however, when the value is drawn this decrease should be illustrated as linear instead. Similar to this point is another comment by Jacob. He too stresses that instead of the drastic decreasing curve, he imagines it to start from the intersection and be linear, meeting the point that is indicated as the lowest point in Synthesis 1.

Generally, the interviewees agree with how value is illustrated in Synthesis 1 (IV2-5, appendix 6). Gerdrik does not provide a lot of comments to the synthesis, only indicating that he thinks it is fine:

"I really have nothing to add on this, I think it is fine" (IV2, appendix 6).

Willem agrees with the knowledge curve:

"Knowledge curve ok" (IV3, appendix 6).

Furthermore, Jacob comments that he thinks it is correct that knowledge and value are created in the beginning of the collaboration and gradually increases as a staircase. Adding to this, he argues that the number of steps on the staircase will differ depending on the specific case. Additionally, he likes that the value from the collaboration is split into the two curves (IV4, appendix 6).

Based on these insights we find additional points to change. The changes concern the wording of the different periods since we do not think that 'loops' is a suitable term since a 'loop' indicates a process where the end is connected to the beginning. Rather, we seek to define it as a 'phase' because we view it as a distinct period in the process of something's development. A phase in this sense is not meant to have a predetermined time span, but it is something that has no absolute time of ending and is more a part of a process. The loop 'from beginning to launch' we change to the phase 'ideation, development, deployment'. Additionally, we believe it is more precise and true to include learnings in the knowledge curve because it better resembles the findings. From the follow up interviews we argue the curve should start at the zero-point of the y-axis because the collaboration between Trackunit and MCFE is a new collaboration, and so no value has been created when the project begins. From this, we present the improved Synthesis 2 of value co-created in the collaboration between Trackunit and MCFE.

9.8. Synthesis 2: Value Co-creation in the case of Trackunit and MCFE

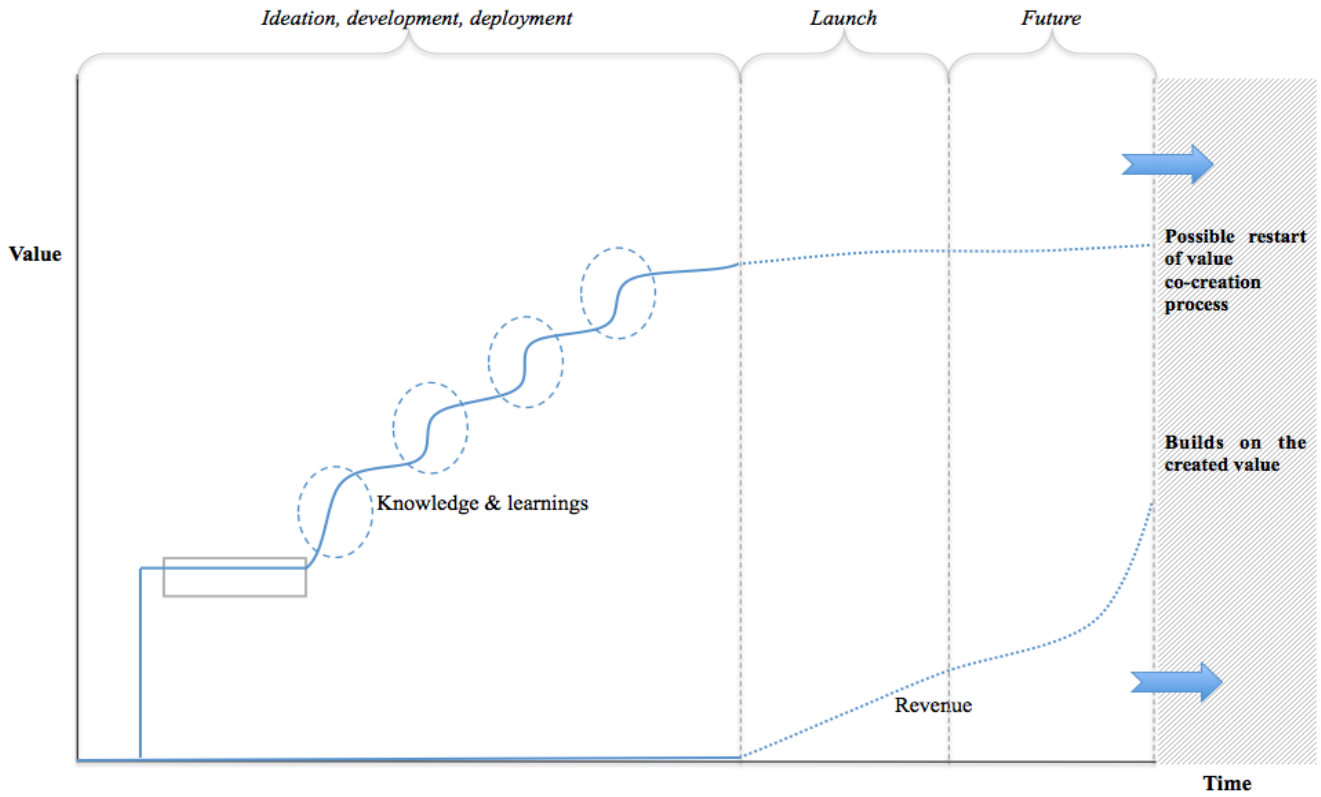

Illustration 8: Own illustration. Synthesis 2: Value Co-creation in the Case of Trackunit and MCFE.

Synthesis 2 describes the value co-creation between Trackunit and MCFE during the phases of the collaboration. The illustration includes the three main elements of this thesis: PSS, value co-creation and forms of value. The synthesis is derived from a service context between two companies, and the value relates to the solution, the service oriented product service system. This PSS entails the integration of both product and services which in this case is the physical devices and the data which can be extracted from the solution. The service oriented PSS is implicit present in this illustration because the specific characteristics of it are relevant for the value created. Parts of the knowledge and learnings from the collaboration relate to the PSS, including knowledge of the industry, the needed software, technology and features of the solution. Value as revenue indeed also relates to the development of the PSS concerning the telematics solution because without this no revenue can occur.

Value co-creation is present in the synthesis because the companies together create the solution. Based on the interviews it is clear that the act of co-creation is more present in some periods during the

collaboration. Especially in the beginning, the companies interact the most, and this is also why value, knowledge and learnings, increases significantly. The co-creation process is visualised as a staircase because during the collaboration the companies interact e.g. during weekly calls or at times where important progress is presented and further actions need to be agreed on. This is expressed as circles of interaction in Synthesis 2. The importance of interaction for a value co-creation process refers back to the revised DART framework presented in chapter eight. Synthesis 2 is meant to provide an understanding of the value from the companies' interaction and so the actual number of steps on the staircase may differ from what is illustrated in the synthesis. Therefore, the synthesis is not a precise indication of how many interactions occurred during the collaboration.

The last element of the thesis, value, represents the two curves in Synthesis 2. Both curves relate back to previous findings where interviewees perceive value creation in terms of knowledge and learnings and revenue. This is what we argue to be value-in-context and value-in-exchange. Value as knowledge and learnings relates specifically to the context of Trackunit and MCFE and the specific PSS. Value as revenue relates to the exchange between MCFE and its customers which affects Trackunit's revenue because Trackunit's earnings partly depend on how many of MCFE's customers buy the solution. We argue that value-in-use is another form of value resulting from the collaboration. However, this is not explicitly illustrated as a curve in Synthesis 2 because the synthesis covers a B2B context and therefore neither of the companies are users of the solution. Instead, value-in-use, which mostly relates to the dealers, is implicit in the revenue curve. The two companies' revenues depend on subscriptions of the solution, and earnings from the monthly subscriptions will only be generated if dealers use the solutions and thus continue to subscribe. The element of subscribing to the solution refers back to the specific service oriented PSS. The dealers obtain ownership of the tangible product, in terms of the device, but services are offered as an integral part of the solution which adds additional value. These services are the data the dealers can extract, and this data and the value from it is the incentive for dealers to continue subscribing which results in continued revenue for Trackunit and MCFE.

The knowledge and learnings curve does not start in the intersection between the y-axis and the x-axis. This is done deliberately because in the very beginning of the collaboration the two companies had to build a relationship before the companies were able to gain a shared understanding of how to proceed. Therefore, the curve increases after this period when the companies 'are on the same page'. The grey square in the Synthesis 2 illustrates the point after ideation where Trackunit and MCFE have agreed on the technicalities of the solution, and so the actual development of the solution begins. Some interviewees

argue this can be a difficult point in time where the employees can find it difficult to proceed and are overwhelmed by the obstacles. Here no value occurs and so the curve is linear.

The phases of launch and future relate to a later point in time; therefore, we cannot precisely predict the length of these phases and how the value will evolve. The illustrations of the curves as dotted lines indicate that we anticipate the development. Based on the interviews the revenue is expected to be linear in the launch phase and exponential in the future phase. Value as knowledge and learnings is expected to increase slightly. This small increase relates to the feedback that MCFE and Trackunit will obtain from the dealers after usage of the solution. At a future point, the companies might choose to create a new version of the solution or add other solutions to the existing one. These will be created based on the existing knowledge and learnings, and so the curve will not start all over but instead continue from where it took off. We argue that the value again can be illustrated as a staircase. The question of where the future revenue curve will start depends on whether it will be an update of the existing solution or a new solution with a new revenue curve. This possible restart can be initiated by different variables we do not know and with different possible outcomes. Exactly due to the intangibility of the future, this part of Synthesis 2 is not more precise. However, it is important to illustrate that the collaboration between the two partners is a value co-creation process that will continue and does not prescribe a clear ending, as discussed in the building block time. The future is illustrated with the arrows pointing to the grey area.

To sum up, we find that the three value forms describe the value co-creation process. Regarding the value created value-in-exchange occurs in the exchange between Trackunit and MCFE however it is mostly seen as the monetary and solution exchange between MCFE and the dealers. Value-in-use refers to the users of the solution such as dealers, operators, services engineers and warehouse managers. However, value-in-use primarily relates to the dealers. Lastly, value is likewise perceived as value-in-context in relation to the specific companies and their resources and competencies, the learnings from the collaboration and how the value can be brought into future contexts. For Trackunit and MCFE the value is partly reciprocally as they both experience value-in-exchange and value-in-context; however, the details of this value differ and so the value cannot infinitely be argued to be reciprocally created. These two types of value together with the co-creation process are presented in Synthesis 2 which is based on the interviewees' illustrations of value from the collaboration.

Chapter 10: Towards a New Theory

This thesis is written in the specific context of the two companies Trackunit and MCFE and the collaboration of co-creating a telematics solution to the forklift market. Therefore, the findings refer to this case study. However, this chapter seeks to discuss how some of the findings can be generalised. Building theory from a case study is based on the juxtaposition of contradictory or paradoxical evidence (Eisenhardt, 1989). Putting forward the following propositions aim at having other researchers use these across cases with different types of data, which will increase the likelihood of reframing it into new theoretical positions. As Glaser and Strauss (1967) argue:

> *"It is the intimate connection with empirical reality that permits the development of a testable, relevant, and valid theory"* (Eisenhardt, 1989).

Although in normal science incremental empirical testing is what develops theory (Eisenhardt, 1989) there are times when little is known of a specific phenomenon or when current perspectives seem inadequate (Eisenhardt, 1989). We argue that this is the case for this thesis. We have investigated a case by using a combination of theories we had not yet discovered when we started the research, and within each field of theory, not enough was empirically tested. Therefore, we refer to Eisenhardt's proposition:

> *"In these situations, theory building from case study research is particularly appropriate because theory building from case studies does not rely on previous literature or prior empirical evidence"* (Eisenhardt, 1989).

We generalise the findings of this thesis into six propositions which can be used by companies who wish to engage in value co-creation collaborations in a service context. These propositions are presented in the following.

Proposition 1:

- Value co-creation presumes interaction of involved parties and in periods of high interaction the co-created value increases.

Value co-creation presumes interaction of involved parties and in periods when these interact more frequently the co-created value will be higher. Therefore, often this increased value co-creation occurs at the beginning of the collaboration when the companies team up and agree on the setup of the solution and

choose a way forward. It then enters a phase of stagnation only to rise again when the companies interact, meaning that the co-created value evolves in interactions.

Proposition 2:

- The revised DART framework facilitates a good value co-creation process.

To provide the best conditions for value co-creation the seven building blocks must be present. These building blocks are a revision of the original DART framework and focus on companies' need to align on the expected level of participation, time of collaboration and time of development as well as articulate and address differences in organisation mindsets.

Proposition 3:

- Optimal value co-creation entails commitment and engagement over time.

Optimal value co-creation entails commitment to the collaboration in the long-run. Engaging in a co-creation collaboration is an on-going process, and companies who wish to enter into this kind of collaboration have to be aware that the best possible value co-creation depends on the continuation of the collaboration, what we call collaboration time. We find that there is generalisability in terms of companies' commitment and engagement over time, and there is also an aspect of generalisability in terms of the development time. This is influenced by the context, to which this case focuses on a telematics solution, and generalisations about development time would require a similar context within the digital industry. For telematics solutions, the development time needs to be short, so the final solutions remain relevant in a fast-changing market.

Proposition 4:

- In a B2B context, there is value-in-context and value-in-exchange, while value-in-use is implicitly created.

The value of a co-creation process is difficult to define, and therefore, when researching the locus of value creation, it is advantageous to do so based on distinctions of the three forms of value. The value creation between companies is expressed in value-in-context and value-in-exchange since neither of the companies is the end user of the solution and thus no direct value-in-use for the parties is created.

Proposition 5:

- The three forms of value can co-exist but they do not occur simultaneously.

The three value forms can co-exist in a value co-creation collaboration, but they do not occur simultaneously. Value-in-exchange and value-in-use occur after value-in-context; however, value-in-use for the customer influence the future aspects of value-in-context and value-in-exchange.

Proposition 6:

- How employees perceive the value from the collaboration, depend on when they engage in the collaboration and their professional positions and competencies.

Even though employees engage throughout the process, it is different when they are most engaged, and this influences how they perceive the value of the collaboration. The value created is perceived differently depending on when employees participate most and their positions and competencies connected to their areas of expertise.

These six presented propositions can be used by companies who wish to engage in co-creation collaborations. Not all companies are alike, nor are all solutions like the one developed by Trackunit and MCFE, but the propositions and Synthesis 2 in chapter nine can be applied as a starting point for investigation and understanding of other value co-creation collaborations in service contexts.

Chapter 11: Discussion

The previous chapters have analysed the empirical field resulting in a number of findings. This chapter discusses and takes a critical stance on the theoretical framework versus the empirical findings of product service system, value co-creation and forms of value.

	Theory	Findings
Product Service System	• Solutions rather than single products • Value from combining services and products	• Service oriented product service system • The integrated telematics solution
Value Co-creation	• DART • Reciprocally created value • Converging roles	• Present plus additional parameters • Not to the full extend • Partially
Value	• Three forms of value • Elusive term • Co-existence of the three forms	• All are present • Indicated in the different illustrations • The value forms can co-exist

Table 3: Own table. Overview of theory versus findings.

11.1. Effects of the Product Service System on the Collaboration

The concept PSS focuses on companies selling product services systems, rather than single products and services. Chapter three presents five different types of PSSs, and in chapter seven we argue that the solution in the case of Trackunit and MCFE is a service oriented PSS. Based on the empirical findings we argue that the value of the solution is due to it being an integrated combination of product and services because interviewees from both Trackunit and MCFE state that the value refers to the data that can be extracted. This value cannot be derived without the physical devices placed in the vehicles which gather information of usage of the vehicles. Thereby, this supports the argument that the solution is a service oriented PSS because it is the combination of a product and service which creates value.

The following will discuss which effects the solution as a service oriented PSS has on the collaboration. Trackunit and MCFE's vision of working together, we argue is actually a necessity for the solution to even exist and bring value to the two companies and their customers. The interviewees are very positive about seeing each other as partners for the long-run; however, we claim that there is no other choice when the solution is a service oriented PSS. This is because much of the value to the customers is in the data and

the extraction of data, and this means that MCFE is dependent on Trackunit for the future since MCFE does not have the required back-office systems to provide the services connected to the data. Simply put, MCFE is within construction equipment, not telematics. Unless MCFE chooses to vertically integrate telematics into the corporation, which would turn the service oriented PSS into another type of PSS; the integration oriented PSS, they cannot operate the solution. This influences the relationship between the companies to Trackunit's advantage in that MCFE cannot opt out Trackunit. We state that it is not so much the companies' willingness to become partners which makes this partnership exist; instead, it is the characteristics of the PSS that tie the companies to each other. The empirical findings show that because of this PSS classification, the collaboration will continue, which corresponds with the co-creation theory arguing value co-creation should be a process over time.

11.2. The Reality of Value Co-creation

According to the theory, the DART framework with its building blocks facilities the value co-creation process. Based on the empirical findings these building blocks are present in the collaboration, and they facilitate the co-creation process. Other building blocks also influence the facilitation of value co-creation which falls outside the original DART framework thus they are presented as individual building blocks that extend the original DART framework in the case. These are organisational mindset, participation and time in which the latter is split between collaboration time and development time.

The value co-creation theory argues that value is reciprocally created for each actor. In overall terms, the analysis shows that the value is reciprocally created because both companies experience value-in-exchange and value-in-context. However, when this value is viewed in more details, it is clear that it is different how the companies experience this value. Thus, we hold that value has been created for both companies, but it is not the same value, and therefore, the value is not reciprocally. We remain critical as to whether value can really be reciprocally created for companies in general because as much as Trackunit and MCFE may engage in a co-creation process, there will remain differences in their purposes, wanted outcome and in the resources and knowledge, they bring to the collaboration. Thus, the outcome of the experienced value will not be the same when the companies are different. If they were to experience a reciprocal value, we believe it would require for the companies to have a system in place that incorporates elements of reciprocity, in which they then align all aspects of the organisations in terms of management

system, organisational structure and decision-making processes. This has not been the focus of this thesis, and it would require a different approach for researchers to investigate whether embedding a system, which facilitates reciprocally value in companies, is realistic.

According to the value co-creation theory, there are no predetermined fixed roles instead these converge, are temporary and shift as the circumstances change. Thereby, the traditional roles of supplier and customer converge into being partners and collaborators where actors are both collaborators in co-creating value and extractors of the value. From chapter eight it is clear that Trackunit and MCFE view each other as partners, they both contribute to the co-creation of value and they also are extractors of the value. Thus, this is consistent with the value co-creation theory. Nevertheless, it is also clear from the interviews that the traditional roles of supplier and customer still exist where the supplier, Trackunit, provides the customer, MCFE, with the solution. The fact that this traditional view of roles is still present in the case may also be the reason why, despite some disagreements of engagement level during the collaboration, it is accepted that Trackunit contributed more than MCFE because at the end of the day it is Trackunit which sells a solution to MCFE. This contrast between the theory and practice indicates that the theory is not always easy to apply to reality which relates to our previous argument that value co-creation is a conceptualised theory and not an empirical tested theory.

11.3. Criticism of Value Co-creation Theory

The inconsistency between theory and practice has led us to raise critical points of the value co-creation theory. We find that the theory of value co-creation is a conceptual theory. The examples of value co-creation are often isolated examples from different contexts, and this only contributes to the theory remaining conceptual. Even though other authors have contributed to Prahalad and Ramaswamy's first work of value co-creation, it remains a theory which is difficult to grasp and even more difficult to test in practice, and this is one of the findings from this thesis' research.

In essence, value co-creation is a process where the actors jointly create value (Leclercq et al., 2016). We claim that when value co-creation is created during a process including everything from ideation to consumption, it remains difficult to pinpoint what kind of value is created. Therefore, to better understand the specific value from a value co-creation process we rely on the service management literature which presents three forms of value. One of which is value-in-use where value creation relates to the user of the

output, in this case the users of the solution. However, if value is determined by the actual use of the solution, this means that everything up to this point is not a part of the value creation. Instead, the production leads up to the point of actual usage and so it is potential value as mentioned in chapter nine. Thereby, value-in-use contradicts the notion of value creation being in a process, and again this illustrates the inapplicability of value co-creation.

If the customer determines the value created and if Trackunit and MCFE only can create potential value then this also contradicts the notion of value being co-created. Value cannot be created *both* by companies and the customer *and* by the customer alone. It is not the aim of this thesis to make a statement of right or wrong regarding whether value is co-created or independently created by the customer. Rather we highlight these conflicts as they show the complexity and inapplicability of the value co-creation theory and how it is difficult to apply it from a conceptual to a practical level.

11.4. Co-existence of the Three Value Forms

Value as a concept is elusive with many different definitions. In this thesis, value is viewed as three forms of value-in-exchange, value-in-use and value-in-context, and the theory does not describe whether the forms of value can co-exist. Based on the empirical findings we interpret that the value as these three forms is a result of the collaboration. Synthesis 2 indicates that the value forms can co-exist; nevertheless, value-in-context occurs before value-in-exchange and value-in-use. We raise the question of whether value-in-context is a more important than the two other value forms as value-in-context precedes these, indicating that without value-in-context, value-in-use and value-as-exchange cannot exist.

It is an interesting finding that the interviewees from both companies perceive value-in-exchange as one of the main outcomes of value creation. Value-in-exchange adheres to how value traditionally has been viewed, as a monetary gain in a market between company and customer. This means that the company determines the value for the customers and the interactions between companies and customers are not seen as a source of value creation. Thus, when Trackunit and MCFE perceive value as something that is exchanged, both companies still adhere to the traditional firm-centric market perspective, despite much else of the analysis shows that the companies view value as occurring in the interactions between the companies and the customers. This again supports the claim that the different value forms can co-exist,

however, it goes against the theory of value co-creation where value occurs in the interaction and not as an exchange.

This chapter has discussed aspects of the three main areas of this thesis in terms of whether the empirical findings are aligned with the theory. In essence, this chapter shows that theory and empiricism correspond; however, complete alignment between theory and practice is not possible within the scope of this thesis.

Chapter 12: Conclusion

This final chapter constitutes the conclusion of the thesis. First, we answer the problem statement and after managerial and theoretical implications follow. We then propose suggestions for further research and the chapter ends with limitations of this thesis. This thesis has answered the problem statement:

> *How do Trackunit and MCFE use co-creation to create value, which forms of value do they create and for whom?*

To answer the problem statement and research questions a qualitative approach has been applied, and the primary method for data collection has been qualitative semi-structured interviews with actors within management positions at Trackunit and MCFE. Both the interviews and the following analysis were based on theoretical frameworks derived from service management literature on product service system, value co-creation and different forms of value.

As highlighted in the introduction and throughout the thesis, the literature and management thoughts increasingly focus on the combination of products and services, i.e. product service systems. A main reason for companies to offer combined solutions is that these will create greater value than products or services can if they stand alone. Based on the different ways to combine products and services, i.e. the five classifications of PSS, we argued that the solution, in this case, is a service oriented PSS. This classification entails the incorporation of services into the product itself, and thereby the product and service are integrated. The customer obtains ownership of the tangible product, but services are offered as an integral part of the offering and add additional value. The telematics solution by Trackunit and MCFE is an integration of products and services which creates value since this value of the solution refers to the data that can be derived. However, without the physical devices placed in the vehicles gathering information of usage, the value cannot be extracted. Thus, it is the integrated combination of product and services which creates the value of the solution.

Value co-creation is a broad theory to which many authors have added to the literature. This thesis has focused on Prahalad and Ramaswamy's initial thoughts on value co-creation. Hence we applied the DART framework to investigate the value co-creation process between Trackunit and MCFE. The framework consists of the building blocks dialogue, access, risk assessment and transparency. The study showed that it has been possible to analyse the value co-creation process by using these building blocks. Dialogue relates to interactivity and engagement by the companies. The companies' dialogue included workshops,

physical meetings and weekly calls, and the companies engaged more in a dialogue at the beginning of the collaboration. Nevertheless, it was consistent throughout the process. The dialogue between them enhanced the companies' mutual understanding of the solution and each others' businesses. The building block, access, entails availability of information and knowledge between Trackunit and MCFE. At all times, access to information was available if employees wanted it; however, there was a degree of selectiveness, because the companies themselves decided what to share on the information platforms. The third building block, risk assessment, relates to whether sufficient information was given to assess the risk and if the risks of the collaboration were considered. MCFE paid more attention to the risk than Trackunit, yet none of the interviewees thought much of the risks of the collaboration. This meant that in practice the collaboration differed from Prahalad and Ramaswamy's take, and here the study found that the empirical findings deviated from the theoretical propositions. The last building block of transparency concerns the disclosure of information. In the case, the level of transparency had some nuances to it. For both companies all information was transparent, however, from MCFE's point of view the transparency about the telematics solution was not sufficient, and for Trackunit the transparency involved strategic thoughts, indicating that not everything was shared.

Furthermore, we argued that three additional building blocks were evident and these extend the original DART framework, which allowed us to present a revised framework for this case. These additional building blocks are organisational mindset, participation and time; collaboration time and development time. This revised framework follows the original idea of the framework in that the building blocks overlap and interact. The importance of the first two additional building blocks is that the companies' differences in organisational mindsets and expected level of participation must be articulated and aligned to create better conditions for the value co-creation process. The last building block is divided into time of the collaboration, and the time it takes to develop the solution. Findings showed that the collaboration time is relevant to the co-creation process because continuing the collaboration is important for the success and relevance of the solution now and in the future. Due to the nature of the solution in terms of its digital content it is essential that the time it took to develop the solution was relatively short and so this influenced the co-creation process between Trackunit and MCFE.

This thesis has viewed value as value-in-exchange, value-in-use and value-in-context. The empirical findings showed that all three types of value occurred. Value-in-exchange refers to the monetary and goods exchange between Trackunit and MCFE, and between MCFE and the dealers when they purchase the solution and sign up for subscriptions. Value-in-use refers to the value created through usage, and so

this type of value relates to the dealers, operators, service engineers and warehouse managers. Lastly, value-in-context relates to the value specific to these two companies, the knowledge and learnings and future value co-creation projects. The value for Trackunit and MCFE is reciprocally in the sense that they both experience value-in-exchange and value-in-context, however, the details of this value differ and so we argued that the value creation is not entirely reciprocally.

The analysis included the interviewees' illustrations of how they perceived the value which occurred in the collaboration. These illustrations differed because of their participation in the process and their positions and expertise. Nevertheless, the illustrations also showed similarities, and Synthesis 1 and the later revised Synthesis 2 are based on these similarities. From Synthesis 2 we commented on the generalisability of the findings and put forward six propositions that are applicable as a starting point for investigation and understanding of other value co-creation collaborations in service contexts.

The thesis ends with a discussion where we take a critical stance on whether the three main theoretical frameworks are aligned with the empirical findings. We conclude that value co-creation is difficult to apply to an empirical case followed by questioning reciprocally value in general. We also conclude that the three value forms can co-exist. In essence, the discussion showed that theory and empiricism correspond; however, complete alignment between theory and practice is not possible within the scope of this thesis.

12.1. Implications

We highlight the following implications to make the thesis' findings relevant to companies and management who wish to engage in a collaboration with the aim of co-creating value in a service context.

This thesis provides an understanding of how to engage in a value co-creation process for companies and what to pay attention to. When engaging in co-creation managers should be aware of the aspects that facilitate and influence the process as these have an impact on the outcome of a collaboration and so the value of it. Companies' way of embracing this framework may very well be different, and so it is important to pay attention to and align expectations to facilitate the best possible value co-creation. We suggest that to do so there are following three areas to consider: resources, organisational culture and wanted outcome.

First, we suggest that resources should be set aside regarding time, money and technology. It is necessary that companies, both management and involved employees, understand the importance of allowing to spend the time to get to know each other, although it might to some seem as inefficient use of time but this serves as an important enabler of the success of the process. Investment of time means that companies should focus on fewer projects to enhance the success of the collaboration. This is because a value co-creation process does not prescribe a definite ending point; instead, it is a continuous process, and so if companies engage in such collaboration, it is important to realise this commitment because the benefits to gain are greater than if not engaging. Thereby, the monetary resources are affected as these will be distributed or used in other manners than previously. The use of resources includes investments in technological resources in terms of equipment for interaction be it either video calls or online platforms to share content and the like.

Second, we point to the organisational culture as an implication. Allowing for transparency of information and access to resources by engaging in dialogue is a point that in most cases is rooted in the organisational culture. This case showed that even though this was a successful co-creation set-up, there were organisational differences that affected how they understood each other. We assume that this will be the same in any co-creation process in a B2B context since each company is unique with own cultures and habits. To overcome the differences in organisational culture, we suggest that companies make themselves aware of this and do their best to articulate and align on this, preferably from the beginning to avoid clashes later in the process.

Third, the wanted outcome of a co-creation process is the creation of value. We see a significant implication in companies knowing that there are different forms of value which can be the result of such collaborations. Companies may not necessarily be able to agree on which type of value they wish to achieve but knowing the distinctions of these forms of value can make the two parties' wanted outcome more clearly and so easier to reach. However, value is perceived individually, and we argue that the perception of value differs depending on the management and employees in the collaboration in terms of their participation as well as positions and areas of expertise. Therefore we highlight this point as an implication that management should pay attention to since this adds another level of complexity in understanding value from a co-creation process.

The findings of the thesis bring theoretical implications. Our findings showed that value co-creation as a theory is difficult to apply in practice. This was among other things expressed in the clash between the

theories, where value co-creation is viewed as a process, and the findings of value-in-use, where value is created in the actual usage. This is an interesting contrast because the thesis' theoretical framework relates to the SD Logic where value stems from an interaction. If the value is created in the actual use, i.e. by the end customer, this contradicts the notion of value being co-created. Value cannot be created *both* by companies *and* by the customer alone. In all, the findings showed that the value co-creation theory is of conceptual size, and it is difficult to apply to an empirical case. Therefore, it would be interesting if other researchers were to test the theory in similar contexts within telematics or in different service contexts and present their findings of how the theory applies to these settings.

12.2. Further Research

The findings of the research in this thesis point to related research fields that are worthy of further studies. The most obvious ones would deal with the limitations of this study, i.e. access to relevant actors and time constraints. However, there are more specific areas of further research we would like to point to.

Relevant further research would be to investigate the collaboration between Trackunit and MCFE in the future, to see how the co-creation process and the value from it develop. The development would be in terms of how the companies interact with each other as well as the further development of technical specifications of the telematics solution. Then, it will be possible to advance Synthesis 2 as it now only includes speculations on the future. With further research on the collaboration and the value creation, it would be possible make what we call future in the synthesis more precise.

As a final point for further research, measuring the value would be interesting to investigate. The reason for this is twofold: Firstly, because the findings of this study show that the value creation has not been entirely reciprocally and by measuring the value it may become possible to give specific and clarifying answers to this difference. Secondly, measuring the value would allow for Synthesis 2 to transform from an illustration to a model with specific units of measurement on the axes.

12.3. Limitations

Although this thesis has reached its aim and the research conducted answers the problem statement and research questions, we are aware of limitations for this study. Admittedly, a more substantial amount of

interviews and data could have given a more in-depth understanding of our subject field. This was not possible because the collaboration, at the time we gathered the empiricism, was unknown to the public, and so access to the participating departments and employees was limited. In addition, we had to limit the time span of the interviews to 40-50 minutes, while more time with each could have allowed for other or more detailed answers. We acknowledge that five interviews is a small sample size, and in a perfect world, we would have liked to interview more employees, thus expanding our understanding of the value co-creation seen from a larger perspective.

Another limitation is that the collaboration had not ended at the time of the data gathering; instead, the companies were in the middle of launching the solution to MCFE's customers. This limited the research as we were not able to get the full perspective on the interviewees' perceptions of the experienced value of the collaboration from beginning to end. It is possible that the interviewees' perception of value had been different if the data gathering was conducted after the launch and when the companies had numbers of sales, earnings, revenue etc. This would have resulted in a more precise Synthesis 2 to be used by other companies in the future.

Due to time and scope limitations, we conducted a literature search in the initial phase of writing the thesis. We find this to be a limitation to the study because a full literature review would have given us a broader knowledge scope of what theories already existed, the relationships between them and to what degree the existing theories have been investigated. This means that we could have developed an even stronger illustrative synthesis to be tested and from this develop theory.

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Appendices

Appendix 1

Interview with Hans Seijger, Vice President, Sales & Marketing, MCFE, 15 March 2018:
Skype, Copenhagen
HS: Hans Seijger, LK: Lærke Kyvsgaard, ST: Simone Thelin

"": indicates quotes by the interviewee
, : indicates minor pauses in word flow

Introductory talk clarifying the content of the interview consisting of three elements, one related to the content of the case and two more related to the theory, and the background of the interviewers and interviewee.

HS: *It is always about selling and customer requirements and how you can tailor your products to what the customer needs and to create the value for him. Products have always been a prerequisite but once the product is a ticked box then it really starts to build up a lasting and fruitful customer relationship. That's what I have done for the last 30 years. And I'm now with MCFE since four years again trying to do the same, networks, network development, product creation, what are the prerequisites for products that we need to develop as a company, and of course you talk about sales strategy and positioning and it all comes together in a business model: I think changing business model and laying them out in a market, that's one of the things I have some experience in.*

ST: *Okay. Can you briefly describe what the Trackunit/MCFE case is about?*

HS: *Trackunit is basically operating the devices that make it possible to monitor equipment remotely. That is a hot topic in the industry. The forklift business is mostly about rental, and that means that the dealer is still the owner of the asset. And the owner of the asset means that after the contract period ends the asset goes back to the dealer, or the customer chooses to extend the contract and the contract usually include financing, residual value guarantee of some sort, and the service (all inclusive or some other variant of that) in one monthly fee. It is important to understand that that is the core of the business model. In a rental environment you own an asset but you can't see it. The competitiveness of a rental company largely depends on what they can supply for the customer against a fixed monthly fee. In the market a forklift is not really a commodity like sugar or flour but it is getting close to it because it is a very competitive environment with lots of suppliers so margins are thin, and we're always looking to create value or in this case additional margin in the chain. And that is among the suppliers, dealer, end user, so in this case the definition of added value is very clearly to create additional margin potential in the value chain either by cost reduction and efficiency or by the sales opportunity to create additional or sell additional services, to upsell. So these are the two keywords - cost saving and upselling. So in this case the emphasis with Trackunit was on cost savings.*
Automotive distribution is about a lot of workshops, a lot of dealerships have started to consolidate. These are now large groups that cover big parts of the country and sell huge amount of cars. This was very different 20

years ago when there was a lot of small regional dealers that was trying to serve their market, but cars are expensive so there is a lot of movement within the European Union to try and push the cost out of the distribution because the perception of politics is that consumers or end users or businesses are paying too much for their goods because the market chain is too long. And especially in automotive the released legislation, I think the last was from 2010 or something like that, kind of push the industry towards reducing distribution costs. And this is also very valid in the forklift truck industry. Lots of manufacturers have bought, or at least bought a stake in their distribution network, or own their distribution networks and they see that as a way to shorten the distribution chain and to reduce the marginal marginal marginal effect that you can sometime have when there are too many middlemen. So this is the environment; on the one hand we have the rental model, on the other hand we have an environment where the industry is consolidating and where the distribution chain needs to shorten, so less links in the chain and less cost in the chain. This is actually an interesting technology that Trackunit is supplying that could help us to achieve exactly that; optimize the rental model and eliminate links in the chain. That should lead to a situation where the available margin in the chain and less cost will grow.

LK: *Can you elaborate on whether you hope to gain this optimisation you are referring to or have you already gained it?*

HS: *No, these trends have been on-going for the last 20 years, and the Trackunit technology is not entirely new but the cost level and the current stage of the technology allows us to roll it out and use it for this purpose.*

ST: *So that was your motivation for engaging in the collaboration with Trackunit?*

HS: *Yeah, and my specific motivation was to have a tool to work with our independent dealers because we, Mitsubishi Caterpillar, are a little bit different. We do not have a lot of owned dealers, most of them are independent entrepreneurs so our partners decide how much money they want to invest in the business and how profitable it is and how attractive it is. Of course, since they are buying from us as independents they always put pressure on our pricing in order to improve their results.*

ST/LK: *Okay, interesting.*

HS: *So, it is a commodity market, it is a rental model, a lot of the total market in the chain will probably only go down with the consolidation and because of the shorter distribution channels, but we need technology to take the cost out in order to keep the margin and even to grow it.*

ST: *Looking at it now, do you think you have achieved that from the collaboration, or?*

HS: *Yes. I think we will achieve it. We started this thing a year and half ago, Per and myself, I also met Per before when he was still with Volvo, and we were actually looking for a supplier to give us this kind of technology, and it seemed to be a perfect match between what Trackunit wanted and what we were looking for. We are very close to the market launch of this product that means that the network-wide roll out of this system through our dealers, that is just starting now.*

LK: *Okay, it is just starting now.*

ST: *Okay.*

HS: *Yes.*

ST: *We will move a bit more to the theoretical part of what is called co-creation. Firstly, what kind of opportunities did you use to engage in a dialogue with Trackunit?*

HS: *Yes, well. There are a number of keywords. First of all, this is an app-based product and that is one of the product features that we really liked because it is different from systems on the market, it is a new approach. And that is something that really appealed to us because by using the cell phone as a platform you already by definition eliminate a lot of costs. That cost is still there with more traditional systems that have their own hardware and display. That is one argument in our philosophy with apps that was very appealing. Secondly, the transparency we were both willing to put into the co-creation was also a real benefit for us. I mean we started to define a minimal viable product about a year ago through a number of workshops. And I think what Trackunit explained really well was what you need to do to apply this technology and make it work efficiently. I think what we saw with that scope and the focus Trackunit had we could really match that with our business model. Let say the limited resources available on our side to create something that would have business potential for both parties in the medium term.*

ST: *So when you mentioned this transparency, do you think that all kinds of information were shared between Trackunit and MFCE?*

HS: *Yes. Definitely.*

ST: *Can you elaborate a bit more on how you engaged? How often did you speak together, was it only in the workshops you mentioned or was it an on-going dialogue?*

HS: *No, no. It started basically on an executive level between Per and myself, and then the management team of Trackunit and management team of MCFE to decide why Trackunit would be a suitable partner for MCFE. First and foremost, it was the personal contact and the strategic focus from both companies that seemed to be in line. So, there was a personal and a business match that we both wanted to explore. So it's really interpersonal contact, you know. You meet up for dinner, you come with an idea and then you find out "hey, this could possibly work" and then you take it from there. So not very complicated. Of course, there was willingness from both sides to work with partners, and to really partner up in this, and that is more a feeling than anything. It is a matter of trust and confidence.*

LK: *Do you think that even though both parties wanted to engage in this collaboration, do you then think that there was something you in MCFE did not share with Trackunit at first or?*

HS: *No, I think there was a very clear understanding of what each party could contribute with. I can be a bit more specific: I think based on what I told you, the biggest competitors we have in Europe they own their distribution, and we do not. So, that means that those big competitors were not potential customers for Trackunit. So in terms of developing this product, we were not afraid that the product would leak to the competitors. That of course, gives you a safe feeling. Secondly, Trackunit seemed to have a customer base in the rental business which is basically a very similar model to what we are doing, slightly different but they have a lot of rental companies for equipment that they serve, so that was a reliable base. Thirdly, what we needed to share with Trackunit were the specifics of the forklift truck business, what kind of customers we had, who were the stakeholders in the business, and what these wanted. We basically taught them how the forklift truck business works.*

LK: *You mentioned the transparency level. You said the transparency level was high and that you shared a lot and that you did not withhold anything, do you think this high level of sharing somehow affected the collaboration process?*

HS: *I mean, it may sound a trivial thing but when you know your business partner and you trust him, you seem to be aligned and you have a vision, then it is actually not so difficult to just put it all on the table like it is. I mean this is not a strategic game where you try to outsmart your partner or anything, I mean either you go in with your eyes open, both sides, or you don't.*

LK: *Oh, that's interesting, extremely.*

ST: *Really good.*

HS: *I knew Per from a previous thing, I'm not going to explain all that, it will take too long, but basically, he was new with Trackunit as well, "he is okay, his proposal sounds logically, okay we need to go explore this because this is an opportunity I will probably be unable to find anywhere else".*

LK: *You mentioned the workshops and that you met up for dinners and so on, if you look at the entire collaboration process, did you engage more in the collaboration in the start, the middle, the end or was it all the way through?*

HS: *You mean myself?*

LK: *Yeah, and MCFE.*

HS: *I was there very predominantly in the beginning but once the co-creation ended in certain work streams it was delegated within my company and within Trackunit and then we just following it during weekly steering group meetings.*

LK: *Okay, so you were more in the beginning and when it sort of took you took step back and then Trackunit took over?*

ST: *So your position was more in the beginning but that MCFE was engaged all the way through, or?*

HS: *No. Basically, the partnership had started at the top and trickled down, both in Trackunit and MCFE because at the end of the day, the people who are going to sell the product and do the logistics behind the product, the ones who do the accounting, the invoicing and customer contact - all this people need to be part of the project so we developed a little infrastructure in MCFE and Trackunit did the same as part of the project, so that people had a counterpart in Trackunit for their specific assignment. So both organisations know each other pretty well by now.*

LK: *You said it started at the executive level first.*

HS: *Yeah.*

LK: *It is your opinion that everyone involved had the opportunity to raise their voice?*

ST: *In terms of the wanted outcome?*

HS: *Yes yeah, it was. Per had a vision and I liked it, I took a decision to step on board and participate and then we started to share our vision in our organisations and to come up with a project that would lead to a minimal viable product and from there on you have product leaders, you have supporters and I think we have strong supporters in the top of both Trackunit and MCFE, but those people are really in the background, and in the end it comes down to the people in the different departments that need to work together to get it all done. And that is basically what we did. There were strong leadership, and a very strong sense of direction from both sides that we kept going on the way through the project.*

ST: *I think we covered pretty much what we had for that area, so you mentioned earlier that in terms of value the keywords for you were upselling and cost savings.*

HS: *Yes.*

ST: *We would like to move to the part of the interview where we ask you about the value creation in the collaboration.*

ST defines value as indicated in the interview guide in appendix 7.

ST: *Can you tell us about how value has increased in this collaboration? For you, i.e. the company and for both, Trackunit and MCFE.*

HS: *Okay, you are being very concrete about where the money is in this.*

LK: *It does not necessarily have to be the money it can whatever you perceive as value.*

HS: *We had a long discussion internally and together with Trackunit about who will benefit most from these products. And actually, it took us a long time to focus on the fact that this product would have to create value at the dealerships, so the dealerships should be able to reduce their costs by using these systems. There was some level of consensus in the end that the end user, the people who rent the trucks that will have this device inside, that they all wanted it. Why did they want it? Because they all use Android and Apple phones and they love the technology and it is all free of charge so they go out to the market and say "I want this, and I want this and I want this", "I want to see what my trucks are doing anytime of the day", but it is also at least in our business it is a relatively well-know fact the same in automobiles that customers are not willing to pay huge amount of money for these services. So we clearly recognised that the added value, by going out to end users and asking lots of money for this was very low. But we could also see the potential that when applied probably this technology should allow dealers to reduce their costs for delivering services by 20 percent.*

ST: *Okay.*

HS: *And 20 percent means, that you have one engineer driving around in a van servicing between 50-80 trucks in a certain area. That same engineer, with the help of this technology could service a 100-120 trucks, then I would need 20-25 percent less engineers. And engineers are hard to find, good engineers are very difficult to find and can be very expensive, so if you can reduce the demand for the engineers then your business will benefit.*

LK: *Okay.*

ST: *So the value is more focused on the cost saving and not as much a feeling or something?*

HS: Yes. There are other elements related to it as well. When an engineering visits a truck he needs parts to complete the repair, this tool will eventually, not now, enable us to tell the engineer which parts he needs and how to get it to the destination as soon as possible. So it is a huge convenience for him. If we take this a step further, we could even say that before the engineer goes there, he knows what is wrong with the truck, he knows which parts he need, he can even bring these parts and then instead of fixing it in two visits he can fix it in one visit.

ST: *If we look more at the collaboration between MCFE and Trackunit; creating this product/these devices together was that more valuable to you and your company than if you had to do it alone?*

HS: *It is very simple. If I had been on my own, I would not have been able to do anything.*

LK: *Okay.*

HS: *Because the problem with this is that once you start to collect data you kind of need an IT infrastructure that collects the data, that reports the data, that sends invoices to the customers, and it is a type of infrastructure that*

we do not have. So the whole IT back office part, that is as much a part of the solution as let say the hardware or the software that has been programmed.

LK: *In this collaboration can you perhaps give an example of a value decrease or was it all..*

ST: *Was there any negative points of collaborating with another company developing your product and services, or do you think that it was mainly just successful?*

HS: Yeah, it is a little bit early days. We are about to scale up the sales of this product. If the dealers accept it it has the potential to explode. If it is successful it could spread across the globe to our American subsidiary, to our sister company in Europe, to our Japanese R&D department, we are a big company worldwide. This was a local development and for Trackunit there is potential to become the global supplier of this type of solution. So there is a massive potential, but in the end of the day, you need to have a dealer calling "yes, I want 50-100-200 solutions a year to put them in my trucks so I can monitor them and save money". We have developed the products, we are at the point where the marked wide acceptance is now starting. So the potential is huge but we are going to make sure that the product actually works and that it provides the convenience for the dealer that we promise. So, there is a lot of practical details, and the devil is in the details and that is the next step, that what we have to prove now is to make sure we can market it in big quantities.

ST: *Do you think that you will continue with this collaboration or would you say that you have gotten what you wanted now and then that is it? Or how do you see it?*

HS*: This was always going to be a long-term thing because like I said the customer is not willing to put massive amount of money on the table to buy this solution. The attractiveness is in the potential for cost savings, and it is kind of disruptive technology, it also has some complications, you might have heard of the GDPR, the new European privacy launch, well we are collecting data with these things, and we have to respect all that and it has taken us a very long time to draw up all the agreements that are needed in a distribution chain that is from Trackunit to MCFE, from MCFE to its dealers, from the dealers to the end users, and make sure that everybody's privacy is respected.*

LK: *It seems that you perceive value very much in relation to the end users or the dealers, and you also said that the dealers they have buy-in before it can become a success.*

HS: *Yes.*

LK: *If the dealers are that big a part of it were they somehow represented in the collaboration when you first started meeting up and trying to figure out what you wanted to develop? Did the dealers have a say in this?*

HS: *It is a good point. And the answer is yes. In every business you have certain preferred partners and we included a limited set of preferred partners to find out what the marked needs and what they need for that business.*

LK: *Okay.*

LK: *We have a final question:*
We ask him to visualise a diagram and describe the value creation to us, and we draw the diagram while he talks.

Can you explain to us when you felt high or low value over time?

HS: *If you describe the curve there are two curves that jump to mind: one is an exponential curve. You know this business case has a lot of similarities to a cell phone. I had to buy the first iPhone to my kids ten or fifteen years ago, everybody have at least one phone now. So it is that kind of device that could be connected to the internet, it has exponential potential.*

LK: *So it is more what you would imagine it would be? That the value will be exponential, it is not necessarily that it was exponential.*

HS: *I think that if you look at the competitive environment everybody has seen the potential. Not only because it is a huge quantity but also what I mentioned earlier that engineers driving around in vans is a difficult concept because finding the people who want to do this is more and more difficult.*

LK: *So you expect the value to be exponential?*

HS: *Oh yes, definitely. 10 or 15 years down the line, will we ever say, "oh we achieved exponential value", and the answer to that is probably not, because everybody else is trying to do something similar for their business. Our competitors are also engaged in similar projects. But being able to sustain your position in the market or even grow your position in the market, that will be the indicator of how well we did our job in this respect.*

ST: *That's an interesting point.*

HS: *But you know, an exponential curve, once the curve starts to go up there is always the risk that it turns right and then down, and that's when you have a failed project. But if we succeed it will be exponential.*

ST: *Yeah, okay.*

LK: *Yeah. Thank you very much.*

ST: *That was all we had.*

We ask for additional points before we end the interview.

HS: *No, yeah. We, MCFE, are a global corporation that has huge amount of R&D capabilities and technology. But developing new products, appealing products today as with every new product generation the developing costs double. And you also see it in cars, the level of technology integrated in those cars is huge, you know with*

all these big touch screens and built-in systems and all sorts of things. There isn't a single manufacturer in this world that's able to develop all that technology themself. So the need for co-creation with the right suppliers will be growing, it is growing all the time. And you need to work with specialised companies to create a product that is modern and suits the need of the customers. That's why this co-creation is so interesting. At the same time you can only do it if you both see the long term kind of exponential potential and if you have the patience to work through all the bloody details and, believe me, there is a lot of bloody details even for a simple project like this, to wait for the curve to really take off to the sky.

We thank him for his time and end the interview.

Appendix 2

Interview with Gerdrik Pongers, Country Manager, Trackunit, 16th March 2018:
Skype, Copenhagen
GP: Gerdrik Pongers, LK: Lærke Kyvsgaard, ST: Simone Thelin.

"": indicates quotes by the interviewee
, : indicates minor pauses in word flow

Introductory talk clarifying the content of the interview consisting of three elements, one related to the content of the case and two more related to the theory, and the background of the interviewers.

ST: *If you could start by telling us more about your position as Country Manager at Trackunit?*

GP: *At first, I want to state that when you go from a product oriented proposition to a service oriented proposition, I want to state, that services is not a department, but it is an attitude. I found out long ago. I'm 52 years of age and have been in sales since my 26th or something like that, and I found that sales is not really difficult, not in either kind of product. I have worked in the forklift branch quite some time which is sort of the reason that I was at MCFE, because it is a forklift manufacturer, and in the period of working with active sales and sales management, which I have in the past, I really found out and executed that services is the extra mile that you do for the customer, not to lay back, but to really trying to fulfil plus plus for that customer. So we have services that can fulfil but they also could over fulfil for the customer, and that's what I found out, which is at the back of my mind when talking of services. My position is as a Country Manager, that Per (Stjernqvist) and I did the first contact with MCFE, and they are a materials handling manufacturer and there are a lot of brands that offer these products so there is heavy competition and these manufacturers try to be ahead of each other each time. One year, number one is a little bit ahead, and the year after, number two is a little bit ahead and that is on adding value in the form of economics, productivity, price, noises, vibrations, etc. etc. etc. So, looking at MCFE they were quite in the back in the race of being the best and their market position also showed that. So they had to do something to get back on track and get their position well in the market again. And as we look at our products and services…*

We lost connection. When the connection comes back we start by telling him where we heard him stop, and he then continues.

PG: *We are the number one telematics supplier in the machine world, as a generic one, and well, they needed to improve their proposition, and in that matter we had some kind of a perfect match. Saying, we needed them as a new OEM on board, and they needed us as an added value to add to their products and services for their dealers. So, at that time, when we started, we didn't have the proper services in place, as in, let's say, the hardware was in place, also including the access control. Did Per explain what it is?*

ST: *Not so much in details so you can elaborate?*

GP: *Ok, good, when you talk about a forklift truck, let's keep it at forklift trucks, and big warehouses, a lot of people can drive on the machine, but also a lot of people are not allowed to drive on the machines because they don't have some inspection or a forklift truck license for it, and in Trackunit Manager we had the possibility to add users and allow certain users to use certain machines or not, and we do that with an access control system which is mounted on the machine. And in that world of materials handling this is very important, because a warehouse manager only wants to have certified users on the machines, for safety reasons. So this was really needed. And we had that in place, so there was a perfect match for that, and the part we missed, because of our background, is that the machines are all inside. We have a background in the rental world, a rental of boom lifts and scissor lifts, escalators and so. They want to know where their machines are, so in fact, we help them set a dot on the map, "there is my machine and it has been hired by customer X". But as the machines and materials handling are in warehouses and factories they are not moved around a lot, so MCFE did not care about the map, but they cared about a lot of other stuff, such as this access control, but that was also in combination with shock reports. And actually, there, the co-creation started as in the fact that we have an accelerometer in our hardware, which can register shock. With that respect, we can actually see when a driver has caused a shock, on which machine and how late and where. So from that perspective the end user will have better driver user behaviour, so they will have a better productivity, and they will also have better safety and better driving behaviour because they know that they are followed. However we didn't have any shock report in place and we didn't have any efficiency reports in place and that is where the co-creation started. We tried to define their demand and the usage and the value of these new services, and from that perspective, in an on going process of really becoming partners instead of a manufacturer and a customer, as that Trackunit being the manufacturer and MCFE being the customer, we really partnered up and said "let's forget the commercial part and let's have a really intense and thorough workshop with different personas on board to find out what the needs really are" and that was, I think, November 16 where we actually did the first workshop to find out what the needs are. So there was a very big MCFE team and there was four persons Trackunit team with Per, me, and two senior product managers, one with hardware and one with software, and that is actually where the journey started.*

LK: *So still, there were mostly participants from Trackunit and MCFE, or did anyone else engage?*

GP: *Yes 10 from MCFE, different stakeholders from different departments such as sales, outside sales, training, product develop from their side, and two people from their management and board. And me as commercially responsible and Per as Servitization Officer and two product managers who were also trained to run the workshop. Men very often go into the solution mode, and when you do workshops you should get out of the solution mode and start to discuss the pain points and trying to step into the role of saying "oh here's a pain point, we have a solution for that" instead you should try to stay in the pain area and find out what all the pain points are in order to come to co-creation.*

LK: *In this collaboration, did the involved teams and participants have an equal knowledge level? Or did they sort of knew the same?*

GP: *In the MCFE group?*

ST: *Well, more in the area between Trackunit and MCFE, were there a level of knowledge sharing that enabled all parties to have the same knowledge and same information?*

GP: *Yes, as soon as you define some kind of partnership, then you do not sit against each other on opposites of the table, you sit next to each other, literally. Also in the process that is happening, you really start to partner up and cooperate.*

LK: *So you give access to each other's information and so on?*

GP: *Yes, information, trust, knowledge sharing, of course there's an NDA, non disclosure agreement, which makes it safe to exchange information, and we will not use that information for other parties, which always should be in place, it's formality, but quite important.*

LK: *Do you think there was some information that you did not share? Or was everything put on the table?*

GP: *As far as I can see, from their side, everything was put on the table, because their VP mentioned, actually it is tactics, because officially he should ask permission from the board in Japan, for something like this, and he said, "well I'm not going to do this because then I will have a set back of two years before I have anything in place and I want to have it now because my dealers have an urge for it". And we mentioned it as a technique, "you will help us on this, we will get it started, you will get going, you will have joint investments for this. Let's just give it a start".*

LK: *Did you and your company withhold information that you later on gave, when you knew each other more? Because you said that they gave everything, was that the same for you?*

GP: *Well that's a commercial question, you know? I don't think that we really showed all our cards, and when you do creation of software you can buy software in roadmap and say "well we have this in place and we expect to have this and that in place at the end of the year". But then you promise something that you don't know and maybe you promise it when you are not clear and sure if you can deliver by the end of the year. So it's always opportunistic to share everything and we were very open on stuff that we had in place, this was our proposition and we were very proud of that. We were also very open on our roadmap, which we showed to them, and this was of course a positive roadmap and we had some backlog on that, we then understood, because we could not proceed until some kind of contract was in place, because we have to validate the internal investments and we will not invest if there is some kind of side of our intention or what ever, we will then have to do it without having the guarantee of getting back to business, so it's always in the commercial play.*

ST: *Okay, do you think then that you still achieved the expected outcome?*

GP: *Yes.*

LK: *So it wasn't limited by the fact that you did not share everything?*

GP: *No no, it's also like playing cards, sometimes you have to put them against your chest and wait to play them, you know what I mean? That's really the commercial part. The good thing is that we were actually in the lead of the co-creation because they didn't have any internal resources so they were quite dependent on us. So they said, "this is what we need but we don't have any resources. We will not get any resources besides budget" because they are about to merge with another forklift company and because of that they could not raise their headcount.*

LK: *So would you say that you participated equally throughout the collaboration? Or were Trackunit more dominant?*

GP: *Yes, we were more dominant, because we saw this as a very big chance to get a big OEM on board, actually one of the largest materials handlings companies that was free to get. So we made, well Per, made it a strategic project and we invested quite a lot. Not only for them, but also for ourselves. Because, the functionalities that came out of the surveys not only benefited MCFE but also other customers. And we did not give any exclusively on functionalities. So it was an investment in general with MCFE as the first customer, and they really demanded a 100 percent owned branded version of Trackunit Manager and the two apps we had in place for them, but the functionalities of these apps, we also use for our own apps. So there was a mutual benefit for us. One is fulfilling, and two is investing, and giving other customers the functionality. So co-creation is not only for the specific customer, but it can help in general to develop for other customers.*

LK: *So you took some of the learnings from this and used it in another context later on?*

GP: *Yes that's correct.*

LK: *What kind of opportunities did you use to engage in a dialogue with MCFE, sort of how often, was it more in the beginning, during or at the end?*

ST: *And how? Was it mainly in workshops or in which way did you speak?*

GP: *Yeah well, actually, there was a big kick-off proposed by us to really get on board with different stakeholders and the objective of the first workshop was 1: from our side to having them on board from a wider perspective, and 2: getting a lot of information. And then actually we followed up with more workshops. We were in Almere (MCFE headquarter) and later they came to Aalborg, but that was also a testing of their commitment, to come to us and they did. And then we did a team sprint in the development department where we made mock-ups of functionalities, as if we had these examples of smart phone screen, that we wanted to look like this and this, and this was the functionality that we wanted to have, actually we designed and co-created the design. They wanted to have an app in place that can track the drivers and our test was quite a big hit because companies found out we had this app and spread it out in general and MCFE knows because when we started it was already more or less in our roadmap and they had exclusivity to development. In regards to co-creation we made mock-ups and said this is how it looks and its functionality, then they started thinking out it and came back to us and gave feedback and together Trackunit and MCFE showed it to the end customers saying "this is what we think you need" but please give your feedback to us so we can proceed in a connected matter and not in*

normal lines of ways. That was in little groups to really build the services and as soon as the service was really ready then we had bigger meetings with their board, again to really show milestones of what we had done the last months and this is the result until now and it is checked by customer X, Y, Z and we think that we will proceed in this direction. Does that cover the question?

LK/ST: *Yeah.*

GP: *Actually it is project management, by defining a roadmap with different milestones with end dates. MCFE had a birthday at the end of June last year. And they had a big dealer principal meeting where they wanted to launch the functionalities and we actually made a big presentation with a marketing agency called Plateau and we outsourced our presentation part to Plateau and made a triangle cooperation with us and MCFE and them as the marketing agency, they made a big pile of materials with flyers, materials, presentations to get the launch going.*

LK: *So far, we mainly covered the good things that came from the collaboration. Were there some negative aspects?*

GP: *Yeah, some of the negative aspects were that MCFE had no internal owner of the project. There was one, the VP of Sales and Marketing, and he delegated it to another manager and that guy really didn't have enough time for it.*

LK: *How did this influence the collaboration and the expected outcome?*

GP: *The expected outcome was the same, because we were really persistent. We had weekly updates through Skype with all the stakeholders on board, with Per, me, their VP, and we kept pushing but there was a certain moment where we said "well we ain't going to do anything anymore because you're not ready". We were two foot ahead and all ready with everything and they were not willing to sign the contract because of some legal details. In that moment we said stop because we need the contract in place because otherwise it had no value for us to proceed. We skipped the heartbreak. And in the end they understood. We showed them the investment in time and money and showed them that each time we delivered. We had weekly meetings where all stakeholders were there, but most of the time only one or two MCFE members were there. And we actually held that against them saying "well we are working so hard and you're not there, so we don't bother anymore".*

ST: *So what you're saying is that there wasn't really an equal collaboration or engagement throughout the process?*

GP: *The engagement was there but I think they had, what I mentioned earlier, a lack of resources and a lack of time. But that also had to do with the merger that was about to happen, they really had to be also on that area.*

LK: *When you and Trackunit then put more time and effort and resources into this, did that also influence the value in the end? Was the value more created from your perspective than from theirs?*

GP: *I guess so, yes, the position between manufacturer and customer comes back a little bit. The moment the functionalities have been co-created, we actually have to build that, because that is our competences and not theirs. The effort is always a little more on the supplier side than on the customer side, because we had the software in place and the marketing agency in place etc. But in the end it was not for free, it came with a cost, where we said, "we cannot do that for free, we will never ever earn that back" and they understood and agreed also, so they paid for the co-creation.*

LK: *Okay. We would like to move on to questions related to value.*

Lærke describes how we define value, see appendix 7.

ST: *So with this in mind, can you tell us more about the value you experienced from engaging in co-creation?*

GP: *One of the values is loyalty. We really speak out to each other if things are not in place. I at least did, that is my personal approach, normally I would be a little bit reluctant speaking out to a customer saying "you have not done this right" but there is a mutual dependency which comes up during the time of the project and then you, or at least I, start to annoy myself when people who don't fulfil. And for example, we had biweekly meetings, and actually nobody was there from MCFE. I was really, let's say pissed off, and I started calling them saying "well, we are there, there are five people from Trackunit and you're not there, that's not ok. So will you please be there the next time. Or say up front that you have other priorities and will not be there the next time" so then we can also set our priorities in another way. So it's really partnering up, co-creation. That is one of the values. Another value is also that they are a bigger organisation, and now we call it MCFE as in E for Europe, there is also an MCFA for Asia and also the new family member as in UniCarriers, US and Europe. So the commercial value of the merger will be big. And another value on content is that MCFE as a customer really pushed us to a higher level. Because of their specific demands, our knowledge and awareness grows. The closer you get to a customer the better you can find out what their needs are. Actually, this is the most important value. When you have the chance for co-creation, the organisation itself will also have a good outcome. You can really check if your products and services are really aligned with the market.*

ST: *Do you think, in your opinion, that this was the same drivers for MCFE?*

GP: *I think they had the same outcome, it is hard for me to speak for them, but the outcome for them now is that they have a telematics solutions in place that the dealers want for long time, so they fulfil their dealer end-user wants and needs and they will have also an earning model because they are going to resell our solution, as in, we sell it to them for one hundred and they will sell it to the dealer for 120. So that is an example of how they will have an extra earning model. And their proposition will have raised, meaning that they came out of this co-creation smarter than what they came with, so there was a mutual benefit. We learned from them and they learned from us.*

LK: *We have a final point.* We ask him to illustrate the value creation in a diagram he draws the diagram and shares with us on the screen.

GP: *Of course it starts at zero, that is the easy part, and ends, also somewhere at zero, because then the co-creation is done. But it will not end at zero because there is a certain value at stage and that is the extra proposition, I guess. They start at, let say one hundred, but with this collaboration they end at somewhere with 120. And somewhere in between these two dots in time, there is, as far as I see it, it will not be linear, but it really has to do with the milestones. Lets go from 100 and 150, because in the end it will be 150, but they way there is not a straight line, because first you don't know each other, then you don't understand each other, so the value actually goes below the zero, and they say "well you don't understand this" and we say "you don't understand us" and then you mumble and grumble, which makes sense in a way because you really have to adjust to each other and when that moment has passed it will get back to zero. And with more milestones in place you will go to, let's say 110, and then with the next milestone it will be 120, so it some kind of a staircase. And in the end it will go to the final end result.*

LK: *So in the end it will go down again to zero? Or continue up?*

GP: *No rather what I mean is that at the end you start at nil and in the beginning you define where to go to, this is actually below zero, where do you want to go, and why, and what, and how and when and all these big measures. Per uses a figure, that it is not a straight line, it is really a ball of wires that is going in all directions except one and this is actually the below zero point where you are annoyed and pissed off because you don't understand each other. The outcome of that will say, well "now we know what your needs are, we understand you, we can do this and that" and then you go start in solution mode and this is actually defining the pain, and you set milestones with what should be in place at the end of some weeks. I think that you will never ever go back to zero because of the fact that the company has got extra value that they will not throw away. That is an extra asset that they bought something from us.*

ST: *And the same goes for you, you've gained some value that is brought into later collaborations.*

GP: *Yes. So if it goes to zero it will be a no deal. It might be possible if you say "we do co-creation" but then something happens for whatever reason and they say "fine but we will not proceed with you, because it doesn't work" then something in the co-creation has gone really wrong.*

We ask for additional points before we end the interview.

GP: *I think that what I have said is more or less it. The most important is that two partners really should partner up and stop thinking as manufacturer and customer.*

LK: *But yet it was still present sometimes but you refer to positions as supplier and customer?*

GP: *Yeah at certain points in time, these milestones, the position stuff comes back, because someone will ask "you are supposed to deliver next Monday, are you ready?" and then the old stuff comes back. But content wise you really partner up. It is only on the milestones that you keep positions. Which makes sense, because in the end, commercially it is manufacturer and customer and that remains, it is always in the back that we want to*

make money and we also will get information from them to bring to something else. The question is always how can we fulfil and how can we fulfil a little bit extra?

We thank him for his time and end the interview.

Appendix 3

Interview with Willem De Jong, General Manager Equipment, MCFE, 19 March 2018:
Skype, Aalborg
WJ: Willem De Jong, LK: Lærke Kyvsgaard, ST: Simone Thelin

"": indicates quotes by the interviewee
, : indicates minor pauses in word flow

Introductory talk clarifying the content of the interview consisting of three elements, one related to the content of the case and two more related to the theory, and the background of the interviewers and interviewee.

ST: *Can you briefly elaborate on your position within MCFE?*

WJ: *I have been in MCFE for 15 years. The products we sell is forklifts or material handling equipment, forklifts can be anything required to move pallets around. So indirectly we also deal with AGV (automated guided vehicles), small pallet trucks or the bigger level reach trucks. Various equipment. We do that with Mitsubishi and Caterpillar brand products and we distribute those in Europe, Africa, Middle East and Russia (and the surrounding countries to Russia, Ukraine, Kazakhstan etc.)*

LK: *Can you briefly describe what the Trackunit and MCFE collaboration is about?*

WJ: *Co-development is the right word, it's about basically redeveloping, or fine-tuning available solutions Trackunit has for our MCFE market's specific needs. We are different from Trackunit's regular customers in various ways, so we have some unique requirements and our set-up compared to the normal setup of Trackunit and its customers is different so I my view we are basically fine tuning the product Trackunit already has to our use.*

ST: *So is fine-tuning an existing product the expected outcome?*

WJ: *Yes. Fine tuning maybe sounds too minimal or less flattering but I think hardware wise we are not really developing something new together, software wise some adjustments, service and distribution wise there is a bigger difference, but that is not in the traditional domain of the product.*

ST: *But was developing the service a part of the goal?*

WJ: *Yes, I think it is a part of the goal and I think it is the biggest area where we had to collaborate.*

ST: *Would you then say looking at it now, that you had achieved this once the collaboration ended?*

WJ: *I think we are almost there. Almost there means that we are almost at the point where we are launching to our customers. So I think we are done for this phase, but we will hopefully, at least that is my expectation,*

engage in further collaboration to fine-tune everything further and build up on the first version of the product and update a second version with more functionalities.

LK: *So, has the collaboration actually ended or is it an on going process that will continue?*

WJ: *Yes, I that's how I see it.*

LK: What was the timespan of the collaboration? When did it begin?

WJ: *I think it started more or less one year ago, it depends on the definition of beginning. In the very very beginning it was an early romance. Let see, I was involved last year in June the first time. So that is around one year.*

LK: In this period did Trackunit and MCFE participate equally or were one part more engaged than the other part?

WJ: *I think per phase there was an unbalance, sure. Per deliverable there was an unbalance in the effort on both sides, but also related to the tasks which had to be done at the same time to realise that deliverable.*

LK: *Can you elaborate on this unbalance you mentioned?*

WJ: *I think, well it is just my feeling or the limited view I had to the spending the resources on the Trackunit side, I know some people were active on the things but I have not been at Trackunit to really see how much effort they are really doing. From the calls we had and our on going dialogue, I had some idea of how busy Trackunit has been, and let see. So there was more effort on Trackunit's side to change a couple of things which also had to be changed on their side to accommodate us as a new customer. As a new customer we had some unique requirements and to set that up Trackunit has spend really an awful lot of time it seems. I think to learn what our requirements were in the beginning, we weren't sure because of us the Trackunit telematics solution is rather new so we're not the experts so Trackunit basically had to teach us and together with us explore what it is we need. Especially in that area Trackunit did a disproportionate effort from their side to bring us up to speed, explain us what the service is cable of doing and work with us to make sure that our ideas start to form about what we want to achieve with it. So there Trackunit really did a disproportionate effort on their side and then again to connect their product, the Trackunit box, to our product. Their MCV in my view has spend a disproportionate effort to really reinvent the wheel per product type, how to connect this box, just the hardware connection we spend several months figuring out per product on our side which are all different so we have some really small trucks, some really large with various voltages, one product was much easier to accommodate the Trackunit product versus other products to really find the right mode in that process to connect the equipment.*

LK: *Did these involved actors from Trackunit and MCFE knew the same?*
ST: *Was there an equal access to information for both actors?*

WJ: *I think to the shared information yes there is equal access but then of course to each other expertise, Trackunit has expertise on their side and MCFE has expertise on our side, so Trackunit has the expertise towards the telematics solution, MCFE towards the vehicles. This needs to be installed on. The expertise simply is either at Trackunit or MCFE and it's just a phone call away, so the information is there but yes, probably it's more accessible to either Trackunit for the telematics side or MCFE for the product side. The shared information in between, let's call it the project information, I think is accessible to both in equal terms.*

ST: *But it requires each part sort of search for the information themselves, you have to actively ask for information about their telematics and they actively have to ask about information on your expertise on the products?*

WJ: *Yes, I would say that is correct.*

ST: *So was there anything that you felt that you didn't get information to, that looking at it now you think you should had received information on in some way? Did you sought the information you needed?*

WJ: *Looking back now sure there are weaknesses on both sides, which I think mostly commercial reasons are not mentioned that openly.*

ST: *Can you give an example?*

WJ: *One example is the shock reading. The box is able to read shocks but the, I would say, the functionality of the shock reading, I think has been overstated by Trackunit. So the capability has been overstated. Only very late in the process did we realise that it is more difficult than we had hoped and less capable than we had hoped, yet we have a product that more or less work and I think we just need to bluff our way into the market with that solution. We know it is not as sophisticated as we would like it to be.*

LK: *So you think it could pick up on more shocks than it actually turned out it could?*

WJ: *We thought it could provide more meaning.*

LK: *More meaning, okay.*

WJ: *Yeah but in order to provide that meaning we basically need to do a lot of calculations, probably more software needs to be written in various ways and I think from the start that could have been more clear.*

LK: *Do you think this had an effect on the value in the end?*

WJ: *It might. Yeah, it's too early to say but it might.*

LK: *So it might have had a negative effect on the value?*

WJ: *Yeah.*

ST: *In terms of the dialogue you had with Trackunit can you explain what opportunities you had to engaged with them? How often did you talk, in which ways, which medium did you use?*

WJ: *We had face-to-face talks, I think in the beginning we had a handful here and a handful there with various parts of the companies, so various disciplines from our side meeting with various disciplines from Trackunit's side. Just face-to-face meetings either in Denmark or in the Netherlands. I think it is excellent to be in the same room and explore the chemistry in that group and really gain traction in the project. Face-to-face was then followed up by telephone calls either just small telephone calls, but mainly web sessions like Skype, just online calls. Typically just voice without video, occasionally with video, but usually video is rather distracting, that is our view. You see people with their headset who are talking to a camera which is mounted somewhere on the side of the screen, so when they are looking at the screen they are not really looking at the camera and it's all rather distracting. They sit there with their silly headsets and occasionally from home so you see their house, their dog walking around, you see them...*

ST: *It is too much noise?*

WJ: *Yeah it is. It doesn't support the clean dialogue, so usually it's without the video and then sometimes we use the screens for sharing other content, spread sheet, presentation, material etc.*

LK: *Did you talk more in the beginning, during, the end or was it more less the same all the way through?*

WJ: *We talked all through the collaboration. In the beginning we sat up the frame of how this should work and invite the people, but after that some structure start to appear and it becomes clear how these people need to interact and from there it is a very healthy discussion.*

ST: *Do you think all involved participants that the opportunity to raise their voice on their opinion and give their input?*

WJ: *I think so, yeah I think so. I do need to say one thing there. I think in the DNA of Trackunit it is very fast moving, like a startup company, with this startup jargon, with the wording in various areas in the project it sounds more flashy than more traditional companies like MCFE with more traditional brands and slower and traditional ways of working. The Trackunit way in the beginning was perceived as rather pushy by MCFE so everything was fast paced and urgent, quick time to market, whereas in our case we have products which take years to develop and test and this was all much faster, so that in way was perceived as dominant, pushy and it took some time I think to get used to it on our side, how that should work. But once it was in motion it was properly understood. It's just two ways, it's just two teams working together.*

ST: *Was there transparency of information?*
LK: *What information did you share or did you only share selected information? Is there anything you did not share e.g. in relation to the data of shock feature?*

WJ: *Yeah, some that was shared less with words. My conclusion is again that as I have seen with several projects that the project is much less, than people believe, in the online storing of data files etc. and is much more in the daily dialogue, when teams together talk and how frequent and well weekly calls might be quite boring but requires discipline to do that (problem with the mic). But that is the way it works.*

LK: *In these weekly calls, was there transparency of information where you shared what you wanted to share?*

WJ*: Yes.*

ST: *Looking more of the risks of engaging with Trackunit. Can you tell us if MCFE had any consideration about the risks of working with Trackunit?*

WJ: *Yes, we had a whole legal team studying our interaction with Trackunit and to explore and hammer down who has what responsibility and to make exactly that point very clear, to identify the risks and find out who is responsible in what part of the system.*

LK: *The fact that you discussed who was responsible for different risks, what effect did that have on the collaboration?*

WJ: *In some areas it made it sometimes quite uncomfortable, of course. Well, personally I also found that by having a too friendly approach in the beginning "this is all super positive all this nice collaboration" (quote by Willem) it only delays the harder and bigger discussion of who are you, who are we, how do we interact and how do we split the money in the end. At some point that discussion needs to come, and we were too naive to think that this would not come up a one point.*

LK: *It was too pretty in the beginning?*

WJ: *Yes, too pretty and positive.*

LK: *Despite these more uncomfortable talks you had, how come you still chose to engage in the collaboration?*

WJ: *It's just an assignment, it just needs to be done.*

LK: *Okay. We would like to move to out last part related to the theory of value.* LK defines value in relation to this thesis, see appendix 7. *Can you tell us about value has increased in this collaboration from your point of view?*
ST: *How you experienced value from this collaboration. What is value to you in this collaboration?*

WJ: *I think there are several aspects to the value and the value created. The simplistic view I had when you started the question, how much value are we adding to our customers and these customers and what are they willing to pay for that. That is one side of the story, and there yes MCFE and Trackunit by working together we*

are hopefully creating that value but it's too soon to tell since we haven't launched the product formally. In more generalistic ways sure the collaboration it drove the mutual understanding forward, we learned from Trackunit and Trackunit learned from us. So there we have really been making steps forward and each step represent value. It's hard to quantify that value, so people who did not know each other in the beginning now know each other and if they need to do another product or everything they need to do in the future it constantly gets easier because you know the other party, you know the other company, you know what type of response will be received for what type of situation. So there it's like an "incherspilled", the word we would use in Dutch, the translation will be "we are played in" for the next match. So we're like a soccer team, after you have done your training you have the experience of working together, you know how the other person in the team will respond, and then you get that the 1+1= 3 synergy.

LK*: So, just so I understand when you talk about value. Firstly, there is value related to the customer and whether or not they will like this product and use it, so we (MCFE) are still waiting on that part to see. And on the other hand you talk about value as something that is closely connected to the context of these two companies, but which might also in the future be used in other settings.*

WJ: *Yeah.*

ST: *You can take the learning from the collaboration with Trackunit and then use it the next time you collaborate with someone?*

WJ: *No, for the future codevelopment with Trackunit, Trackunit can also use it for future use with other customers who are similar to MCFE. We can apply it also to other projects similar to the Trackunit project. I think we are starting to apply some of the faster thinking Trackunit has taught us, we're applying that already today in our company. So in that sense it's creating value.*

LK: So some of the value has been specific to the context of these two companies?

WJ: *Yes.*

LK: *Okay. Does that also imply that some of the value you could not have created on your own but you needed that other part?*

WJ: *Yes, definitely.*

LK: *Could you have used anybody or was it only Trackunit you could have used?*

WJ: *I think we could have used similar companies to Trackunit.*

LK: *Was there any value decrease?*

WJ: *Value decrease?*

LK: *Was there some less positive outcomes?*

ST: *You mentioned the shock feature that wasn't as sophisticated as you thought it had expected? Do you think that was negative when looking at the value creation? That the value wasn't as good as it could have been?*

WJ: *It's too early to tell. Trackunit's way of reading shocks is more simple than initially thought, expected from our side and also the way it was presented on Trackunit side. Actually it's more simple and maybe some of our customers need more advanced readout, but also probably in the end it may turn out to be a storm in a glass of water, actually nothing is acquired and a simple approach is also good. I'm trying to think of an analogy: Some of these new electronic gear for example these fitbit arm devices. Several devices like this they claim they can count very accurately heart rate pulse and the steps you take and thereby the movement and so on - when in fact the readout on those devices is actually far off from the accurate readout with more traditionally equipment. So heart rate can easily be 10-20 percent off. Personally, I think that is a lot, but for some of the people in the market they simply don't care. They are like "yeah this is fine" (WJ making a quote), and it will probably get better over time and that is a bit similar to our shock readout. Yes, it read shocks but it may not be accurate enough for some people if they expected it to be super accurate, then this is simply not their device but they question is do they really need it to be super accurate? 80 percent of this fitbit is fine and it's providing them with more information than without the fitbit and yes it may not be entirely accurate but those companies they will present it as been very accurate compared to having nothing and compared to a more precise instrument. It will probably be only 80 percent right.*

LK: *So it' still an improvement but perhaps just not as big an improvement as you would have thought?*

WJ: *Yes. Then it's just about expectation management: what should the customer expect and why should the customer expect some lower value, why should the customer learn to accept a lower value than he originally wanted. I think that is one example of where we could have had a better dialogue with Trackunit in the beginning/ already from the beginning.*

LK: *Do you think you would still have engaged in the collaboration if you had known from the start that it might not be as precise as you thought?*

WJ: *I think we would have continued just the same, but we could have better thoughts about it earlier.*

LK: *Do you think Trackunit knew they were sort of overselling the feature or did they actually think that the could deliver it?*

WJ: *I think the answer to both questions is yes. Yes, they knew they were overselling the feature, yes they also thought that this would be sufficient.*
ST: *Okay, again based on the dialogue you had with them?*

WJ: *Yes. It is probably similar to the Fitbit where some of the people in fitbit will believe this it is sort of good enough. The customer simply needs to go through the process to start learning to except that this is good enough.*

LK: *Okay.* We ask him to illustrate the value creation in the collaboration in a diagram.

WJ: *Like is it linear?*

LK: *Yes, is it linear, when is it high or low? Does it go up and down? Just whatever comes to mind.*

WJ: *I think it starts not at a zero, as soon as these parties are together it starts at the middle area, where this represents not value but the potential value. These people get together and they learn a bit what each other have to offer and then they think, "oh this may work", so here there is some value. That potential value is at ⅓ of the total potential value or 50 percent maybe. Then more people are drawn into the project and it will increase, probably it will from 40-60 percent of the expected value. Then reality starts to kick in and some more people start to join the project and it will be clear that it's not yet market ready and something still needs to be done. Some question marks start to appear "will it work this way, or this way".. Depending on who then joins the project there will be some real negative people because they simply see the obstacles which are not yet clear. So let's say it move from 40-60 percent then I think, in the beginning we had a big push from management on both sides, I think who tried to inflate this number maybe to 90 percent of the total value, a big push. Then reality kicks back in and for a long period I think it sinks back to 50 percent. It collapses from the 90 percent to the 50 percent because everything still needs to be done. I think from there on and forward it's bit of a ladder approach or steps where these obstacles are dealt with one by one, every time gaining 10 percent, so we are back towards, right now, the 80 per cent and I think the last 20 percent is really pushing it out to the market and it's where customers have a say in this. After that it's bit of a question mark. Do we get to the 100 percent expected or will there still be gaps.*

LK: *When the value went down to 50 percent, when was this during the collaboration?*

WJ: *I think it was in the middle, or little bit before the middle.*

LK: *Okay.*

ST: *You mentioned that other participants started to join the collaboration, did the value decrease at this point?*

WJ: *It was a decrease. Some theories call it the dark night of innovation. It's where various parties they stop seeing light at the end of the tunnel, it's a motivation trap, it's seeing too many obstacles, it's not getting the right resources, it is reality that the original timeline is too ambitious. It usually means that part of this scope which was in mind may not be realistic and maybe the scope needs to be redefined. That some part of the original scope needs to be cancelled. But that is nothing new, I think that's for any project it is like this but I think the more uncertainty here is and the newer it gets the bigger the difference might be between the initial peak and dip after. Let's say some other company where they do e.g. shampoo and then go from shampoo*

number 1 to shampoo number 2 there is almost no difference between the first and the second type, then there is no risk so the dip will be very small. I think in this case if the risk is higher, if it's very new and unsure then this dip will be bigger.

LK: *More in general, who were the participants? Was it only participants from Trackunit and MCFE?*

WJ: *There were others as well. A third party marketing company involved from Denmark, and in the Netherlands a third party legal company participated. And our customers also, we had some test customers involved.*

LK: *These test customers, who were they and how did you work with them?*

WJ: *There was a test customer in Denmark, it was chosen for geographical and language reasons - it was a short communication line with Trackunit, so a Cat dealer in Denmark. Then we had two dealers in England, one in Ireland and one in France connected to the dialogue. But mainly the biggest dialogue was with the two in the UK.*

LK: *These were test companies/test dealers?*

WJ: *They were, in traditional market terms, focus groups. You do brainstorm, product confrontation with these potential customers and you obtain their feedback.*

LK: *When did you do this?*

WJ: *We did it twice. Once at the very beginning and then one more session.*

LK: *When was the second session?*

WJ: *I think the first was at ⅓ and the second at ⅔ of the project.*

LK: So MCFE and Trackunit created something together and then you sort of went out and tested it?

WJ: *Yes. That's correct.*

LK: *Is it correctly understood that these two test dealers were not part of the entire collaboration but only in these brief sessions/points?*

WJ: *That is correct.*

LK: *Thank you. Do you have any concluding remarks that you find relevant for what we talked about?*

WJ: *I like the question about the value created. That the value created is actually more in the sharing of information, educating teams, there is a lot of value in there which normally goes maybe less noticed because the traditional focus is on only seeing the value created towards the end user and it's less visible that there is actual investments in the teams, investments in the company and that is also constantly on going.*

ST/LK: *Thank you very much.*

WJ: *If you have more questions just drop me an email. Good luck.*

We thank him for his time and end the interview.

Appendix 4

Interview with Jacob Zimmer, Senior Software Manager, 19 March 2018:
Trackunit, Aalborg
JZ: Jacob Zimmer, LK: Lærke Kyvsgaard, ST: Simone Thelin

"": indicates quotes by the interviewee
, : indicates minor pauses in word flow

Introductory talk clarifying the content of the interview consisting of three elements, one related to the content of the case and two more related to the theory, and the background of the interviewers

JZ: *I can pretty much talk from now and until tomorrow on this MCFE project, so to me, it would make sense to spend two-five minutes on Trackunit and what it is as a business, and where it comes from and where it is today, because that it very important in the light of this case and the co-creation concept that we are maturing right now. So Trackunit has historically been this typical production company, right? It has produced its own hardware in a facility up here in the northern part of Denmark. And that was really how to identify Trackunit, as an electronics provider that also did some software on top of that, but the core, the DNA of Trackunit was really this hardware. Over the years it became more and more apparent to Trackunit that this was not how we wanted to identify ourselves with Trackunit as a company in the long-term, also in the light of buzzwords such as 'big data' and 'data driven services'. Everything is evolving more around the services rather than the product itself, so we also knew that we had to shift our focus and mindsets had to change, because we had been very much focused on this black box thing that we developed, what were we capable of doing, how many wires could we attach to it, how many sensors did it have and stuff like that, so we very much began to focus on what value could it have and was it capable of delivering for this customer or this OEM or this company, right? So that has been a journey over the last three years, so now we have outsourced the production part, so we still speak of our hardware as something we produce ourselves, even though another company handles this for us. Today we are a company that employs a lot of engineers and IT app development guys that will really help us, you know, get some traction on this journey we are on, and drive the company into this more data driven mindset. And that is very important when speaking of this co-creation concept, because as we are maturing on this, so are our customers, so is the market, the market itself is waking up and becoming more and more aware of the fact that value lies in the data and the services you can build on the data rather than enablers, you know the little black boxes that can help us get the data…*

LK: *Yes something physical?*

JZ: *Exactly, the enablers are becoming, it's pretty much something anyone can do, anyone can go, today especially in purchase, make a device and pick up some data and transmit this stuff. But the value lies in the services that you can build on these data. And this was the message that we began leveraging on and was kind of also what got our, especially the larger, customers, the OEM's, to get back to us, and they were kind of curious and interested in what was happening with us "what is it with you guys, what is this thing you're doing?" and very eager to get closer to Trackunit as a company and it was really apparent for us that they wanted to become*

a part of this journey. So that, to us, one of the core elements of co-creation, that is having a customer or a partner that is interested in becoming a part of the journey, because the journey is not only Trackunit it is also a journey that the customer has and I think that is a premise for kind of being in this setup of co-creation, you realise that this is a journey, you do not just build something that suddenly you're there and you have a new product.

LK: *So that is more about building something or more about getting there?*

JZ: *Exactly, exactly, because it is just as well, you know, the mindset of people within the companies that we deal with, that has to change and see things in the same manner as we do.*

LK: *Can you briefly describe what the Trackunit and the MCFE case is about? Who participated? Were there more than Trackunit and MCFE?*

JZ: *Yeah, it's been a big project as I would say, and MCFE is a big company that facilitates the dealership of certain types of equipment, forklifts especially, and they were in, I would say, in need of, kind of a breath of fresh air into their business. Their dealers had begun speaking of their competitors as someone being a bit more ahead, so they were really in need of a breath of fresh air. So it was kind of a talk back and forth and at some point we….*

LK: *Who are we?*

JZ: *Per (Stjernqvist) is a major stakeholder in this, he was really the guy driving this project up until it became a project, there is always communication back and forth until it becomes something, the thing is, the critical thing is that you have to get to the guy or the guys in a company that has some weight, have an opinion and can bring this into their company, because if you do not succeed in that, then the project is doomed.*

LK: *Others have described the start as a flirtatious romance.*

JZ: *Yes Per was a big part of that and had a good contact to MCFE and Hans Seijger who has a lot of weight, and it was a good thing that they managed to get the romantic relationship up and running, and this was also what established this as a project. They were kind of discovering what would be the value that Trackunit could gain from this partnership and what would be the value that MCFE could gain from the partnership and I think they had a lot of stuff up in the air.*

LK: *When did others start to join in with Per and Hans?*

JZ: *That's a good question. I think, when we had to start putting this down as a project, that is when I got involved and others got involved. For myself, I have been a part of the execution of this, so when you go from building the project plan, the visions, and all of this fluffy stuff and then when you need to go and execute on this, that is where I entered the project. So I helped deliver many of the things that we wanted to deliver to MCFE.*

LK: *Okay, so we heard from others that it is a collaboration of one and a half year, so if you entered in the middle, it was after half a year?*

JZ: *Yeah I think that is a good indication. I think it is safe to say that before I entered there was half a year of work-ish.*

LK: *And who else entered in that phase?*

JZ: *Prior to me?*

LK: *Yeah so before you it was Per and Hans, but were there other departments, did it trickle further down to the organisation?*

JZ: *Yeah I know from Trackunit's side there were colleagues of mine that was also a part of this. From the Business Development side of things.*

ST: *Right, because you are more from the technical side of it?*

JZ: *Yeah I'm more the product development part of it, and before all this stuff happens, there is the business development, where they build up the value proposition and how do we plan to monetise this for MCFE and for Trackunit, and this is really where the co-creation comes together, it is really a matter of figuring out where there is value in this for Trackunit and where there is value in it for MCFE. This was what was prior to me entering the project.*

LK: *Do you think that Trackunit and MCFE participated equally throughout the collaboration?*

JZ: *I would definitely say that Trackunit pulled a lot of the weight, I would also say that we pulled more than MCFE. I think that was because we saw huge potential in MCFE and that they could help scale our business. That is definitely some value for Trackunit as having MCFE as a customer. For us it is always about getting the big fish. If that succeeds, it will just get five others of these potential customers to get aroused so that is why we definitely spend a lot of time on this.*

LK: *And that is was ok, it was not a problem that you had to put more effort into than the other?*

JZ: *That is just how it is, I mean it is a part of the strategic aim of Trackunit, it is the fact that we have to spend a lot of time on these co-creation projects. Some projects take more time than others that is how it is, you cannot really know, you have to find out, but it is very much dependent on who is driving the project on the partner side. And some of these, we have seen examples, are not very mature, while some others are, and in some project you just manage to find a tool where things propel magically and some projects do just not as much.*

ST: *And this project did not as much?*

JZ: *That's my personal opinion. On the MCFE side, they weren't quite as mature as we would have hoped so that also really induced us to have to spend more time on it than we really wanted it to.*

ST: *And the expected outcome, from Trackunit's side, was there a specific target set? You say that the main outcome was to create value for both parts but did you define value in some way?*

JZ: *Yeah yeah we managed to do that. Really, we wanted to bring our core products, or core services, we wanted to bring them into the MCFE world, but with an MCFE skin. So it's kind of, you know, we grab the products that we were developing at that time and brought them into the world of MCFE with put a new branding on top, so we had our marketing partners help MCFE provide a new brand for these, so it kind of you know fitted into the MCFE ecosystem.*

LK: *It was very much fitting it to MCFE and that specific context?*

JZ: *Exactly, so one thing is to applying the proper branding that doesn't rhyme with Trackunit, it has to rhyme with MCFE, you know "powered by Trackunit" underneath, and the other thing is making sure that these products meets the requirements within MCFE which they did not to begin with, we had to accommodate some features, so we had to build these on, and we were hoping that this new brand, which they called VISR, by the way, they were really eager to get this out to the dealers because they were really hoping that the dealers would see this as really promising to the future, this cool new tech, that they can bring to the customers and get new business going. And Trackunit was really hoping that this would help get traction to our products. So that is really where value is for us.*

LK: *We would like to move more on to questions related to the theory of co-creation. First of all, what kind of opportunities did you use to engage in a dialogue with MCFE?*

JZ: *Well, all three actually, face to face, obviously, with stakeholders within MCFE, a guy there facilitated a project, who we had contact to a guy there whom we met with a few times. Also having regular meetings online, Skype, those, you know, typical mediums for handling that...*

LK: *How often?*

JZ: *Once a week, usually.*

LK: *All through? Or was that more in the certain parts?*

JZ: *No, I would say this really (his apple watch is ringing)... this was a scenario once we headed into the execution phase so when we needed to get things going we had these calls, and actually still do, so now we're coming out of this execution phase by delivering the products and following it all the way out so there is still a need for having these calls, so we have stakeholders from our side and stakeholders from their side to align things.*

LK: *Is it your opinion that these stakeholders from both sides, did they have an equal opportunity to raise their voice?*

JZ: *Yes they definitely did, so you know, the classical structure of these meetings was that everyone had two to five minutes of speech time to get their latest updates to the tables so everybody had a chance to get heard.*

LK: *Did that then make you think that there was a good mutual understanding of the wanted outcome?*

JZ: *Yes I would say.*

ST: *So how would you explain the knowledge level? Did everyone have access to the same information?*

JZ: *Everybody had access to the same information. Knowledge level was not at the same level, I would say, throughout we had participants from MCFE's marketing department, all the way up to the C-level where Hans Seijger is the owner of the project and have some better insights than the guy in the marketing department, so this was very much also what we tried to achieve with the meetings, to make sure everybody had the same understanding and access to material, because otherwise it would be difficult for these guys to drive this.*

LK: *Were all the needed information provided? Or were there some information that could have been relevant that you did not receive?*

JZ: *Good question. I would say it was provided.*

LK: *From both sides?*

JZ: *Yeah that's a good question. I would definitely say we provided more than the MCFE side. As a reason, I think this was down to the maturity level, I think there was quite some uncertainty on the MCFE side.*

ST: *But do you feel that there was an opportunity for you to get the information if you asked for it?*

JZ: *Yeah yeah, definitely. They definitely had the opportunity to request the information...*

LK: *But they didn't necessarily provide it unless you asked for it?*

JZ: *No.*

ST: *Okay. That relates to whether important information was kept from you or wasn't revealed?*

JZ: *That's very broad terms. I don't think so, I didn't feel as if there were.*

ST: *We're thinking in terms of the risks that arise from working with another company, so you're telling us that all information was revealed which clearly creates some kind of risk, so in which way did you overcome this and what did you think, before engaging with MCFE?*

JZ: *I didn't personally, I don't even know if our legal did. Usually we put down these NDAs so we make sure that all parties do not share this outside the walls. We probably did.*

ST: *Okay, so that is related to your position that you don't know?*

JZ: *No I think that when, you know, when I enter then it is really when all of this has been agreed upon, so...*

LK: *Do you think that having everything written down in these NDAs, have that made it easier for both parties to engage in it then and participate, because they knew that the legal basis was then covered?*

JZ: *I don't think that is one way or another, I think that people see these NDA as a necessity, it is something you always do when engaging in these things, I don't think that it made them share even more, it all depends on how much they wanted this, the NDAs are just, yeah.*

ST: *Just to round off with transparency of information, is it correctly understood that everything was put on the table?*

JZ: *Yeah as much as possible, definitely.*

ST: *So information wasn't selected or anything that on purpose was withheld?*

JZ: *Not from my side.*

ST: *Okay, we will move more to the theory related to value.* Lærke defines value, see interview guide, appendix 7.

LK: *Can you tell us how value has increased in this collaboration?*

JZ: *For Trackunit or in a general way or?*

LK: *Both.*

JZ: *I would say, for Trackunit, MCFE was one of the first customers that we brought the co-creation concept to, and we were at some level, I would definitely say that after the MCFE Case, we are at another level, there is a lot of learning for us. Definitely. So I think there was quite a bit of value in maturing all of this cocreation internally speaking so we really learned quite a few things, especially this thing with having the right sponsor.*

ST: *In what sense, sponsor?*

JZ: *Well, you have a sponsor like Hans Seijger, which was very keen on getting things going, we definitely used his influence in MCFE to get things going and get some traction on it.*

LK: *So it was sort of the need for having the right sponsor that can influence the other parts in the hierarchy?*

JZ: *Very much, he is capable of persuading other people within his organisation, rather than having us to putting this into their minds. In some cases people will be reluctant when it could feel like Trackunit comes with these things that they may not see why they should use, but when it is a sponsor within the organisation that brings it and says "listen up, there is actually some interesting value in this" then it usually softens up people.*

LK: *Could this sponsor be anyone or was it beneficial that he was high in the ranks?*

JZ: *It was definitely beneficial that he was that.*

LK: *So it came from the management team and down?*

JZ: *Yes. I mean, it is beneficial when you have a sponsor that is at C-level, it always is, but it could just as well be other stakeholders.* He explains about another project with another company and how the sponsor is placed in this.

ST: *But as you say it is finding someone within the organisation instead of you 'selling' it?*

JZ: *Yes that's well put, instead of us selling it as a fancy idea it's always helpful when you find someone that shares the vision and leverages this within the company.*

ST: *So is it more helpful to take people on the journey rather than setting the scene for them?*

JZ: *Yeah.*

LK: *Were there any examples of value decrease?*

JZ: *Value decrease? In our products or services?*

LK: *Yes, now you talked about that you gained value from the learning and through the maturing, so we were more interested in, if there were some negative aspects of it where you thought that the value was not what you had expected?*

JZ: *That is a good question. On the flipside of the project, I would say that there was parts of the process that we would have seen turn out differently to having a bigger value for us. We had expected bigger value. I'm not we can say it was value decrease, but our expectations were higher.*

LK: *Can you give examples of this?*

JZ: *Well I think that the value for us was really, how many customers are MCFE capable of on boarding with this new services and we were kind of expecting X and now we were at Y. So we were definitely hoping to have more of their potential customers on board than what we actually had on board. Again, there are different learnings in this, it might be due to the fact that they are not really there yet, they are not so mature, they are not able of bringing this all the way out to do the dealers and equip them with the ability to bring this to their customers, it is about understanding this entire ecosystem with a hierarchy of all kinds of customers and stakeholders.*

LK: *You speak very much of value in relation to the context, learnings, maturing, I am wondering, is there any value related to the sale of the service? Or is it the process that is valuable to you?*

JZ: *I'm not sure I follow.*

ST: *Was it in the process of working with the development of the service that you experienced the most value or has the value level been the same here in the end?*

JZ: *That's the phase we are in now, us stepping two steps back and MCFE entering the ring, now it is the time for them to deliver this into their ecosystem and that is a good question, difficult to answer I would say.*

We ask him to illustrate the value creation in a diagram.

JZ: *This would have to be based on expectations. At this time, if this is the time where I entered the project, we had an expectation of the value being here, and this is the time where I stepped out of the process, we would be seeing a linear growth but at the end of the project, we would be seeing a bit of a decrease because now we are kind of crystallising it for us.*

LK: *So to you value is still related to what you expect from it?*

JZ: *Yeah. It is an interesting question because value in this context, as in the MCFE project, it was derived on expectations. We had our expectations that was aligned with MCFE's and they had their definition of value in their ecosystems it is always at the exit of these projects that push come to shove, that is where they need to deliver and we have kind of delivered so we want a return on the investment, it might go up or down.*

ST: *Is that a determinant of value, whether you monetise or not? Has value only been experienced when you get money from selling the service?*

JZ: *I think that is where the highest value is, because that's when we really see customers buying in. There is also a different kind of value, and that is that MCFE is a big player in the world of OEMs, and this has to, it is a weird thing in this business, because when such a partnership is established and someone spends time on something, it always ends up in the ears of someone and in their pipeline, and we see that a lot of times then*

people suddenly approach Trackunit and call us and say "we have kind of been hearing about your work with MCFE, it sounds interesting, can you do it with us?". And that is kind of the different value, we don't necessarily have to go out and bring this to customers, sometimes they hear of us and approach us.

LK: *A question related to the money aspect. Did you earn money when you sold it or per user they have?*

JZ: *That's a good question. Let me keep drawing on this. This is the time that goes prior, let's call it business development phase, this is where we agree with MCFE to create a new brand in this amount of time and it will cost you X amount of euros. So MCFE has agreed to work with us and spend an amount of money and hours. But the real value for us is when we see customers buying a subscription because that taps into a subscription with us and this makes it a subscription-based business.*

LK: *So there is a start base of money and then it is related to subscriptions?*

JZ: *Exactly, and that is the real potential for us. We expect to see a specific amount of money coming down to us in a generic product base.*

LK: *So that is why you talk of expected value?*

JZ: *Exactly, and then MCFE comes and align on the payment, so MCFE get a cut of it and Trackunit gets a cut and that is how you align. This is how both parties profit from this.*

LK: *So that means that both parties get a fee in this rental model.*

JZ: When we speak of OEMs which are companies that produce this big iron that can move and dig holes in the ground. MCFE is like that, unless that it doesn't produce anything, it facilitate the dealers, so MCFE facilitate the dealers of Caterpillar and Mitsubishi, so they facilitate all these dealers, there might be A, B, C and so on. So they might have dealers in the UK, France, blablabla. So they want to deliver something good to the dealers so they can take this new service out to the customers and then sell this. So they get paid and eventually MCFE gets paid and then Trackunit gets paid. So it is the dealers that own MCFE.

LK: *So that is why their needs to be value for the dealers and this relates to you?*

JZ: *Exactly and that is why all of this value is based very much on expectations because you don't know this because only when you start delivering to the dealers you find out if they like it, if they see it as a potential and exciting product.*

LK: *So this means that, you entered the process here and exited here, and the value went down right before, does it mean that the value potentially can go up again?*

JZ: *Yeah.*

LK: *And then you don't know how the curve will be?*

JZ: *Exactly. And that is very much depending on the link to MCFE because they are the ones that need to go out and sell this, not Trackunit.*

ST: *So you don't have an interest in including the dealers in the collaboration, because we didn't get the impression that they were a part of it?*

JZ: *They have. So lets say, in the first part of the project, one or two times we conducted big workshops. All dealers were invited from the Caterpillar side and Mitsubishi side, I think there were fifty dealers in the room, where we gave the visions and features and showed they new shiny things and showed them the different products that could be sold at different prices. And then, after that, we had more practical workshops, with "this is product A, what does it do, who is it for, what does it cost" all of that and get some feedback on it. It is very much…*

LK: *So you made the vision and presented it for them and then they were invited again when you had actually made the product, or the service, and you could then tell them how to implement and use it?*

JZ: *Yeah they were on board from the beginning, this is when we began putting the big services and features down, so they were present when we told them this is in development, now we are launching, now you need to go sell the stuff.*

LK: *So they were sort of more included at specific times, where Trackunit and MCFE were engaged throughout the collaboration, and then sometimes these dealers were invited in?*

JZ: *Yeah.*

LK: *How much, is you can answer, if they buy a subscription, do you earn the same percentage as MCFE?*

JZ: *That is a good question. Lets just say that there has been a formal agreement on how MCFE gets a cut and Trackunit gets a cut. It is actually pretty complex.*

ST: *That was it, do you have any concluding remarks?*

JZ: *No.*

We thank him for his time and end the interview.

Appendix 5

Interview with Per Stjernqvist, Vice President, Servitization & Products, 21 March 2018:
Copenhagen Business School, Solbjerg Plads
PS: Per Stjernqvist, LK: Lærke Kyvsgaard, ST: Simone Thelin

"": indicates quotes by the interviewee
, : indicates minor pauses in word flow

ST: *Can you briefly describe what the Trackunit and MCFE case is about?*

PS: *It's about MCFE needing a telematics solution. That was the initial part because all their competitors they have one, or the main competitors so they were lacking behind and they were looking for something that would differentiate them compared to their competitors because their solution only worked in silos, they were equipped on their own equipment and could not communicate with other brands. So what MCFE saw was that the reality is that almost all warehouses or fleet owners they have mixed fleets so that's the reality but OEMs they are pushing for their own solution and not solving their warehouse managers' problems by having a mixed fleet. Of course you can find fleets that have only one brand but it's very seldom. So MCFE they said "okay let's take another approach and see if we can make a solution that goes across all brands"* (PS making a quote)*, and as Trackunit are working across all brands and have done it for quite a while it was obvious that we teamed up. At that point, that was a year ago, we did not have the more advanced solutions that we were aiming for, you know applications on a smartphone, so you can engage with the fleet owner, the operator and the service engineer and harvest data from the whole ecosystem - that was our idea, we had it on a road map, we had a deadline of when we wanted to launch this new application but developing these kinds of applications in R&D and not having a real customer in the project can be a challenge, so that's why MCFE when they approached us it was like a present because then we could co-create together with them. We could both accelerate and we could also increase the quality of the solution by getting input from them.*

LK: *What was your role in the collaboration?*

PS: *I opened up the discussion, I knew the management at MCFE and then I asked for meetings were I could present our solution. I had the opportunity to present this to the whole management team. I'm not a technology freak, the hardware really doesn't interest me, but what interests me is the data we can collect and what value we can bring. So our whole presentation was about data and value creation and that was the first time MCFE had seen a presentation where telematics wasn't mentioned one single time because everybody else they had engaged with they had all been very technology focused and very little on the value.*

LK: *So it was easier for them to understand you?*

PS: *I had already done some research and with my background I knew about the forklift industry and I knew about their pains and gains and the ecosystem so I pitched it with small teasers of how they could solve the different problems, so they could see that I understood the industry and I could take some of the data and create*

solutions. I didn't go in depth because it was just a brainstorm but I got them engaged and that opened them up. I have been running the product since, of course all the software developments and co-creation has been carried out by a programme manager, Jacob, he did all the software developments but I had the commercial responsibility.

LK: *Did Trackunit and MCFE participate equally throughout the collaboration?*

PS: *It depends on the timeline. In the beginning we did several workshops together and we did a lot of research with the help of MCFE, so there was a lot of engagement in the beginning. Then we build the first prototype...*

Per's phones rings and we pause the interview.

PS: *Where was I? Oh yeah the beginning. In the beginning we had a lot of interaction and then we build the first prototype and we validated that with customers, real customers, getting their feedback, so we knew that we were on the right track. And then we started coding and in that process there was very little interaction.*

ST: *So Trackunit was the main participant?*

PS: *Yes, yes. And then when we reached a stage where we were to do the final coding and setup the application then we met up with them again. So that was a time frame of two months were we had very little engagement. When we finished the product we were going to launch it, it didn't stop there because then we helped them launch it.*

LK: *You were not supposed to do that actually?*

PS: *No, we helped them make all the communication packages. We developed the names for them, we developed the logo so they paid us for that but when they were going to launch it at the expedition and training and everything, we decided to help them. We didn't get paid for it or anything but we could see that they would struggle with that because they were not a software solution company, they are producers of machines so they really struggled with this, so we helped them and maybe it's not co-creation.*

ST: *But it was in order for your solutions to get into the market?*

PS: Yes, yes and we see that more and more. It's not only the basic co-creation around evolving a product, OEMs they need help for the whole process, from developing the service where you have co-creation but also launching it.

ST: *So actually implementing it?*

PS: *Yes, implementing it. Because they don't have the resources or knowledge. It's so far away from selling iron and suddenly they sell software and solutions.*

LK: *From your point of view what was the expected outcome?*

PS: *To generate subscriptions and volume, volume, volume. That's our business, the more solutions we can sell with a subscription the more money we can actually earn and increase the value of the company.*

LK: *So you just like MCFE earn a share from the subscriptions generated?*

PS: *Yes, yes.*

ST: *So the value in relation to the outcome was more related to actually getting subscribers?*

PS: *Yes, that's where the money is. If you deliver 3000 machines in one year, and the subscription is 10 euro per month multiplied by 3000. Next year you also sell 3000 so now it's 6000 multiplied by 10 euro multiplied by 12 months and then it's exponential and there is so much money in it.*

LK: *Did you expect the value to also be exponential?*

PS: *Yeah and the revenue.*

ST: *Looking at it now do you think you have achieved the outcome?*

PS: *We don't know yet because we officially launched it last week at an exhibition in Stuttgart and now we are waiting for the orders to flow in and they will of course come but I want to see it before I can calculate what will be the outcome of this project, but it will come. There is an interesting spinoff because MCFE is one subsidiary of Mitsubishi Group. There is also MCFA, Americas (Mitsubishi Caterpillar Forklift America) and two years ago Mitsubishi bought another company called UniCarriers, they produced Atlead and Nissan forklifts, but they consolidated into one brand, UniCarriers and they are almost as big as MCFE and MCFA. They are both in Europe and America and what happened was that suddenly UniCarriers and MCFA could see that we had done a solution together and now they want the same. So there is a spinoff that we can actually increase the volume through other parts of the Mitsubishi corporation.*

LK: *You mentioned the workshops you did, did you have other opportunities to engage in a dialogue with MCFE?*

PS: *Workshops, interviews with the dealers. It was primarily the workshops and the interviews.*

ST: *So mainly face to face interactions?*

PS: *Yes.*

LK: *Is it your opinion that everyone had the opportunity to raise their voice in these mediums e.g. in the workshops?*

PS: *Yes, we had a very structured approach when it comes to these workshops to secure everybody is heard. All ideas come to the table and we priorities them because of course not all ideas are good, but we also try to group them. And that is actually the whole purpose of these workshops, to tap the brains of everybody in the room, so we have a process for that. It's not about who shouts the loudest.*

ST: *Everybody getting the opportunity to talk?*

PS: *Yes, yes. That's why we during these workshops where we facilitate it can be pretty nasty and a pain in the ass but that's how it works.*

LK: *Do you do it to gain a shared understanding of what you want and be on the same page?*

PS: *Yes, exactly.*

LK: *Was the number of workshops sufficient to reach that shared understanding?*

PS: *Yes, I think we had four workshops. Three with MCFE and one with their dealers.*

LK: *When was this with their dealers?*

PS: *That was in the beginning.*

LK: *In the brainstorm phase?*

PS: *Yes, yes.*

ST: *Did all the involved teams and people have access to the same information throughout the collaboration?*

PS: *Yes, we have a Confluence which is a document sharing system, a collaboration system like SharePoint and others. We created this internal web page where we stored minutes and documents and roadmaps and everything and then we invited people from MCFE into Confluence so every time we had an update they were alerted. So that was the common platform for the collaboration. We do this every time we have co-creation projects because it's very very important to share all documents and progress structurally.*

LK: *Was it documents on the progress or did you also get access to their systems and the details on their processes or products?*

PS: *We did not get online access but that was not necessary. Everything that we needed for the project was transparent. There were no barriers at all.*

ST: *But if it's documents and materials you put online is it then an active choice from your side which documents and what information you reveal?*

PS: *Yes.*

ST: *So was there anything specific withheld from them that you think affected the whole process? And the other way around?*

PS: *No. We were 100 percent transparent.*

ST: *Did you feel they were the same to you?*

PS: *Actually yes.*

LK: *So you felt you got all the needed information.*

PS: *Yes.*

ST: *In terms of the risks that come from sharing this information which thoughts did you do on this?*

PS: *To be honest. We didn't think about it because we did not see an issue in the risks.*

LK: *Do you think they saw an issue in the risks?*

PS: *Yeah, it could be.*

LK: *Why?*

PS: *Maybe it's because of their culture. At Trackunit we have decided that we should not be afraid of sharing, also sharing ideas.*

LK: *Open innovation?*

PS: *Yes, exactly. Some will argue, "yeah you're giving away your ideas etc." (PS making a quote) but what we believe is that it's not only about getting the right idea but about execution and speed. We are just so fast so maybe they can copy our idea, but when they manage to copy it and launch it we are already on to the next or second idea. So it shouldn't be a problem, so we had this culture of sharing in the open because we are not afraid and these big corporations they may be a little bit afraid of sharing too much. But in this specific project I didn't really see any problems. Maybe it's because we didn't touch issues that could be controversial or confidential.*

LK: *You mentioned that there were full transparency, can you elaborate this?*

ST: *You mentioned it was a corporate philosophy but how did it affect the process of the collaboration?*

PS: *It made it better.*

ST: *Because you were able to access some of their resources?*

PS: *Yeah, you see. It was a process for us because in the beginning we could see that this was driven by the management and they trusted me and then the second level at MCFE they were little bit reluctant in the beginning but as we started working together, interacting, you know socialising that is also an important part, we came closer and closer. When we had problems during because it's not all without problems we simply just put the mice on the table and simply just said how can we solve the problem. We didn't argue or shout at each other like we might have done if this problem had occurred in other circumstances but we were so aligned and we worked like colleagues so it was like "let's just solve this problem instead of fighting."* (PS making a quote)

ST: *Again back to the point you said about dialogue; you had a really good dialogue throughout it?*

PS: *Yes, yes.*

LK: *Who was this second level?*

PS: *The second level management they hadn't tried this before, that was my feeling, so they had this more "we buy, you supply and we just want the lowest possible price"-attitude but that really loosened up during the process.*

ST: *You think they were more considerate of the risks or were it is more that they were not on board on the co-creation concept?*

PS: *I think, they were not on board on the co-creation concept.*

LK: *Do you think they still see it as supplier relationship?*

PS: *No any longer. We are partners now, definitely.*

LK: *So they sort of had a mind shift change?*

PS: *Yes, that's my feeling at least.*

LK: *We will now move on to the value part.* LK describe how value is viewed in this thesis, see appendix 7.

LK: *How did the value increase in this collaboration for Trackunit and MCFE?*

PS: *When we had the idea of this new application we wanted to run on mobile phones it was very much about connecting the operator to the machine and doing pre-checks. Safety pre-checks it started with. During the co-creation process we found out that there were other stakeholders in the ecosystem that could benefit from pre-checks and we could solve some of their problems and just to give an example; MCFE they have dealers and the dealers have rental fleets so when they rent out the machine they get a fixed price on this machine every month. So that's the revenue and the cost is service and repair. So the whole purpose of getting a profit seen from the dealers' perspective is to get as low costs as possible because they can't increase the price. If they could reduce the amount of travel for the service technicians, you know a service technician travelling 100 kilometres just to fix a mirror, that's very expensive, or fix something the operator could have done himself, if we could decrease that, then it would create value. So suddenly the pre-check app we turned it in a different direction helping the dealer to actually lower his costs so when he did the pre-check he could also report damages in a smart way, taking a picture that the service engineer could see on his mobile phone or in his system and come to the conclusion "that is something I can fix remotely or I can do the repair the next time I'm there to do a normal service" (PS making a quote). So that value came out of the co-creation project and then there was another stakeholder in the ecosystem, the warehouse manager. He was also very interested in this application because when he has signed a rental agreement with the dealer there were some assumptions. The assumptions were that damages were not included or breakdowns that were caused by the operator not checking this or that e.g. oil leaking, if he see that and he doesn't care and just continue driving and then the engine breaks down, who should pay that? That is definitely the warehouse manager, so he was very interested in following up on these pre-checks as well, so suddenly we found out that we need to build a management tool of the warehouse manager so he could follow up on that. The whole ecosystem could suddenly benefit from an application that was just a pre-check.*

ST: *So it was very much the use of it that created some value for both Trackunit and MCFE? You mention the value for MCFE, so the value they get from your solutions but looking at it from Trackunit perspective was the value mainly getting more customers?*

PS: *There were two parts. One was to satisfy MCFE so they would buy more and more and more, the second part was that with this new application we could scale it up and sell it to other OEMs.*

ST: *So developing your solution?*

PS: *Yes. We had this foundation that was the pre-check application and we could sell that to other OEMs, branding it as whatever they would like and of course we could twist it a little bit but developing an application like that is extremely expensive. We are talking millions, it's not just a simple app you develop at home. We could use that development cost and spread it out on other OEMs.*

LK: *So what you created in this context would be relevant for other contexts in the future?*

PS: *Yes.*

ST: *Because you can bring all the learning with you?*

PS: *Both the solution we can scale it up and sell it to others but also the learnings, but it doesn't stop with just selling this application. We have agreed that we should continue the co-creation, so continually developing new versions.*

LK: *So the collaboration hasn't ended?*

PS: *No, no.*

ST: *And you don't see an end?*

PS: *No, and that's very important because when you develop a machine it can take two, three sometimes six years from start to launch but software and updates, the cycle is different and we need to work in another speed and continuously develop new services, so it doesn't stop.*

LK: *So when you talk about value in relation to making it useful for these different stakeholders, do you then mean that you want to create value in use for them with the goal of actually getting them to buy subscriptions?*

PS: *Yeah, yes.*

ST: *Were there any examples during the process where you think the value decreased or that there were any issue that made it less successful?*

PS: *No, I can't recall anything.*

LK: *Were there some aspect that was more relevant to the value you created than others?*

PS: *What do you mean?*

LK: *Was the physical solution more important than what you learned together or was it what you talked about and both of yours understanding more useful to the value created in the end? What had the biggest influence on the value?*

PS: *Good question. Let's come back to that question.*

ST: *We would like you to illustrate the process of the value creation.*

We give him an introduction to the diagram and the axis and ask how he would illustrate the value.

PS: *So when you mean value? Value for whom?*

ST: *For Trackunit in this collaboration.*

PS draws while being quiet, then shares the following with us.

PS: *Looks like I'm developing a whole new method. That was not my intention.* He keeps drawing. *I'm not hundred percent sure about this, you can challenge me on it. I have been writing two loops. One loop is the one that we are searching on now, the one that is a part of your project. So we are in the deployment phase now, launching the product. And then, I just came up with this idea, the second, third, fourth loop is when we take it in, because we have to develop all the time. So research, just by doing the research on all the stakeholders, the value really start picking up, and when we have the ideation, that is really the workshops, then it really takes off, because we get so much value out of gaining insights about the industry and creating ideas. So this is a combination of revenue but also knowledge. Value can be many things. So I have this feeling that it peaks here, we have maybe one, two, three, four workshops, and it just gets better and better and then it flattens out and we start the development because at some point you need to say "okay, this is the solution" and in this phase we have the development with the minimum viable product, mvps, 'build-measure-learn'-loops, so we validate our ideas and at this points we have maybe done four validations or tests, so we are ready to actually start coding. Maybe the curve is not that steep.*

ST: *But in some way it goes down?*

PS: *Yeah it goes down a little bit, because now it is R&D, that takes over.*

LK/ST: *But why does it go down, is it something specific that happens that makes it go down instead of being steady?*

PS: *Yeah but maybe it is…..*

LK: *Is it because now they have to take your ideas and do something? Or what is it?*

PS: *Maybe it is not tipping. I'm thinking. Maybe it is flattening out. And then we have the deployment. I think we should leave out, it should be the value of knowledge and leave this out.*

ST: *So not revenue?*

PS: *Yeah because we don't have any revenue here it's over here later, so I think it is flatten out. Then we comes to deployment, maybe it is still flatten out. And then lessons learned, I think it increases a little bit.*

ST: *Because then again, you get to interact?*

PS: *Yes, we evaluate, maybe do an interview with the customers that are actually using the system. I think it will increase here. And then we have ideation. Maybe it will just continue like this and be linear. So now I actually believe it will continue up like this.*

LK: *So, a ladder?*

PS: *Yes actually, a ladder.*

ST: *From each time you interact it goes up and the times where you don't have an interaction so to speak, at the times where Trackunit is working on developing by yourself it is steady?*

PS: *Yes. We have a model.*

LK: *Why do you think you actually drew this in the beginning?* LK points to the first line PS drew which he afterwards deleted.

PS: *Maybe because I was not involved at that stage, so I don't have a feeling, "nothing is happening but they were coding" but I was wrong.*

LK: *Interaction and development?*

PS: *No ideation.*

ST: *Because it indicates another loop?*

PS: *Maybe you could produce a PowerPoint with this and then we could do some ideation on it, and see if we can come up with something. I can validate it with my colleagues. Because that would be an interesting model.*

We explain to him how we have done it with the other interviewees and that there has been difference in the drawings, but also many similarities, and what our idea was with the model for the thesis.

LK: *It is interesting that you start out with drawing one thing and you say knowledge and revenue, but that it was more knowledge, because there is no revenue here (in the beginning) but does the revenue aspect then enter at one point?*

PS: *Yeah. Because this is knowledge and revenue from Trackunit's perspective starts here, so you have Euro here and this is knowledge, so the revenue starts here in the deployment phase so there is a slow start and then of course there will be an exponential growth.*

We discuss how adding the second dimension of the expected exponential growth improves the model and jokes about how this will improve our thesis and Per suggests that we do more research on whether models like this exist.

LK: *So the knowledge level is more important, yeah, okay. Do you want to get back to what you said about the biggest influence on value?*

PS: *The biggest influence on value was these workshops, because that is where we created the value. And the workshops were all based on research. So we went out and interviewed real customers and real engineers, so we asked them and got very deep into their pains and gains and their focus. The ethnographic research was then the basis of the workshop and that is during these that we had the insights and could create some awesome ideas.*

ST: *So it was also the physical or the active participation of both parties in the workshops that helped and created value?*

PS: *Yes and I also believe that if you are going to have this successful co-creation process you need also to do a strict selection of the stakeholders that should be a part of the co-creation process. Because if you only invite R&D or engineers into the workshop then you only get their perspective and that is usually very different from if you invite a sales person, that faces the customers, but you also need the input from the R&D, because they know what is possible and not from a technical point so I would really prefer to have had those also. Once you define the stakeholders in the ecosystem, then you define the knowledge that they could bring to the table.*

LK: *Stakeholders within Trackunit and MCFE?*

PS: *Yes, so it is in this case the relationship between the warehouse manager, the service engineer, the operator, it was very important that we invited the dealer, because they sit with the contract agreement. It was important that we invited in the service engineer, because they sit with the pains and gains and the daily business. A real customer, the warehouse manager, R&D, of course, representing the machine, and very important, the management.*

LK: *But were these, e.g. the dealer and the warehouse manager and the operator, were they in all workshops or only in the first?*

PS: *In this case, they were not a part of any of the workshops. And that, I would have liked to have. Because we based it on the interviews that we had done before, but I would really have appreciated to have the warehouse manager present in the workshops. But we have done other co-creation projects after this and then we have done much more, and been much more strict on doing the mapping and inviting the right people. Because the OEM tends to think that "if this has to do with data, then we invite someone from the IT department or R&D" but we can challenge them on this to get all perspectives.*

LK: *Did this influence the value, in the end, that you actually, in these four workshops, were more strict and invited people related to Trackunit and MCFE?*

PS: *In this case, I don't think it was a problem, because the most important stakeholder was actually the dealer because they could benefit from this solution by lowering their costs and so they were, their business model were very strong so they would really like to buy the solution. The warehouse manager, of course, it is interesting for him to identify what is in and out of the contract, but the most important stakeholder was actually the dealer and we invited him so they were a part of the co-creation process*

LK: *But they were a part of the first workshop? What about the second and third?*

PS: *Only the first.*

LK: *Do you think there is a limit to the amount of stakeholders from the ecosystem that you could invite? Estimation?*

PS: *Yes, it is more from a practical point of view. When we run these workshops, maximum eight or ten, maximum.*

ST: *And that would change from context to context, which will be the most important?*

PS: *Yes definitely.*

LK: *So eight or ten, that would be the dealer, someone from R&D, some from management, both teams, ok. From the top of your mind, do you think time played an important part? That it lasted for over one and a half years and now it continues. The fact that it is an on going process, not just three months and then it ends, but that it continues?*

ST: *We mean, how important is the time?*

PS: *Time is very important.*

ST: *Which is also what you drew with the loops. It is a process that keeps developing?*

PS: *Time is essential because when you develop or launch digital services we have seen many projects that have totally failed because we used too much time, so when we launch it, the customer is somewhere else or the technology is obsolete and so these long projects usually tend to fail.*

ST: *Also what you said, that Trackunit is more fast moving and push for results.*

PS: *Yes and we see OEMs that have this vision that they want to build everything and of course it is possible but it takes a long time, costs a lot of money, and there is a big risk that it will fail, so we want to do the opposite, we should allow ourselves together with the OEM to think big but start small and get fast results. And then get return on investment immediately or as soon as possible. And then you can build on that, referring to the next loop, and at some point in two or three years from now, we will reach this 'think big scenario' but I also believe that you can have one vision that you want to be there in two years and things around us change so fast so we should revisit that vision that we are already working on, already after three or four months, because things are moving so bloody fast, so there is a risk that if we do like the OEM, they want to pursue this vision and they continue to pursue the vision, and forget about the world changing because they are so focused on the solution, but when they launch it the customer is somewhere else.*

LK: *So it doesn't fit the market anymore?*

PS: *Exactly, so when you get fast to the market, evaluate, and learn from it then you might twist the next solution or update in a different direction, because we see that things are changing and we can allow that agile approach.*

LK: *Okay, so it is actually also about being close to the market and keeping an eye on the market and how it moves, especially within telematics, technology?*

PS: *Software solutions, yeah.*

LK: *So you cannot withdraw too much, you have to keep an eye on the market?*

PS: *You see, Facebook is a good example because it started with Mark Zuckerberg's purpose of getting a girlfriend, so it was a dating portal, so you see, it evolve, and that can be very difficult for the OEMs because when they start projects they ask the finance department for a very strict analysis on return on investment and that can be very difficult when developing these services. It can go through the roof or it can fail, but let's fail very fast so we limit the costs and we can allow ourselves to fail. This is also why we need to fail as early in the process as possible, this is why we have these loops, so when we start doing the coding, which costs a lot of money, then we are pretty sure this will fly.*

ST: *Is this also why you have more interaction in the beginning?*

PS: *Yes, but the challenge is that we ask for the money for the whole process which is here.* He points to the beginning of the drawing. *But we are not able to make a solid return on investment calculation. Do you get my point? That is really a challenge, because that is the shift in mindset.*

LK: *Is that also why you needed to really get along and talk together and meet up?*

PS: *It really differs depending on the OEM, some have an executive management that understand this. When I started two years ago, I could see that many of the management teams of these OEMs they didn't understand what this was about so that was really challenging for me. In some way, I had to teach them, so the way to do it was to provide proof and case stories and interact with them in a way, acting like a consultant, you are also able to provide them with thought leadership. This is why I do research at CBS because then I have a leg to support me in saying "yeah you believe the world is like that but we have seen in our research that other OEMs are moving in that direction" and blablabla. But now I see a clear shift, the top managements are ready. In some cases I see that the challenge is actually the level below the top management, if the middle layer really understood this 100 percent and the top management didn't then it would be a problem but it usually cascade these ideas lower down. So it is a movement in right direction. And this is also why we see more and more OEMs asking for help because now they understand that this is not like developing a new machine, it is completely different. And they look at the organisation and say, "we don't have the competence, we don't have the resources, we don't have the processes, help us"* (Per making a quote) *so now we are also selling professional*

services. Actually MCFE didn't pay for anything, so there was a learning phase for us, seeing that OEMs can't do this for themselves.

LK: *Didn't they put some money into it?*

PS: *A little bit, but nothing compared to the costs. But it was all worth it. Because of this project we actually managed to sell other services to other OEMs later.*

We thank him for his time and end the interview.

Appendix 6

Interview with Jacob Zimmer, Senior Software Manager, 19 April 2018:
Telephone conversation, Copenhagen
Succeeding interview to hear the interviewee's comments on synthesis 1:

JZ: *Det er en meget interessant måde at plotte begrebet om værdi kontra revenue i en proces. Jeg kan godt lide ideen om at den er delt i to dele. Men i stedet for at gå fra beginning to launch er det måske mere ideation and shaping for derefter at gå over i en decideret launch. Jeg er ikke så begejstret for der, hvor grafen starter, der går den drastisk opad, og så daler den meget ned til knowledge punktet, og så stiger den støt derefter. Jeg kunne godt forestille mig, at den er lidt mere lineær frem til det her knowledge punkt.*

ST: *Så fra start og dertil.*

JZ: *Så stiger den så gradvist op til launch, hvor det så er rigtigt nok at revenue også stiger. Måske ikke så drastisk som I har plottet det her.*

LK: *Så grafen skal mere starte i nulpunktet og så mere lineær stige op til knowledge punktet?*

JZ: *Ja, det synes jeg vil give mening.*

ST: *Vi har lavet den trappe lignende stigning fordi I har alle hver for sig har sagt, at når der er en interaction, så stiger værdien. Passer det?*

JZ: *Ja, det er rigtigt.*

LK: *Skulle der have været flere trin?*

JZ: *Det kunne man godt sige, men igen det er jo en model der kan variere alt efter, hvilken case der er tale om. Der kan være to, men der kan også være otte. I kunne prøve at plotte det ud og tegne en dotted ellipse runde, de kan gengives alt efter behov.*

ST: *Er meningen der, når du ser grafen?*

JZ: *Ja, det synes jeg. Det vil måske give mening, hvis man gjorde den lidt længere. Lad os sige, at man har den første store klump, der hedder ideation and shaping, hvor man finder frem til noget knowledge og common value. Det giver god mening, at den stiger støt med det her trapper undervejs. Det næste har I kaldt launch and forward, det vil måske give mening, hvis man gjorde det lidt mere eksplicit. Men så igen det kan egentlig være, at den er fin nok.*

LK: *Har I sat en periode på, som I måler på fx fra hvor I launcher til det første kvartal, hvor I fik så og så mange…*

JZ: *Det forsøger man at plotte sammen med OEM'en, hvor man sætter nogle skillelinjer og nogle målepunkter, og selvfølgelig har man et expected outcome.*

ST: *Vi har hørt de fleste af jer nævne, at det er et samarbejde og planen er at fortsætte dette samarbejde, det er ikke med en klar afslutning…*

JZ: *Det er fint at knowledge og revenue kører som to separate tråde. Det kan jeg godt lide. Men en mindre stejl revenue.*

LK: *Er det på baggrund at noget I har fundet frem til siden vi sidst snakkede sammen? Grunden til at revenue skal være mindre eksponentiel og mere lineær er det på baggrund af nogle ting I har lært siden vi sidst snakkede med dig?*

JZ: *Nej, egentlig ikke. Vores erfaring er, at man har en forventning om, at revenue er meget støt stigende når du går ind i den her launch fase, men det er den som regel ikke. Launch er svært og det er tidskrævende, og det har rigtig mange andre punkter, og det er jo ikke bare sådan lige til. I en OEM verden skal det launches mange steder før revenue begynder at finde sted. En ting er at du launcher det, det er egentlig bare at du afleverer det her nye produkt/service til den, der skal sælge det. Når de er udrustet til at kunne gå ud at sælge dette, så kommer revenue, det kommer ikke i takt med at man launcher, det kommer nærmest bagefter man har launchet servicen.*

ST: *Så det ligger faktisk mere over i det, vi indtil videre har kaldt future loops?*

JZ: *Ja, det vil være derude hvor revenue begynder at have den eksponentielle stigning, hvor i launch du har en meget blød stigning. Der er selvfølgelig noget værdi i at forhandlerne eller aftagerne af produkterne pludselig bliver beriget med ny viden. Men der er ikke eksponentiel revenue i launch fasen.*

LK: *Så det er måske mere fordi, at vi har set launch som et punkt, men launch mere er en periode?*

JZ: *Præcis. Jeg tror mange har sådan en misforstået opfattelse af at launch er en slags knap man trykker på, og vupti så er det der. Men det er det ikke, det er en fase, en proces. Der er rigtig meget, der går ind i den fase.*

LK: *Tak.*

JZ: *Det var egentlig mine middelbare tanker.*

Vi takker for hans tid og afslutter interviewet.

Interview with Per Stjernqvist, Vice President, Servitization & Products, 19 April 2018:
Telephone conversation, Copenhagen

Succeeding interview to hear the interviewee's comments on synthesis 1:

PS: *Min eneste kommentar er at det kan godt være jeg bl.a. har tegnet det på den måde I har afbilledet det, men jeg tror faktisk ikke, at hvis der er den der eksponentielle stigning i viden i starten, så kan den jo ikke falde, den skal flade ud i stedet. Man kan jo ikke blive mindre klog. Hvis I forstår?*

LK: Det er selvfølgelig rigtigt.

PS: Det er sådan set det eneste, så det at den dropper skal egentlig være en udfladning med en lidt svag stigning, og så kommer stigningen i viden bagefter.

LK: Ja okay. Har du en kommentar til revenue grafen?

PS: Ja, ja. Jeg synes, den stiger for hurtigt. Det er en langsom stigning i starten, og så den her typiske eksponentielle stigning som så kommer lige pludselig, altså svag stigning i starten. Er der ikke nogle kurver man kan finde på det i litteraturen.

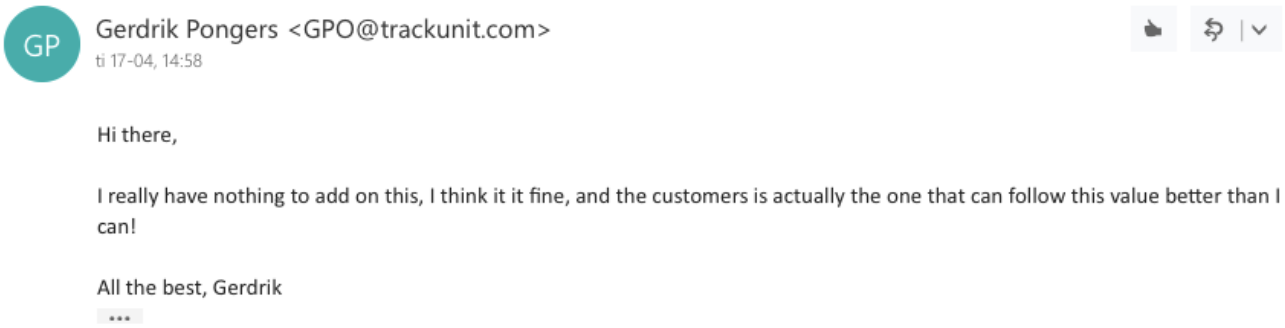
LK: Sikkert, det er der sikkert.

LK: Nogle kommentarer til at den starter midt på y-aksen?

PS: Derudover skal grafen starte i nulpunktet mellem y og x aksen.

Vi takker for hans tid og ender interviewet.

Mail from Gerdrik Pongers, 17 April 2018



Mails from Willem de Jong, 17 April 2018

DW

de Jong, Willem <Willem.deJong@mcfe.nl>

ti 17-04, 10:33

Simone Linnea Thelin

Svar til alle

Dear both,

Comment, knowledge curve ok but revenue graph is too steep in my opinion; should be far less aggressive at least for this product.

Best regards,

Willem de Jong | General Manager Equipment
T +31 (0)36 54 94 333 | M +31 (0)6 51 31 75 50

DW

de Jong, Willem <Willem.deJong@mcfe.nl>

ti 17-04, 22:31

Hi Simone,

While we would like a more aggressive curve, the less aggressive curve is in line with reality as we experience it.

Best regards,

Willem de Jong | General Manager Equipment
T +31 (0)36 54 94 333 | M +31 (0)6 51 31 75 50

Appendix 7

Case	Research questions	Interview questions
	Case context	**Can you briefly describe what the Trackunit/MCFE case is about?** B) Who were the participants? **What was the time span of the collaboration?** **Did Trackunit and MCFE participate equally throughout the collaboration?** B) Why/how **From your point of view what was the expected outcome of the collaboration?** **Did you achieve the expected outcome?** B) How/why
Co-creation	Research questions	Interview questions
	Dialogue	**What kind of opportunities did you use to engage in a dialogue with Trackunit/MCFE** B) How often did you engage with Trackunit/MCFE and how? Did you talk more in the beginning, during or in the end of the collaboration? Which medium? **Is it your opinion that everyone involved had the opportunity to raise their voice?** B) Did you all experience that you had a good mutual understanding of the wanted outcome? B) Can you elaborate on this or give an example B) F.x. was the level of engagement/dialogue sufficient for reaching a shared understanding?
	Access	**Did the involved people/teams have an equal knowledge level in this collaboration? And how has this information been used?** B) Did everyone know the same? B) Were you given access and did you give access to processes and systems? B) Were the needed information provided or were there some information that was relevant to you that you did not get (for the creation of the service)?
	Risk Assessment	**Did you give, and were you given from Trackunit/MCFE, the sufficient information in order to assess the risks of engaging in the collaboration?** B) Were there anything relevant that you did not reveail or that was kept from you?

		B) Are there examples of situations that did not work out as it was planned? Was this something that could have known were to B) Were these risks discussed and how to overcome these? B) Did the companies share the responsibility for any of the risks? B) Despite the risks how come you chose to engage in the collaboration anyhow? B) What about risks in terms of giving the right information on the service?
	Transparency	**Can you tell us about the transparency of information?** B) How much and what kind of information do you share with Trackunit/MCFE? is it only selective information? B) Were there information you did not share in this case? B) Can you imagine reasons for the parties to withhold information? **How did the information transparency level affect the collaboration process?**
Value	Research questions	Interview questions
	Definition	In short, we define value as a process where the user becomes better off in some respect, i.e. the user feels better of than before. So in a combination with the previously asked questions, we argue that value is not created by the firm alone, rather it is the act of collaboration that affects the value being created. In a hands-on way, saying 1+1=3. With this in mind, we would now turn the focus of the interview to 'value' from your perspective.
	Value: Was the value related to the development of the service and its characteristics? Or was the value dependent on the actual use?	**Can you tell us about how value has increased in this collaboration?** - For you, i.e the company - For both, Trackunit and MCFE **Were some more influental than others?** B) In your opinion, who had an impact on the value created? **Any examples of value decrease?** **Were there times were you expereienced that if was more an advantage to engage in this collaboration than others?**
		As a final point: we would like to illustrate this value creation, but since this is difficult through the phone, we will ask you to visualise a diagram with value on the y-axis and time on the x-axis. Can you try to explain to us when you felt high or low value over time? B) Fx did the value increase linear, exponentially or did it go up and down? B) Can you elaborate?

Appendix 8

Information letter

March 2018

Introduction

Thank you for participating in the interview for our master thesis. This information letter serves as a practical introduction to the interview.

The topic of the thesis is value co-creation in a service context, where we are interested in the value creation in the Trackunit/MCFE case. Thus, the problem area can be summarised in the following sentence: "How do TrackUnit and Mitsubishi (MCFE) use the principle of co-creation to create value, what forms of value is created and for whom?"

Structure of interview

The questions are divided into three areas: Firstly, general questions related to the case context. Secondly, questions related to the theory of co-creation and lastly, the interview will end with questions related to theory on value. These questions will serve as a guideline, however it is important to stress that we are interested in your thoughts and reflections.

Practicalities

The interview is expected to have duration of approx. 40-50 minutes. The interview will be recorded, however, the recording will not be shared with anyone without relevance to this thesis. The interview is recorded for the purpose of transcription and later analysis.

Please, let us know if you have any questions. Again, your participation is very much appreciated.

Kind regards,

Lærke & Simone

MSc Service Management, Copenhagen Business School

Appendix 9

Search approach

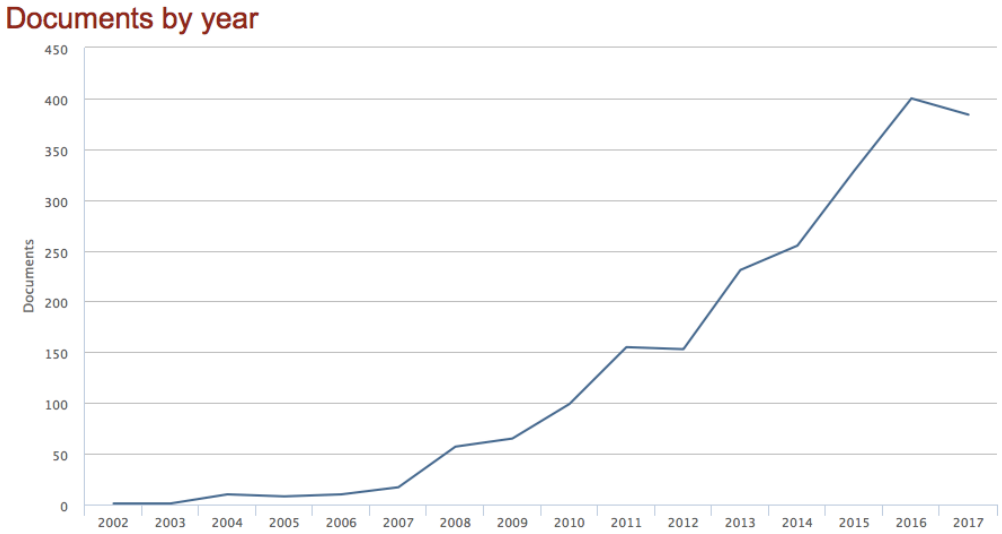
The search approach for this thesis was conducted according to the original idea of combining value co-creation and servitization. Individual searches for these two concepts are presented below; however, what is relevant to mention and pay attention to is that when we searched for a combination of these two concepts, this only gave a total of **27** document results. Only two of the results were empirically tested, the rest remaining theoretical discussions. Our study is therefore highly relevant since the sphere of empirically testing the combination of these two theories on an actual business case, seems rather small and unexplored.

The aim of the search strategy was to identify the relevant data sources, time frame and keywords. Initially, a very broad selection of databases was identified to cover a diverse range of publications (e.g. journal articles, conference proceedings, theses, books and trade journals). These databases included SAGE Knowledge, Scopus and EBSCOhost that searches six databases.

The approach required an identification of our research interest and hence which specific words and operators such as AND, OR and NOT to use. These were combined to create search statements and refine searches since the terminology is very important to avoid getting too much unnecessary 'noise' in the search results. Most articles carry keywords beneath the abstract that identify themes addressed in the study, and the keywords search therefore only covers the areas relevant to this thesis. Using this approach, we kept in mind that being too broad in terms of the keywords used had the chance of leading to too many references, whereas being too focused may produce limited results.

Co-creation

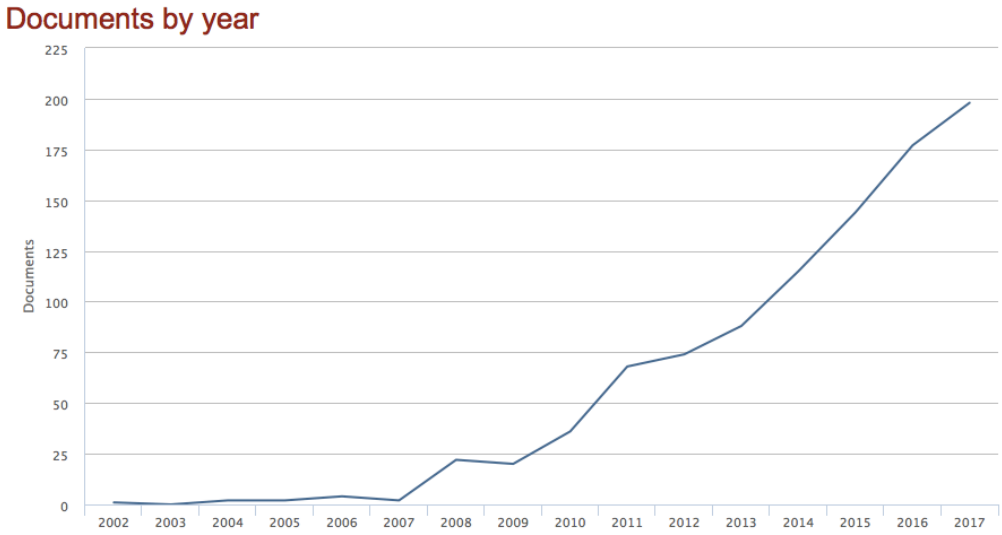
The literature search for co-creation started with a search in the SAGE Knowledge database for the term co-creation. From this result, we found two encyclopedias: 'The SAGE Encyclopedia of Quality in the Service Economy' and 'The SAGE Encyclopedia of Corporate Reputation', both included chapters on Value Co-Creation and Co-Creation Theory. This was mainly used as a framework for and introduction to the concepts.
The search in the Scopus database was done to discover a comprehensive overview of the world's research output and to find trends in the concept of co-creation, since Scopus is a large abstract and citation database of peer-reviewed literature, in terms of scientific journals, books and conference proceedings. Using the search string TITLE-ABS-KEY (co-creation OR cocreation) AND (value OR "value creation") meant that the first search was done to find all documents with those words included in title, abstract or keywords. This broad search gave the total document result of **2,216** articles. Even though it was a broad search, which we would have to narrow later on, at this initial and explorative phase we believed it was important not to exclude important results.
The results show that the first year a relevant article was published on the topic was 2002, and since then there has been a steady increase in publications. Especially the recent years show an increase in articles related to the topic, peaking in 2016 with a total number of 400 articles. This is depicted in table 1 below.



2017	384
2016	400
2015	329
2014	255
2013	231
2012	153
2011	155
2010	99
2009	65
2008	57
2007	17
2006	10
2005	8
2004	10
2003	1
2002	1

Table 1

Due to the large amount of articles and the rising trends in recent years, the search was limited to relevant subject areas: "business, management and accounting", "economics", "social sciences" which gave the results of 1,604 articles. Irrelevant document types (notes, editorial etc.) for the scope of this thesis were then excluded. Afterwards the search was limited to following keywords: SD-logic, cocreation, ecosystems, service dominant logic, co-creation of value, value cocreation, co-production, value, value cocreation, value cocreations, value Co-creation, co-creation, service logic, service ecosystems, stakeholder, customer value, service co-creation, value in use, service ecosystem, service-dominant logic, perceived value, networks, stakeholders, value-in-context, co-creation of values, co-design, coinnovation. The articles of this search was narrowed to **997** results, and as table 2 illustrate most of the papers were published from 2008 and forward indicating that this not a concept diminishing but instead it is highly relevant in today's business literature.



2017,"198"
2016,"177"
2015,"144"
2014,"115"
2013,"88"
2012,"74"
2011,"68"
2010,"36"
2009,"20"
2008,"22"
2007,"2"
2006,"4"
2005,"2"
2004,"2"
2003,"0"
2002,"1"

Table 2

Afterwards, the same search of **997** hits was viewed based on publishing authors as shown in table 3 below to get an indication of relevant authors to look into. The result from the search showed the top 10 of published authors in the field. Vargo S.L. is the most published author with 25 documents on the subject followed by Edvardsson B. with 19 documents. The table indicates that even though it is a booming research field it is still characterised by isolated contributions. We are careful with using the citation amount as a base for choosing specific authors or articles as the most cited will naturally often be the oldest contributions by date and therefore not necessarily the most relevant, e.g. a new and up to date publication will not be shown. However, looking at the top most cited were used to get an overview of potential relevant authors but not as a selection criterion.

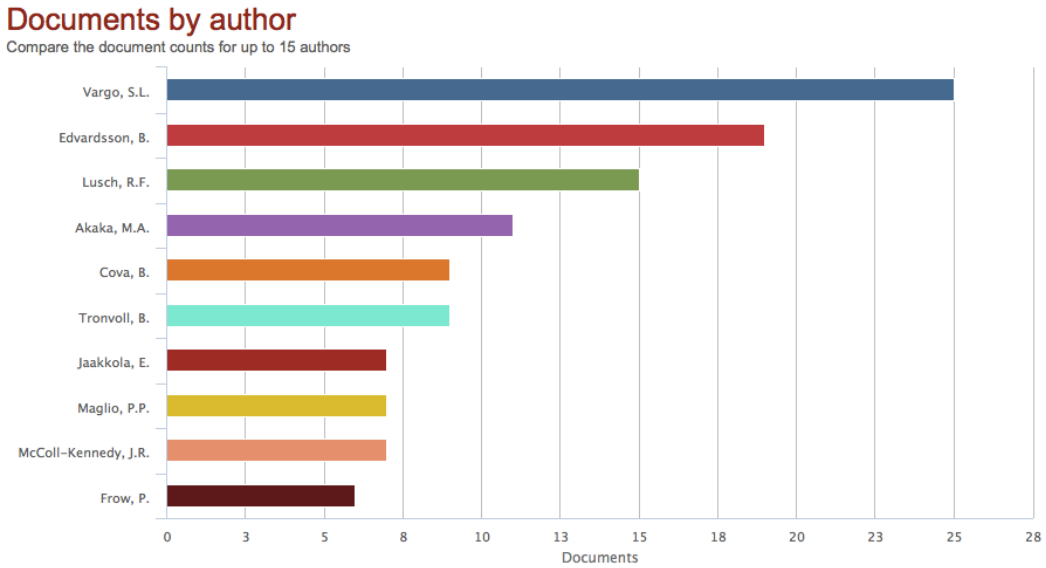


Table 3

With the overwhelming amount of **997** documents another search was conducted that was more specific, only including the search words in the keywords, i.e. KEY (co-creation OR cocreation) AND (value OR "value creation"). This search gave **989** document results. The search then underwent same limitation as the broad search, by limiting to relevant subject areas: "business, management and accounting", "economics", "social sciences", which gave a total of **652** results. By excluding irrelevant document types and limiting to same keywords as previous, there were a total of **613** document results, which, despite of the attempt to narrow the search, is still a large amount of articles.

The two Scopus searches were followed by a search in EBSCO, as this is a database that search in large amounts of literature within several academic disciplines in popular databases. The goal of using EBSCO was to obtain a better understanding of the scope and the framework of the co-creation concept and become introduced to more detailed aspects of the concept. At EBSCO we searched for 'co-creation OR cocreation AND "value" OR "value creation"' in the databases: Academic Search Elite, Business Source Complete, Communication and Mass Media Complete, E-book Collection, EconLit, SocINDEX. This gave **378** document results, which was narrowed to **313** results when looking only at Scholarly (peer-reviewed) materials. The search was further reduced to **87** results when looking at subject thesauruses: business development, stakeholders, technological innovations, innovations in business, new product development, and value creation. The abstract of the **87** results were read through to establish the relevance of these for our thesis, resulting in **33** articles. However, the content of the articles had more of a niche focus rather than a general scope of the concept, since they were all, in one way or

another related to value co-creation but often viewed in a different context too far from the scope of the thesis e.g. co-creation of value in a museum setting and value co-creation of gamification. A smaller and more narrow amount of data was presented with this search, but we find this to be a general limitation to the literature search, as this can also be an indication that information, in terms of articles or other materials, are excluded, either because the database do not contain the relevant articles or because the available articles are not registered by the subject terms/keywords that we are searching for.

Servitization

As with the co-creation search the first approach to the concept of servitization was to search the SAGE Knowledge database for the e-books on the topic. Again the encyclopedia 'The SAGE Encyclopedia of Quality in the Service Economy' appeared with a chapter on servitization. This was mainly used as a framework for and introduction to the concepts.
In Scopus we searched for TITLE-ABS-KEY (servitization OR servitisation) which gave **638** document results. The search showed that an article on the concept was first introduced in 1988, however it was not until 2007 that more publications were written on the concept. See table 4. Especially, the period from 2012 to 2017 was marked by an increased research in the field. The graph shows that even in the past year there has been an increase in publications which is why we find to be a relevant topic that is still being explored, which we would like to make a contribution to.

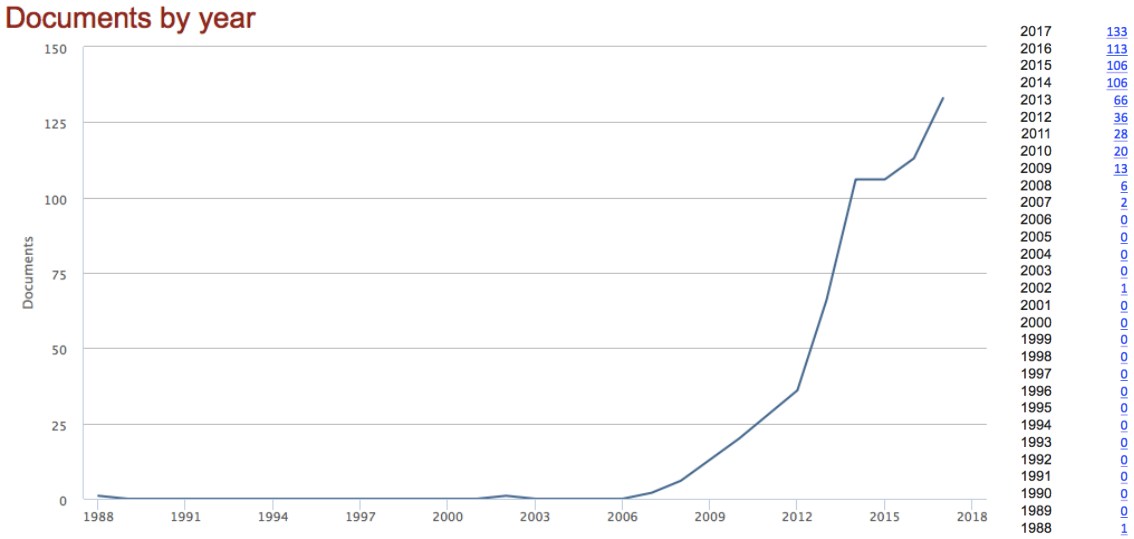


Table 4

The search of **638** document results was limited to the subject areas: "business, management and accounting", "economics", "social sciences". This gave a result of **371** followed by an exclusion of irrelevant document types (notes, editorial etc.) resulting in **365** document results. Afterwards, the search was filtered according to the keywords: servitization, servitisation, Product-service Systems, service innovation, Product-service System, product service system, Products Service System, Product and Services, Integrated Products, PSS, Services, Service Systems, Product Service, Solutions, Information Services, Value, Value Creation, Value-in-use. This gave **283** document results. Afterwards, these **283** documents results were viewed based on publishing authors to get an idea of relevant authors within the scope of concept and this thesis. Table 5 shows the top 10 published authors in the field, among these Baines T. is the most published author with 18 documents, followed by authors

such as Parida V. (and Bustinza, O.F.) Authors such as Kohtamäki, M., Neely, A. and Lightfoot, H. were also in the top 10.

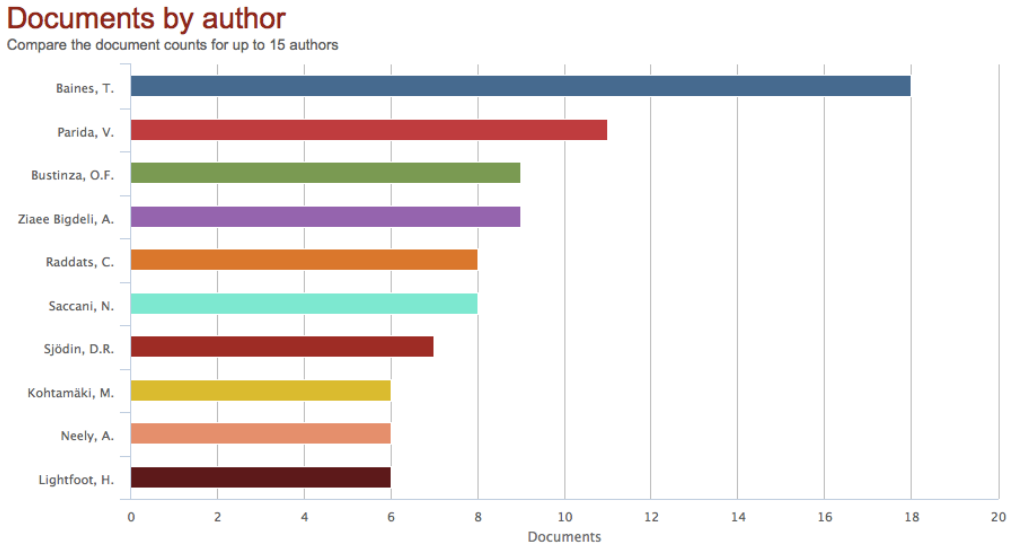


Table 5

After a broad search in Scopus a narrower search was conducted in EBSCO. A search in EBSCO for the subject terms (servitization OR servitisation) gave **3** results. To make the search broader the focus was changed to search in the abstract, not only in the subject terms. Choosing 'peer-reviewed' articles we got a total number of **220**. This was further narrowed to include the subject terms: quality of products, customer relations, service economy, new product development, innovation in businesses, quality of services, manufactures, service industries. This narrowed the search to **75** document results. The abstracts were read through and articles relevant to the scope of this thesis were selected.

Combining Co-creation and Servitization

Having found a large amount of articles and materials written on the subjects individually, we then conducted a search including both concepts for us to be able to position our thesis field in the context of what has already been looked at in prior research. The search included the search string TITLE-ABS-KEY (co-creation OR cocreation) AND (servitization OR servitisation). This gave a total of **39** document results. Limiting to the same subject area as the other searches it gave **27** results. Only two of the results were empirically tested data, the rest remaining theoretical discussions were new concepts or ideas were presented based on earlier work. Our study is therefore highly relevant since the sphere of testing combination of these two theories and concepts, on an actual business case, seems rather small and unexplored. The first year materials were published on the combination of the two concepts was in 2012. From then and until today, seven articles have been published, indicating that the literature on this combination of subject areas are relatively unexplored.

Unstructured approach

To supplement these existing literature searches we took a more unstructured approach to finding literature. We looked into the literature on co-creation and servitization from previous courses, as these had formed the basis of our knowledge of the concepts, which we thereafter combined with the literature searches. These texts provided interesting references, but it also have the drawback that it very quickly broadens the field of research and this

can work against the need for research focus. Some publications offer a systematic review of the articles published, and we especially focused on looking into the references in these.

From previous courses we know that co-creation was first introduced by Prahalad and Ramaswamy in the book 'The Future of Competition: Co-creating Unique Value with Customers (2004)' followed by the article 'Co-creation experiences: the next practice in value creation (2004)'. These constitute the foundation of co-creation presented in this thesis. Reading through the abstract of some of the articles from the searches, we see that this work by P&S are often mentioned, which is the reason that we have chosen to build the co-creation framework of this thesis based on their founding work of the concept. Despite the fact that Prahalad and Ramaswamy's work more or less started the research in the area, it is interesting to notice that in the Scopus and EBSCO searches that they are neither the most cited authors or most published authors. It may not be included in the searches since it is published outside the database coverage, or have not been peer-reviewed, such as work published in Harvard Business Review. We find it interesting that although many refer back to Prahalad and Ramaswamy they are not those with most publications or newest research on the concept, which is why we choose to include other authors' work on co-creation in our thesis.
Adding to the choice theory other articles from previous classes were included. One is the review by Leclercq et al. (2016) "10 years of co-creation". In many of these articles we looked through the reference lists looking for authors/books/articles what were cited several times in the same or different articles. This was an ongoing approach and so the scope of used literature was clarified.

From previous courses we knew that authors such as Vandemerwe and Rada (1988) introduced servitization as a concept in 1988 with the article 'Servitization of Business: Adding Value by Adding Services', which was also indicated in the Scopus search. We had also briefly been introduced to authors such as Baines and Neely. We used the search partly because we wanted to get an overview of whether the concept had developed since its introduction 30 years ago. It is interesting to notice that neither Vandemerwe or Rada were the most published authors, even though many articles refer back to their grounding work. Instead, many new authors have contributed to the field in recent years. Our knowledge of servitization was developed further by following the same approach as with co-creation, where we cross-check references for other publications relevant to the concept and thesis. Thereby, this was the main approach to establishing the pool of literature on servitization for this thesis.