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Reengineering Business Networks:
- A case study of a software platform in a two-sided market

Master of Science Thesis
in the Management and Economics of Innovation Program

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Reengineering Business Networks

- *A case study of a software platform in a two-sided market.*

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Abstract

This report builds upon a case study of a large Swedish technology company's business model of a software platform in a two-sided market. The platform enables the company's devices to run applications developed by third parties. The case study was performed as a master thesis project in the program Management and Economics of Innovation at Chalmers University of technology.

The case company is a leading actor within its industry and has a strong, quality-associated brand. Innovation-focus and a strong network of partners both upstream and downstream in the value chain characterize the case company. A few years ago the case company opened up their devices to applications developed by third party developers. This was made through a technical platform called the case company platform (CCP). The applications available today are present within the two fields of security and business intelligence. The sales of these applications and the associated devices has not developed as initially projected, which brings us to the research questions investigated in this study:

1. Why has the CCP not been more commercially successful?
2. How can the business model for the CCP be improved?

To answer these questions, primary data was collected through more than 50 open and semi-structured interviews and secondary data was gathered from industry reports and market analyses. The data was analyzed through a qualitative content analysis and a theoretical framework. The theoretical framework draws upon relevant literature from the fields of business network-, business model- and innovation management theory.

It was found that the reason to why the CCP was not more commercially successful was to a large extent due to a lack of commercial focus in the case company's organization. This led to low awareness of the applications downstream in the value chain. Low availability of applications was a further limitation; this was due to both low cross-side network effects and lack of awareness.

Recommendations regarding improvements of the business model for the CCP were divided into two categories: urgent and visionary. The urgent actions suggested are to appoint a business development role that takes commercial responsibility of the CCP. There is also a need of communicating the possibilities of the platform through improving the website and creating clear definitions, a vision and a strategy. Visionary, on a more long-term perspective the action that was found to address the most problems were for the case company to take more responsibility in the network. Creating either a distribution and/or sales platform for the CCP applications can do this.

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1. Introduction

This report is built upon a case study of a large Swedish technology company, depictured by the name the case company from hereon. The case company's products are in this report simply named devices, and the core industry in which the company operates will be called the device industry.

The case company is a market leader in the device industry. The company was founded in the 1980's in Sweden where the head office still is located. A strong, quality-associated brand and a strong network of partners both upstream and downstream in the value chain characterize the case company. The upstream partners are called development partners (DPs) and the downstream partners are called channel partners, consisting of distributors and system integrators. With offices in more than 40 countries the case company is a global actor with technology and innovation as its core. The company has traditionally focused on the development of hardware in the device industry, but to avoid commoditization software has been gaining importance for the case company.

One software initiative the case company has made is to open up their devices to applications from third party developers. This was done through an open technical application platform called the case company platform (CCP). This technical platform was launched in 2009. Third party developers can, through this platform, develop applications that can be run on the case company's devices. This can be seen as a platform business model with two types of customers, the third party developers on the supply-side and the channel partners and end-users on the demand-side.

CCP applications run on the edge, which means that the applications can run directly on the device. Device-based applications can be contrasted with server-based applications. The case company is not unique in enabling applications to run on the device but they are the only major player providing such a platform with an open standard. The open standard enables any third party software developer to produce an application that can be used on the case company's devices, creating multi-brand solutions. Major competitors have a more proprietary strategy where they control the software that is available for their devices, providing single brand solutions.

Many different types of applications exist and these are often commonly referred to as technology content analytics or intelligent technology applications. The technology analytics industry is an emerging industry with a lot of growth potential (Industry report company A, 2012). Both internally at the case company and externally in the value chain the CCP is believed to have large potential. However, the diffusion of the CCP applications has been slower than expected. This has led to questions being raised about the current way of organizing the CCP initiative. The focus of this thesis is to investigate obstacles around the commercial side of the CCP and find solutions to how these can be improved. The business model of the CCP will therefore be investigated, since it gives an overview of multiple aspects affecting the commercial success of an innovation. The business model canvas is a viable representation of how a firm does business (Osterwalder and Pigneur, 2010).

From an academic perspective the study contributes in giving a perspective of what obstacles exist in getting a platform model innovation, present in a network organizational setting, to the market. By identifying what actions can be taken to overcome these hinders insight will be given to how the diffusion of other platform model innovations can be optimized. Further, an understanding of the implications of pursuing a platform business model in an ecosystem organizational setting will be given.

1.1 Problem Formulation

Within the case company, there is no common view or explanation to why the CCP has not been more successful. Many different and often contrasting opinions exist of how the business model of the CCP should be developed in order to realize the potential commercial success. Concerns of how to tackle the coexistence with the current business model of the hardware products are also present in the company. Commercial success is in this case defined as finding a scalable way to realize the market possibilities of the CCP.

1.2 Aim and Purpose

The purpose of this study is to find answers to why the CCP has not been a larger market success. This will be done by identifying and investigating the obstacles present to commercial success of the CCP. The aim is further to provide the case company with recommendations of how to overcome these obstacles but also how to develop and improve the business model for the CCP applications to reach a larger commercial success.

1.3 Research Question

The research topic of this report is two-folded. The first part consists of explaining the CCP's lack of success by finding reasons to why the potential has not been realized. The second part consists of generating and investigating improvement alternatives and giving recommendations to how the potential can be realized. Therefore the research question has been divided into two questions, as can be seen below.

1. Why has the CCP not been more commercially successful?
To investigate the first part of the research question the CCP business model of today will be examined. Details about the case company's position and responsibility in the value chain are parts of what will be evaluated. Further, the case company's internal organization around the CCP will be studied. A found understanding of the situation today will create a basis for finding out what obstacles exist in the current business model.

2. How can the business model for the CCP be improved?
In order to improve the CCP initiative the focus of the second part of the research question is to develop the business model for CCP. This includes finding ways to overcome the previously identified obstacles but also find general improvements not necessary originating from the identified problems.

1.4 Limitations

The focus of this report is the commercial aspects around the CCP. However, there are additional important factors around CCP. Aside from the commercial perspective, technological and legal factors are important but will not be investigated in this study. Further, the cost of developing, implementing and maintaining the proposed changes will be kept in mind but not examined. Concerning the scope of the business model it is the front end that will be investigated, without focus on the supply-side of the platform. Considerations for the CCP from the viewpoint of the end-customers and channel partners are what will be in focus. Thus, the third party developers will not be of main concern.

2. Methodology

This chapter will present the methodology used to conduct the case study behind this report. In summary, a combination of interviews based on snowball- and quota sampling with secondary data was used to build an empirical data set. This empirical data set was then analyzed using qualitative content analysis. The outcomes from the qualitative content analysis were further analyzed with an analytical framework.

2.1 Research design and method

A case study is a research design focused on detailed and intensive analysis of a single case. It is concerned with the complexity and nature of that single case (Bryman and Bell, 2011). Holmén (2011) states that a case study is appropriate when there is a need to probe deeper and compare explanations. The subject of this study is a single event, namely the issues around and the development of the case company's business model for the CCP. As such, this study can be categorized as a case study. Holmén (2011) further states that a case study builds on qualitative data analysis, which this study is built upon. The data analysis will be discussed in more detail in section 2.3. Some quantitative elements of analysis have been used in the study when this has been possible and seen as relevant.

Kumar (2005) presents the application of research as the two categories of pure research and applied research. Pure research is described as the development of something new, not yet of any practical value. Applied research is presented as creating an understanding or explaining a phenomenon through applying the results of pure research. This study has applied existing research to analyze gathered data, and should therefore be classified as an applied research study.

The research has been conducted under the hypothesis given by the case company that the situation today is not working well, and that there is room for improvement to more effectively realize market potential. This hypothesis will be tested through data collection and analysis. The reason for the choice of hypothesis-driven research rests not only in input from the case company, but also in research methodological considerations. Deductive research includes the use of hypotheses that are deduced from existing knowledge and theory (Bryman and Bell, 2011). The hypotheses are then to be tested and revised based on findings in the study. Such testing and revision can also take place and be looped several times.

2.2 Data Collection

The methodology behind, and considerations about, the collection of data is presented below. A division between primary and secondary data has been made, as there are differences in the data collection methods of the two.

2.2.1 Primary data

The primary data consists of interviews held with both internal and external stakeholders. Internally, employees across different functional departments have been interviewed as to ensure validity through triangulation. Externally, interviews have been conducted throughout the case company and the CCP value chain. This includes the following types of actors: DPs, distributors, system integrators and end-customers. In figure one below, the amount of interviews with different actors can be seen.

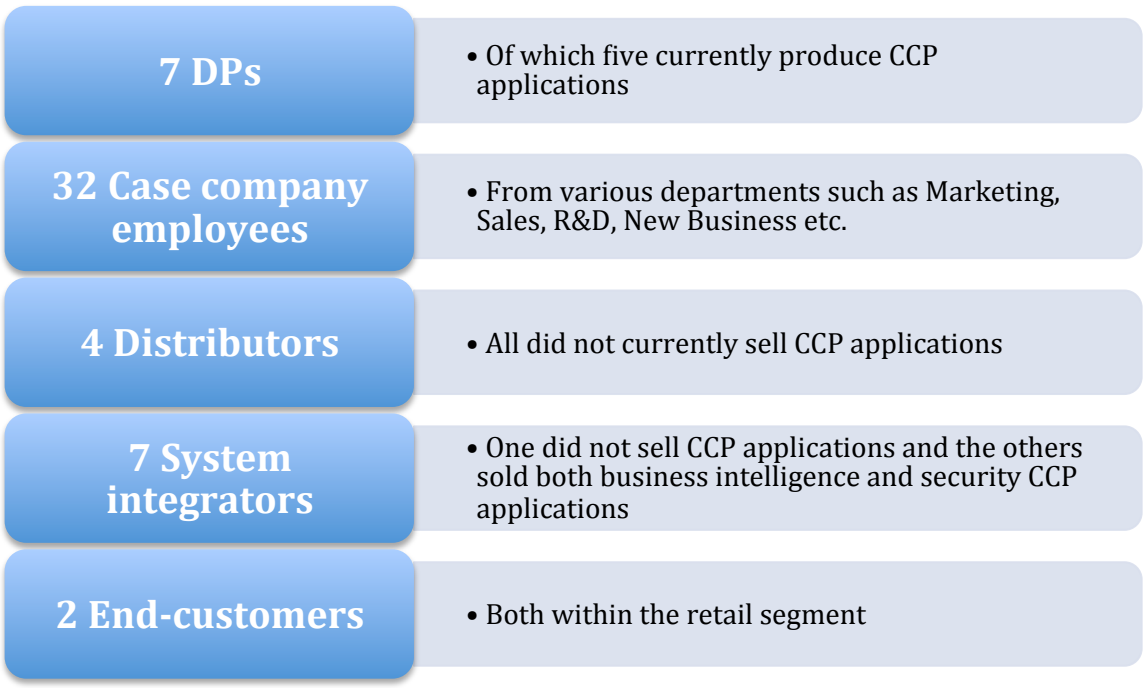

Figure 1: Overview of interviewees

In total, 32 interviews were carried out internally, and 20 externally. The sampling of internal interviewees was a combination of snowball sampling and quota sampling. Snowball sampling is a form of convenience sampling. Initial contact is made with a small group of people who are relevant to the research topic. These contacts are then used to establish contacts with others. (Bryman and Bell, 2011) This method was combined with quota sampling, where the aim is to produce a sample that reflects a population in terms of relative proportions (Bryman and Bell, 2011). The proportions taken into account in this thesis were focused on the functions and roles represented by the interviewees as well as different end-user markets represented. Both internally and externally the distribution of interviewees were complemented with quota sampling. What this meant in practice was that snowball sampling for example put the researchers in contact with a sales force focused on a specific region or market. Quota sampling, where interviews were carried out with the similar functions focusing on different markets, then complemented this.

The data collection was initially made through open interviews. The reason for using such a flexible form of interviewing was to help avoid the researchers biasing the discussion with the interviewees. Bryman and Bell (2011) states that an unstructured form of interviewing is preferable when the researcher needs to gain a genuine understanding of the worldview of members of a group. The broad nature of the subject investigated makes this applicable to this study. Interview questions and templates can be found in Appendix one. As information saturation became evident in the later stages of the internal interviewing, the open interviews were complemented with semi-structured questions at the end of each interview. Bryman and Bell (2011) describes that semi-structured interviews uses a list of specific topics to be covered, but giving the interviewee freedom in how to reply. The questions that were brought up during the end of the interviews were regarding some of the main challenge and opportunity areas. Some internal interviewees were interviewed a second time later in the study to explore ideas further.

Interviews were also made with external stakeholders. As mentioned earlier, these included actors both above and below the case company in the value chain. In common for all the external interviews conducted is that they were convenience sampled. The reason for using this sampling

method is two-folded. First, the external contacts initiated through contacts at the case company proved to have a much higher response rate. Secondly, the scope and timeframe of the project did not leave room for other sampling methods to be used.

The external interviews were conducted semi-structured. Before the semi-structured interviews were made, draft interview templates were constructed customized to each type of actor interviewed. These were tested on both company and academic supervisors to ensure quality and make corrections. The templates were also revised and improved after the first live interviews, mainly through clarifications.

Within the primary data sample there is, as can be seen above, a bias towards interviewees from within the case company. The reason for this is partly that the response rate within the company was much higher compared to the other interview categories. Further, the relative amount of CCP stakeholders is much higher within the case company in comparison to external parties. The interviewees within the case company have insight into the other interviewee segments as well. For example, it is some interviewees' job at the case company to handle key accounts within the distributor or end-customer segments. This insight into the same stakeholder categories, but from different stakeholders' perspectives, is a further reason why the sample was chosen. The comparison between the results of internal and external interviews, as depictured in chapter 5.2, further mitigates possible bias from the skewed sample.

2.2.2 Secondary data

Secondary data has also been used in this study. The secondary data has been found in industry reports, industry magazines, case studies, technology magazines and company reviews.

Industry reports specific to the CCP related markets have been used both as guidance for primary data collection as well as for analysis. Partner information and marketing material has also been used for orientation. Case studies within the device analytics industry as well as business-to-business platform models within other industries have been used as secondary data sources in this study. Much of the secondary data complements the relatively low number of end-customers interviewed in the primary data collection.

2.3 Analysis method

Qualitative content analysis was used to code the interview data. Bryman and Bell (2011) describes qualitative content analysis as a method to search out underlying themes in materials being analyzed. The results of the qualitative content analysis are presented in chapter four; Empirical Findings.

The outcomes from the qualitative content analysis and the secondary empirical data were then analyzed through the theoretical lenses presented in chapter three: Analytical Framework. The result of this analysis was a number of different efforts that would address the set of problems and opportunities previously identified. A separate analysis of the different problems and solution ideas was made, as is shown in chapter 4. The format for this analysis was the five-step adoption process described by Rogers (2003). In order to analyze the problems and solution ideas collectively the three dimensions of organization, network and information were chosen as a categorization of the exhaustive data with the purpose of making them easier to communicate. This resulted in a final solution model consisting of actions that in the best way addresses the set of challenges identified.

2.4 Validity and Reliability

A model for judging the quality of a case study presented by Yin (2003) builds upon the concepts of reliability and three forms of validity, as presented below. Each of the concepts has been evaluated and tested for this study.

2.4.1 Construct Validity

Construct validity regards whether a study has investigated what it intended to investigate or not. The construct validity can be strengthened through using multiple sources of evidence (triangulation), having a logical relationship between the research questions, procedures and findings as well as through peer reviews. (Holmén, 2011)

Triangulation through the use of multiple sources has been carried out throughout the project. Multiple methods for data collection have also been used for each research question. Peer reviews with both the supervisors at the case company and the university have been continuously used, both for findings and data collection methods. Further, a half-time presentation at the case company was made as a respondent validation to assure that the gathered empirical data was in line with what the interviewees had expressed. A clearly described chain of evidence has strengthened the relationship between research questions, procedures and results. The construct validity is thus considered to be high.

2.4.2 Internal Validity

Internal validity reflects if the results of a study can be seen as believable and if a causal relationship can be established. Strong internal validity builds upon systematically related concepts, thick descriptions and internally coherent findings where cause precedes effect, and rival explanations are nonexistent. (Holmén, 2011)

Materials regarding the research process, as well as interview templates are available. Further, the analysis has been made with caution and extensive peer reviewing. The method of analysis is also available. All findings and results have however not been given equal attention, as a more thorough analysis was made with factors commonly identified in the qualitative content analysis. This is largely due to limitations in time and scope. It does however bring the possibility that rival explanations does exist and has not been investigated thoroughly. Internal validity is in all considered to be medium to high.

2.4.3 External Validity

External validity refers to what extent the findings of the study can be generalized and applied to other contexts beyond the scope of the study itself. Results in line with prior research and availability of thick descriptions are factors strengthening the external validity. (Holmén, 2011)

The situation investigated in this project has been found to be rather unique. Similarities exist with other business-to-business facilitators or platforms, but key factors (further described in section 5.1.4) have in all cases differentiated the CCP and thus compromised comparability. As such, confirmation through comparison with other studies has not been possible to make. Part of the reason for this is the sheer complexity of the situation and network investigated. As the number of actors and products involved are high it is difficult to determine to what extent findings are generalizable or not. This in turn depends largely on the problem of differentiating between causation and correlation in a complex network.

The empirical data gathered is to a large extent based on the case company and it has been gathered with the purpose of this specific project. This, in combination with abovementioned issues, means that the external validity regarding the applicability of findings to settings external to the case company can be considered as low. Many of the empirical findings are not necessarily specific to the CCP and can thus likely be generalized to other areas within the case company. The applicability of the findings within the context of the case company is as such seen to be substantially higher. External validity within the setting of the case company is thus considered high.

Findings regarding business-to-business platforms and facilitators are considered to be generalizable as they apply more or less regardless of context. As with internal validity, the

external validity is strengthened by the availability of material describing the research process and findings. However, in conclusion the external validity beyond the reach of the case company is considered low to medium.

2.4.4 Reliability

Reliability refers to whether or not the process of a study can be repeated with the same result. Clear research questions, a well-described research process and availability of collected data are key factors to high reliability (Bryman and Bell, 2011).

This study has had clear research questions. The research methodology used for the study has been clearly described in this chapter. The raw data as well as all the secondary data are both documented. Thus, the reliability of phase one of the study, the data collection and qualitative content analysis, is considered to be high.

The solution generation, phase two, as previously mentioned, is based on application of theory as well as judgment calls made by the researchers. This methodology is described but is to a higher degree based on qualitative methods and processes that are not documented and available to the same extent as previous parts. However, the possibility that a replication of this study would come up with rival solutions cannot be excluded. Cognitive biases and frame of reference of the researchers will likely have affected the analysis. The reliability regarding the analysis and solutions presented in this study is as such considered to me medium.

3. Analytical framework

In the following chapter the theoretical concepts will be outlined. The theory has been organized in three areas. Starting with the most general concept of business networks, which is a form of organizing economic activity. The second part concern business models, which describes the management of firms in networks. The third area called characteristics and implications of innovations is the most specific one and covers the network of interplay between the market, the firm and innovations. The literature has been processed iteratively and chosen by its relevance in adding new ideas to the understanding of the researched problem and generating possible solutions.

3.1 Business Networks

Many different ways of organizing firms exist. Both internal and external factors influence how firms are organized. Important influencers are transaction costs, the degree of control needed and the business environment. Powell (1990) categorizes the coordination of economic activity in three ways: market, hierarchy and networks. When a high degree of trust and collaboration between firms are present this is called network or ecosystem organizational forms.

3.1.1 Transaction cost economics and the scope of the firm

The price paid for a purchase is more than simply the price of the service or product. The additional costs of making an economic exchange are called transaction costs. Williamson (1985) describes the following four types of transaction costs:

- Search and information costs
- Contracting costs
- Monitoring costs
- Enforcement costs

The transaction cost categories are by Dyer (1997) explained as the cost of the time and resources spent on finding and comparing different suppliers and then negotiating and evaluating deals with them. Once a decision has been made of whom to use, further time and resources are spent on supervising the deal to make sure it works properly. If the agreement is broken or mismanaged one needs to apply pressure to restore the agreement. (Dyer, 1997)

Transaction costs derive from bounded rationality and opportunism (Powell, 1990). Bounded rationality means the fact that it is impossible to write contracts that protects an actor from all kinds of uncertainties (Powell, 1990). Opportunism is simply the pursuit of self-interest, actors who consciously use the shortcomings bounded rationality give rise to for their own benefit (Powell, 1990). Safeguards and governance structures are used to decrease the transaction costs (Dyer, 1997). A common safeguard is a legal contract whereas governance structures are ways to organize and can build on informal means like trust and reputation (Dyer, 1997). A firm's organizational form and its scope set the scene for what transaction costs are involved and how these can be handled and minimized (Powell, 1990).

Transaction costs affect which organizational form is the most viable. At the same time the organizational form affects the transaction costs. According to Williamson (1985), the way to organize when transaction costs are low is market exchange and when transaction costs are high in hierarchy. Market exchange is an arm's length exchange where flexibility is high but close to no relationship or trust is created between the exchanging parties (Powell, 1990). Hierarchy is another name for a vertically integrated firm where the exchange takes place within the boundaries of the firm creating control but low flexibility and bureaucracy (Powell, 1990).

3.1.2 Network organizational forms

Powell (1990) argues that the two governance structures hierarchy and market exchange explained in the previous chapter are a narrow explanation of reality. Powell (1990) introduces a third organizational form, the network form. Norman and Ramirez (1993) agrees with the notion of the network form and claim that the static view of the value chain where companies either use the market or perform the activity within the firm's boundaries is outdated. Networks are characterized by being less formal than hierarchy and built on relations, mutual interests and trust where partnership and cooperation is in focus (Powell, 1990; Zott, 2010).

Powell (1990) states that it is under specific characteristics the network form is the preferred form of organizing. Critical components that needs to be present are know-how, need for speed and trust (Powell, 1990). When a firm is present in a rapidly changing environment and innovations are the means of competing cooperative networks become strategically important (Moore, 1993). Establishing networks of complementary functions and creating business community relationships is key in achieving a competitive advantage (Moore, 1998). According to Gadde et al, (2003) three network dimensions should be considered simultaneously in order to enable a prosperous network:

- Resource dimension
- Activity dimension
- Actor dimension

Primarily, resource heterogeneity is to be evaluated with the purpose of combining own and partner's resources to find new and more valuable uses of them and their relationships (Gadde et al., 2003). New combinations give rise to a larger amount of possible innovations (Schilling, 2011). Concerning the second point, activities, it is vital to relate and adapt one's activities to the activities of other actors in the network to increase efficiency (Gadde et al., 2003). Adaption does however create interdependencies (Gadde et al., 2003). Thirdly, the level of control over the actors in the network should be considered (Gadde et al., 2003). Some degree of control is needed for an aligned evolution of the network (Gadde et al., 2003). Control can however create negative effects since it can hinder responsiveness and innovation, especially if one actor becomes too dominant (Iansiti and Levien, 2004).

Power, flexibility and behavior vary depending on what organizational setting one exists in and are some of the characteristics that need to be considered in networks (Powell, 1990). Flexibility is high in networks but the power is low since no formal authority has the determining right of making decisions (Iansiti and Levien, 2004). The behavior needs to be of a reciprocal and trusting nature for the network to work efficiently (Powell, 1990). The backside of networks is that the lack of power gives rise to interdependence and collective action problems. According to Sandström (2011) the problems with networks can be summarized as:

- Collective action problem
- Path dependence
- Interdependence
- System dynamics

Collective action problems concern the lack of direction in a network. This is caused by the informal and loose connections and open borders of networks, which do not let any one actor dominate (Gadde et. al, 2003).

North (1993, page 5) describes path dependence as "the powerful influence of the past on the present and future". Path dependence is by David (2000) explained as a process that is unable to shake free of its past. The problem path dependence give rise to is that what is learnt in the past shapes future learning. However, the shaped future learning might not be what is necessary to solve the problems of the future or create the innovations needed (North, 1993). This creates

the risk of getting stuck in old learnings and ways of thinking.

Interdependence is by Iansiti and Levien (2004) described as sharing the fate of other participants in a network. How others perform in the network will effect how your firm performs. Gadde et al (2003) explains interdependence as resources between companies being tied to resources of other firms.

System dynamics is related to interdependence but describe that the more relations are present the more complex it gets due to the feedback loops between each element in the network. System dynamics concern that the risk of failure is larger the more interrelations exists in the network since this increases the complexity and the unpredictability of the system (Sandström, 2011).

The difficulties can be summarized by the fact that no one is in total control when collective decisions are needed. The network is shaped by its past which can hinder the adoption of new needed directions. The amount of involved actors creates interdependencies, which can limit actors' room for progress. Lastly, the system dynamics gives rise to uncertainty, complexity and unpredictability. (Sandström, 2011)

Being conscious about the abovementioned challenges with networks is important in order to handle them. One strategy to handle problems within networks is stated by Lee (2003) who claims that supply chains should strive to be agile, adaptable and aligned. Agile meaning responsive to sudden change, adaptable to evolve over time and aligned to coordinate the interests of all firms in the supply chain with one's own. To achieve this, the following actions are recommended by Lee (2003):

- Research customer preferences continuously and be generous in distributing your data and your plans to your partners
- Track megatrends like demographics and economic developments to develop the ability to act proactively
- Develop flexible and adapted supply chains for different product segments to customize and optimize towards end-customers
- Align incentives by developing clear roles and responsibilities in the partner network and share profits and risks so that overall network value is optimized

3.1.3 Business ecosystems

Business networks and business ecosystems are similar notions that often are used interchangeably. Lewin and Regine (1999) define a business ecosystem as a network of companies. Similarly, a business ecosystem can be seen as multiple organizations or simply one single organization (Peltoniemi and Vuori, 2004). Moore (1998, page 168) gives a broader but also specific definition of a business ecosystem as an "*Extended system of mutually supportive organizations; communities of customers, suppliers, lead producers, and other stakeholders, financing, trade associations, standard bodies, labor unions, governmental and quasigovernmental institutions, and other interested parties. These communities come together in a partially intentional, highly self-organizing, and even somewhat accidental manner*."

Ecosystems have taken a large role in the competitive arena and participation in one can be a competitive advantage. The CEO of Nokia is claimed to have said, *"The war of devices has turned into a war of ecosystems"* when giving remarks of their lost market shares to Apple (Ziegler, 2011). Adaptability is important in the fast paced business world of today. Peltoniemi and Vuori (2004) claim that business ecosystem gain adaptability since the three cornerstones of them are self-organization, emergence and co-evolution.

The importance of looking into the interplay and the system of which a company is a part of is also highlighted by Norman and Ramirez (1993) in terms of value creation; to create value the

firm needs to look beyond their own company and their industry to see a larger system of actors that can co-create value. Successful companies are claimed to be able to create social innovations in the form of redesigning complex business systems to find new ways and roles for actors within the system to create value. (Norman and Ramirez, 1993)

There are different mentalities and ways to structure and participate in ecosystems. Corporations can choose a closed or open form of organization and both approaches has advantages and disadvantages (Gebert and Boerner, 1999). The advantages of an open form are increased innovativeness, flexibility, education and learning (Powell, 1990; Gebert and Boerner, 1999). Closed forms however give rise to stability, order, feeling of security and clarity (Gebert and Boerner, 1999). Unfortunately the two different forms work as counterparts and the challenge is to balance the two to achieve flexible innovativeness without it resulting as a chaotic uncontrollable organization.

An open or closed ecosystem is one consideration for setting an ecosystem strategy. Iansiti and Levien (2004) and Adner (2006) emphasize the importance of matching one's innovation strategy to one's innovation ecosystem and environment. Adner (2006) states that there are three risks to be assessed:

- Initiative: Is it a thought trough and evaluated initiative?
- Interdependence: Whose projects must be accomplished before yours can?
- Integration: Who has to adopt the solution before the customer can?

Competition and cooperation are present at the same time in a business ecosystem (Peltoniemi and Vuori, 2004). Moore (1993) agrees with the dual role of collaboration and competition in ecosystems and state that one needs to be aware of both cooperative and competitive challenges. Depending on the degree of openness in the system, competition takes various forms. According to Iansiti and Levien (2004) organizations take on different roles and strategies in a business ecosystem depending primarily on their aim and goals but also on the innovation- and relationship environment. Evaluation of two parameters, complexity of relations and level of turbulence and innovation should be done when looking into roles (Iansiti and Levien, 2004) promote the. The roles are:

- Niche player
- Keystone
- Physical dominator
- Commodity

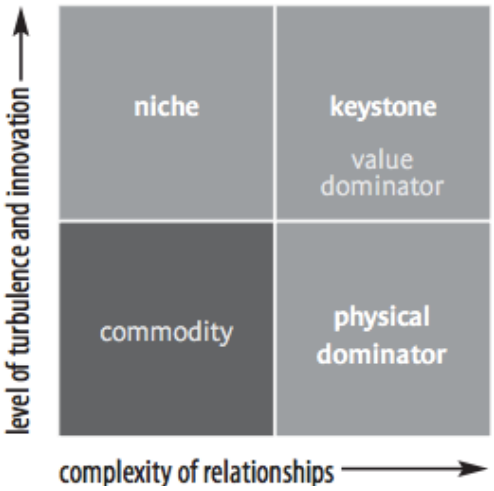

Figure 2: Ecosystem strategies (Iansiti and Levien, 2004)

The niche players are the main mass of the ecosystem and the one's producing complementary resources. Niche players are focused companies in a highly changing environment. The keystones are fewer, working as enablers for a healthy ecosystem. They work to create robustness in the system and give a reliable point of reference for other players. Keystones need to find a way to both create and distribute value in the ecosystem. The physical dominator tries to extract as much value from the ecosystem as possible. Physical dominators can be seen as wanting to create a closed ecosystem where they possess the control over it by acquiring others and controlling the assets needed. Value dominators are another type of physical dominator but is someone who tries to extract value form an ecosystem where one does not control the assets. Value dominating is very risky since a likely outcome is that the ecosystem is starved and destroyed. Commodity is not an

ecosystem strategy since it is described by low complexity of relationships and low turbulence and hence commodity companies work independently. (Iansiti and Levien, 2004)

3.2 The firm and its business model

A business model can be seen as a smaller business ecosystem. No universal definition of the term business model exists. However, according to Zott et al. (2010) a common theme in different definitions is that a business model is a holistic explanation to how firms do business. How a firm does business depend on how it is organized, what the current and future business models look like. Various types of business models exist but the platform model will be examined in detail in the end of this chapter.

3.2.1 Organizational theory

Scott (1998) describes an organization with four elements; Social structure, Participants, Goals, and Technology, but also as being present in a fifth element, the environment. The social structure is the patterns of interaction between participants. The participants are social actors and it is their behavior that shapes the firm, their obedience or disobedience. The goals are what is to be achieved by the actions of the participants. The technology is both the equipment but also the skills and knowledge social actors have. Varying degrees of focus and approaches to the elements exist in different organizations.

For high-tech companies technology and innovation is often in focus. The social structure one needs to develop for a creative innovation friendly environment is a flexible one with decentralized authority (Schilling, 2011). The way R&D is organized at a company creates prerequisites of whether the starting point in the innovation process is knowledge about the market or the technology. Centralized R&D is often more technology driven than decentralized R&D organizations that are closer to the local markets and customers. A risk with having a centralized R&D organization is that one can become isolated from the customer needs and too technology driven (Sandström, 2012). There are however advantages like increased control and efficiency with being centralized (Bartlett, 2002).

Gavin (2004) state that it is important to gain market knowledge and produce demand-driven products. Chesbrough (2010) agrees and argues for a need of including market knowledge in technology management. In order to capture value from technology learning about the market, the economic conditions and the social domain is as important as investigating the technological uncertainties (Chesbrough, 2010). Verganti (2008) claims that this depends on whether the intention is to generate disruptive innovations or incremental ones. The market pull strategy for innovations is user centered and a successful strategy for incremental innovations. The technology push strategy for innovations is better for radical innovations where the new technology is in focus and knowledge about customers who not always know what they want can take a smaller role. Though, one should not forget that in all successful innovations both knowledge about the market and the technology is used (Verganti, 2008).

3.2.2 The business model concept

Osterwalder and Pigneur (2010, pp. 14) define a business model as follows: "*A business model describes the rationale of how an organization creates, delivers, and captures value*". Chesbrough and Rosenbloom (2002) describe the business model as a way to package the innovation by mediating between technology and economics. The importance of the business model is described by the following quote from Chesbrough (2010, pp. 354); "a mediocre technology pursued within a great business model may be more valuable that a great technology exploited via a mediocre business model".

A business model is a broad and general term and Osterwalder and Pigneur (2010) intend with their canvas, shown in the figure below, to create a standardized concept. The canvas consist of the following nine building blocks; customer segments, value proposition, channels, customer

relationships, key resources, key activities, key partnerships, cost structure and revenue streams. In broader terms, Johnson et al. (2008), defines the elements of a successful business model as; customer value proposition, profit formula, key resources and key processes.

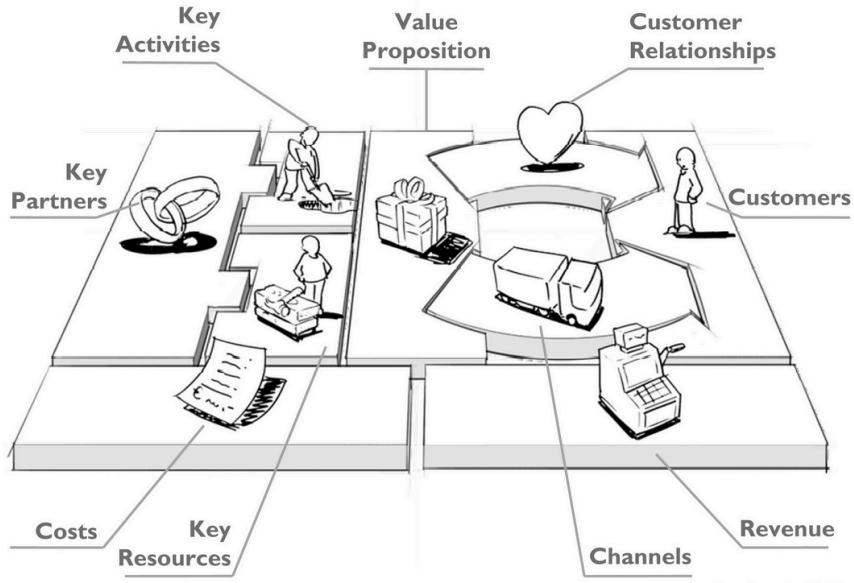

Figure 3: The Business Model Canvas (Osterwalder and Pigneur, 2010)

There are some questions one should pose in the development of a business model. Starting with the *customer segments*, one needs to answer which segments to serve, how they can be defined and prioritized. The *customer relationships* are about understanding what type of relation each segment expects. These can vary depending on profitability and different segment needs. The *value proposition* is the bundle of products and services delivered to the end-customer to solve their problems. The value created can differ between customer segments. The *channels* include communication, sales and distribution channels. The goals of the channels are to deliver awareness, evaluation, purchase, delivery and after sales to the customer segments. The *revenue* block is about looking into the price and payment method to use. The *key resources* can be tangible and intangible but are the ones that are most vital in making the business model work. The key activities are simply what actions are needed for a successful business. For example, for platform models this is network activity. *Key partnerships are* the network of important stakeholders and the resources and activities they bring to the table that facilitate the model. Lastly, the *cost structure* describes every cost that is connected to operating the model. (Osterwalder and Pigneur, 2010)

When developing the canvas it is important to not just evaluate the blocks in isolation but to iteratively look into how they interact and affect each other (Osterwalder and Pigneur, 2010). To improve the model, the left side should strive to become more efficient whereas the right side's striving factor is increasing value (Osterwalder and Pigneur, 2010). A holistic view is what should be achieved by using the canvas. One should however keep in mind that a business model is a hypothesis of how to create and deliver value (Chesbrough and Rosenbloom, 2002). Experimentation with business models is encouraged since it is difficult and highly uncertain to know and evaluate the success of the outlined model (Chesbrough, 2010).

3.2.3 New business models

One needs to be aware of that creating a new business model is like an experiment due to the uncertainty of success (Gavin, 2004). One should however not forget to investigate whether a new business model is needed before the experimentation begins. When is a new business model needed and when will the old model work? The old model works when one can achieve the value proposition with the same profit formula, the same key resources and processes and

build it on the same metrics, rules and norms as the existing business model. (Johnson et al., 2008)

When a new business model is needed it is due to the high uncertainty of success important to not waste time developing business models fully (Gavin, 2004). Chesbrough (2010) argues for three concepts in achieving and succeeding with new business models. These are experimentation, effectuation and organizational change leadership. Effectuation means to act upon the market instead of trying to predict it, learning by doing and not guessing (Sarasvathy, 2001). Batilana et al. (2009) states that enabling conditions for forming new business models are both field and individual characteristics. Field characteristics are crises, technological disruption, regulatory changes and the degree of heterogeneity and institutionalization of the environment. Individual characteristics depend on the actor's social position, both organizations and individuals since their resources and perception varies depending on who they are.

Furr and Ahlstrom (2011) introduce a method of creating new businesses, called *Nail it then Scale it* that is built on experimentation and effectuation. The key factors in this model is that one needs to be aware of the risks of failure and by that make as much as possible as fast as possible with as little means as possible and learn and adapt during the process. The process is similar to the customer development process described by Blank (2006), which is relevant in the early stages of creating a new business or new market.

When a potential valuable business model has been found one needs to organize the firm to develop the model. Johnson et al. (2008) highlight the importance of knowing ones current business model in detail in order to accommodate for the new model. There are multiple scenarios in how to organize for the new business. Separate organizations and different forms of having multiple business models within one organization are to be considered.

Uncertainty creates barriers to business model innovation that consist of conflicts with existing assets and business models and a lack of understanding of these barriers (Chesbrough, 2010). Garvin (2004) agrees and states that new businesses need help fitting in with established systems and structures. There is however a risk that established organization impedes the ambitions and innovativeness of new initiatives (Moore, 1993). Chesbrough and Rosenbloom (2002) explain that business models are built through heuristic logic and in established firms the dominant existing logic risk to filter out new ideas.

To avoid the hinders an existing firm can create one can let the new business be formed in a separate organization. The advantage of a separate unit is that there are higher chances of openness since established companies are based on an implicit theory of how things are done (Garvin, 2004). The negative side of separate organization is that power struggles and culture clashes can arise (Garvin, 2004). The theme of separate organizations for corporate start-ups is a well-debated one. Garvin (2004) claim that separate organizations do not work long-term. Often a middle way is recommended. O'Reilly Ill and Tuschman (2004) introduce the term ambidextrous organization, which advocates separate organizational units that are tightly integrated on a senior management level.

Often, business model innovations are intended to co-exist with the current model during a period to later develop into the dominating and new core business model of the company (Chesbrough, 2010). However, there are also situations where long-term multiple business models are a reinforcing option to pursue (Casadesus-Mansanell and Tarziján, 2012). Running multiple business models is very difficult but when the models complement each other it is a viable idea. In order to investigate if business models are complementary or substitutes the degree of sharing of physical assets and the compatibility of resources and activities should be evaluated (Casadesus-Mansanell and Tarziján, 2012).

3.2.4 Two-sided markets and network effects

A specific type of business model is the platform model that connects two markets, also called two-sided markets. It can be a business-to-consumer or a business-to-business platform. Supply-side and demand-side customers are the two kinds of users of a platform (Osterwalder and Pigneur, 2010). Eisenmann et al. (2006) emphasize the difficulty but importance of evaluating the dynamics of two-sided markets when setting a platform strategy and compares this to playing three-dimensional chess due to the complexity.

Network effects are created when the users of a product need to connect among each other, which makes the users choose the same product as others already have chosen (Grant, 2010). This creates increasing returns to adoption, which is a self-reinforcing phenomenon creating positive additional effects for each new adopter (Holmén, 2005). In other words, the innovation becomes more valuable the more it is adopted.

Two-sided markets give rise to different kind of network effects. Cross-side network effects are the ones that affect the actors in the other side of market and same-side network effects affect actors within the same side of the network. These network effects can be both negative and positive. Multi-homing costs along with integrations risks should also be considered. Multi-homing costs concern all the costs related to using a platform, like adoption, opportunity costs and operation costs. (Eisenmann et al., 2006)

Negative same-side network effects are illustrated by Kaplan and Sawhney (2000) when an aggregation business model is discussed. When suppliers are aggregated in a platform, adding a new supplier only benefits the customers, creating positive cross-side effects, but means more competition for other suppliers creating negative same-side effects for the suppliers. A different business model is the matching one. The matching model brings actors together to dynamically negotiate deals and positive cross-side network effects are created. Matching business models are more powerful than aggregation business models but also more difficult to scale (Kaplan and Sawhney, 2000).

Network effects are further categorized by Li and Pénard (2012) into quantitative and qualitative network effects. These are explained as direct and indirect network effects. In early stages of a platform the quantitative dimension is more important whereas when the platform is more mature qualitative effects should be prioritized. This gives rise to the need of developing a quality screening mechanism in order to guarantee some degree of quality of the actors in the platform. There is a need of a combination of qualitative and quantitative network effects even though they are substitutes for each other. Platform owners need to find a balance in these two parameters. (Li and Pénard, 2012)

Three challenges in handling a platform business are pricing, winner take all dynamics and envelopment (Eisenmann et al., 2006). Since two markets needs to be handled pricing decisions include how to price each market, which one to subsidize and how to gain influential customers. Winner take all dynamics concern whether only one platform will be used and taking the decision to share this or strive for own control of it. The third challenge is the risk of getting enveloped by smaller players who start with a niche platform that grows and then takes over your platform.

3.3 Characteristics and implications of innovations

The process for an innovation to reach the market not only covers the need of utilizing a firm's business network and creating a business model but also looking into the characteristics of ones specific industry, own firm and potential adopters. The adopters can be understood by looking at the stages of the adoption process and the difference among user groups. Looking into attributes of successful innovations and adapting the communication towards specific groups can enhance the chances of adoption.

3.3.1 The Industry life cycle

The industry life cycle describes how an industry evolves with time. It has four stages; Introduction, Growth, Maturity and Decline, as can be seen in the image below. Two factors are driving the development of the industry, demand growth and the creation and diffusion of knowledge (Grant, 2011). A similar notion is the phases of business ecosystem development described by Moore (1993) as birth, expansion, leadership and self-renewal or death if renewal fails. The difference between the two life cycles can be interpreted as the following: an industry is seen more as a certain activity an ecosystem executes and that with time goes into decline whereas the ecosystem can survive by taking on new activities and thus being part of new industries.

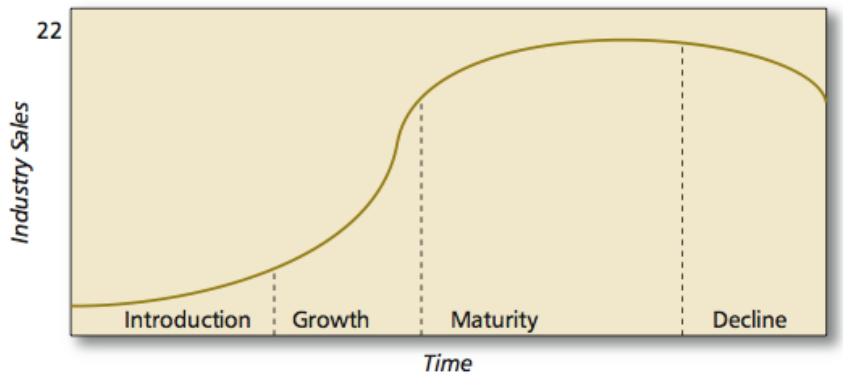

Figure 4: The industry life cycle (Grant, 2011)

Every phase of the industry life cycle and the evolutionary stages of business ecosystems have different characteristics and implications for the firms being present in that stage. A description and summary of each stage in the two life cycles is presented below, always starting with the industry life cycle to then be followed by the corresponding ecosystem life cycle.

- **Introduction** is characterized by products with high prices and low quality due to a lack of experience and a small installed base. No dominant technology or product design exists. There are few interested customers but these are innovators and early adopters who are willing to take risk and are innovation oriented. Key success factors are innovativeness and credibility. (Grant, 2011)

  Birth is explained as the phase where the initial customer value proposition is defined and delivered to customers. Cooperation is important; one should work on the definitions with customers and suppliers. Success is given to actors who best define the customer value. The role of a leader in the system is to take initiatives and drive actors to a future vision. (Moore, 1993)

- In the **Growth** phase sales take off due to more mature and improved products with higher quality. Acceptance of the product increases and opens up the industry to the mass market. Key success factors are being fast to market and availability. (Grant, 2011)

  Expansion is the stage where scalability is key and achieving dominance of key market segments. Established companies are recommended to enter the ecosystem at this stage since the innovative, unsecure first stage can be inhibited by an established corporate culture. In this stage established companies have a great advantage in power and size, which is needed to stimulate demand by investing in aggressive marketing and sales for

expansion. (Moore, 1993)

- **Maturity** it the stage where the mass market is reached and the innovativeness in the industry is low. Key success factors are lowering costs and increasing efficiency. (Grant, 2011)

  Leadership is where the future vision is important to communicate to the ecosystem so that continued improvements can be motivated. Continuous innovation is important and to make sure one has something that the ecosystem needs. The most advantageous position is the one of central contributor who owns a critical component the others cannot be without. (Moore, 1993)

- **Decline** the industry starts to get replaced by other industries with more innovative technologies. Key success factors are capacity management and cost decreasing. (Grant, 2011)

  Renewal/Death is where it is important to work closely with innovators to keep the ecosystem from becoming commoditized. Three strategies for doing this are presented; slow growth of new threatening ecosystems, incorporate new innovations or complete renewal. (Moore, 1993)

3.3.2 Moore's Law

Moore's law was coined in 1965 and describes the rapid evolution of digital technologies. Moore (1965) states that the number of transistors that can be put on an integrated circuit is doubled every 18-24 months at the same cost as before. The effect of this is that either the computing power is doubled for the same price as before or the price of the original computing power is cut in half.

Moore's law creates conditions for fast developments of innovations initially inferior to relative established offers. Bower and Christensen (1995) state that disruptive technologies often have different sets of performance features that existing customers do not value straightaway. With the implications of Moore's law, however, the previously inferior innovation can improve rapidly on the same performance parameters as established offers. Thus an acceptable level can be reached and the other performance features can create a differentiation that makes the whole offer preferable.

3.3.3 Diffusion of innovation

Diffusion of innovation is the process of when an innovation is adopted, also called the innovation-decision process. Rogers (2003, pp. 172) defines the innovation decision process as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation". There are many steps in the innovation-decision process, Rogers (2003) divides the process into fives phases that can be seen in the figure below:

Figure 5: The innovation-decision process (Rogers, 2003)

- Knowledge, the first phase, is about creating awareness and understanding of what the innovation is, how it works and why it is useful. Three types of knowledge are important

for diffusion: knowing what something is, how to use it and why an innovation is useful. (Rogers, 2003)

- The persuasion phase is when the individual forms an opinion and attitude towards the innovation. This stage is feeling-centered compared to the prior substantial knowledge stage. Reinforcement from ones social environment affect ones attitude. (Rogers, 2003)
- The third phase is where the actual decision to adopt or reject the innovation is made. Trial versions of the innovation often speeds up the diffusion. Two types of rejection exist, active and passive. Active rejection is when the individual considers to adopt but then decides not to whereas passive is when adoption is not even considered. (Rogers, 2003)
- The implementation step is when the innovation is put in usage. In this phase reinvention often happens, which speeds up the adoption process. Reinvention is when the user modifies the innovation for their personal usage. (Rogers, 2003)
- The last phase is confirmation where the individual wants to feel that they have made the right decision to adopt. There are risks of rejection in every single phase. In the last stage there are two kinds of rejection, replacement for a new and better innovation or disenchantment, signifying that the user was not pleased with the performance of the innovation. (Rogers, 2003)

The role of the innovator should be to reduce the uncertainty in every phase of the adoption process. According to Rogers (2003) there are five perceived attributes that can increase the rate of adoption, especially during the persuasion phase. Primarily, *Relative advantage* to the previous product the innovation replaces. Secondly, *Compatibility* towards the values and needs of adopters. The third attribute is *Complexity*, concerning how difficult it is to understand and use the innovation. Fourthly, *Trialability,* which is how accessible it is to experiment with and experience the innovation. Lastly, *Observability* is how visual the innovation and its usage is to individuals. In addition to these five attributes, communication channels, change agents, the type of innovation decision and social system can affect the adoption. The type of decision can be categorized as optional, collective or authority. Concerning the social system it is norms and network density that affect adoption. (Rogers, 2003)

Enhancing commitment and trust can reduce uncertainty. Ruyter et al. (2001) declare how commitment and trust can be achieved in high-tech markets by working with and taking three parts in to account; offer characteristics, relationship characteristics and market characteristics.

- Offer characteristics: performance, output, after sales service etcetera
- Relationship characteristics: cooperation, communication
- Market characteristics: replaceability, switching costs and risks

All adopters are not similar and have different preferences (Rogers, 2003). To succeed in creating trust and decreasing uncertainty for potential adopters, actions need to be customized to the different kinds of adopters. Rogers (2003) defines the following adopter categories: Innovators, Early adopters, Early Majority, Late Majority, and Laggards.

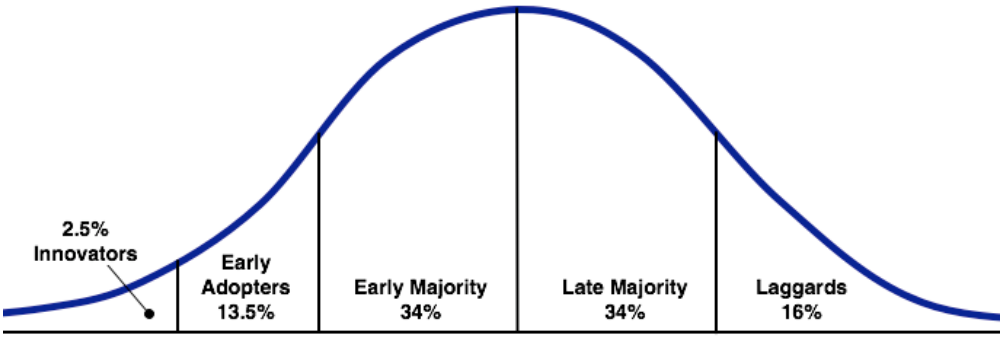

Figure 6: Adopter categories (Rogers, 2003)

Innovators are a small group of highly experimental individuals who can cope with early-stage faulty innovations and are interested in being a part of developing them further. The *Early Adopters* are more conformists than the innovators and act as an important role model in getting others to adopt. They are leaders who people ask for advice. The *Early Majority* is good at interacting in the social system but do not take a lead in adoption. The *Late Majority* is together with the early majority the largest part of the adopters. They are skeptical and dislike uncertainty but when the need to adopt gets obvious they come along too. The last and slowest group is the *Laggards* that are highly skeptical and mainly interact among themselves. (Rogers, 2003)

3.3.4 Crossing the chasm

The technology adoption life cycle, explained by Rogers above, is described in a different way by Moore (1999) called the revised adoption life cycle. Moore claims that there are cracks in the adoption life cycle and the largest one, called the chasm, is between the early adopters and the early majority. Rogers (2003) states that since the adopter categories are diverse and with different values and opinions, people in one category might not respect the choices of the individuals in other categories. This is the reason to the gaps according to Moore (1999) since customers in a market reference each other when they make the decision to buy. Most companies struggle in crossing the chasm since they try to go form zero to mass-market immediately. The advice given to achieve this is to focus on dominating a single market niche, creating a beachhead to leverage the adoption in other markets at a later stage. Moore (1999) states that one should "*Act locally, then globally*". A closed community where one has high control over the environment is explained as creating better prerequisites for adoption (Moore, 1999).

Rogers (2003) emphasizes the importance of focusing on the application and not the platform one wants to bring to market. To enthuse end-users the application needs to be in focus. The process of overcoming the chasm to reach the mainstream market consists of four parts according to Moore (2003):

- Primarily, *select and target a specific market niche*. Full focus and adaption to this niche market is needed to gain dominance. The smaller this niche is, the easier it is to spread the word and conquer it.
- Secondly, *develop a complete product offering in-house or with the help of partners*. The whole product should include everything that is needed to make the niche customer buy. Developments needed to achieve a complete offering can be integration, complementary products, education and training etc.

- Thirdly, *define the competition and your position*. Make yourself the leader in your chosen niche and communicate this clearly and concisely.
- Fourthly, *get into action by launching the product with appropriate pricing and distribution*. Direct sales is claimed to be the most efficient way of crossing the chasm. Direct sales are suitable for creating demand whereas two-tier models are more about fulfilling a current demand.
  (Moore, 2003)

4. Empirical Findings

In the following chapter primary and secondary data findings will be presented. In chapter 4.1, background information about the case company and the CCP will be presented. The secondary data is outlined in chapter 4.2 and 4.3, where information regarding the device analytics industry and other two-sided business-to-business platforms is presented. In section 4.4 the primary data regarding empirical findings of problems, solution ideas and the case company's plans for the CCP are outlined.

4.1 Background

The case company is a market leader in the network device industry. The company is technology and product driven, with a large number of new products introduced each year. The company has a tradition of disruptive innovations and has been, and still is, a driving force in the industry transition from analogue to network/IP technology in the device industry. Network and IP technology are areas where the case company has leading skills and capabilities. In driving the shift from analogue to IP technology the case company has developed educational skills to create awareness in the market. A case company academy exists and consists of classroom training and online courses directed to channel partners such as distributors and system integrators. (Case company, 2013; Case company employee, 2013)

The case company is a global actor with offices in more than 40 countries. The headquarters in Sweden is where the research and development is based. The organization is functionally divided with separate departments for marketing, sales etcetera. Product owners within the functional departments of the organization manage the responsibilities of single products. The company has traditionally focused on the development of hardware in the network device industry, but software development has been gaining importance. (Case company employee, 2013)

A case company employee (2013) gives an illustrative quote about the case company's tradition of handling software: *"We have just started selling our own software online instead of on physical CDs."*

The case company has opened up their devices to be able to run software applications developed by third party developers. The platform on which this is based is called the case company platform (CCP). Third party applications can through the CCP platform run on the edge; directly on the device. Device-based applications can be contrasted with server-based applications. The CCP platform was launched in 2009 (Case company, 2009). Firmware and some commodity software applications are developed in- house. These software programs include both technology management systems and CCP programs, and are of basic functionality.

Many type of different CCP applications exist. These are often referred to as technology content analytics or intelligent technology applications. No clear line exists between these two terms and they are used interchangeably. It is however worth noting that the CCP has potential to be a platform for further types of applications. The technology analytics industry is in an emerging phase, with a lot of growth potential (Industry report company A, 2012). Both internally and externally the CCP is believed to have a large potential. The diffusion of CCP applications has however been slower than expected. This has led to a questions being raised about the current way of organization around the platform.

This open initiative is not unique, but the case company is the only major developer providing such an open-standard platform. Large competitors have full control over the software that is available for their devices. (Case company employee, 2013) The CCP applications can only be used on the case company's devices. This creates a possible lock-in but can also be a hinder for

CCP diffusion since it is not uncommon that customers with installed surveillance systems have different device manufacturers in the same systems (Case company employee, 2013). It is worth noting that some DPs have ported their CCP applications to work on other systems than the CCP (Case company employee, 2013).

Sales of the case company's products are made solely through a partner model consisting of distributors, system integrators and retailers as illustrated in the figure below, the case company is devoted to this business model which by many employees is referred to as holy. It is believed to be a key factor in the company's strong growth over a long period of time. (Case company employee, 2013) The foundation of the model is loyalty and trust which is illustrated by a quote from a system integrator partner responsible at the case company:

"No contractual relationships exist with the SIs, it is a gentlemen's agreement." – Case company employee, 2013

The case company's combination of being a driving force in the shift from analogue to IP devices and their network relation based collaboration with their partners has made them good at providing support and education to the industry. They put resources and effort in education and shaping the market. As a case company employee (2013) expressed it:

"A lot of what we did [in the beginning of the transition] with IP devices was educating and evangelizing."

Manufacturing of the case company's products is completely outsourced. All products are sold to a network of distributors, who receive the products through the case company configuration and logistics centers located throughout the world. The distributors both handle further logistics flow and provide financial benefits through reducing the need for the case company to keep large quantities in stock. The products then go via one of two more actors before reaching the end-customer. Resellers sell products directly on to end-customers. System integrators put together and install complete systems at end-users site, where the case company devices are one part of the larger system. This structure is illustrated in figure 7, below. Working in this cooperative manner with a low level of vertical integration, is as mentioned earlier, believed to be one of the important factors as to why the case company has been able to sustain double-digit growth. (Case company employee, 2013)

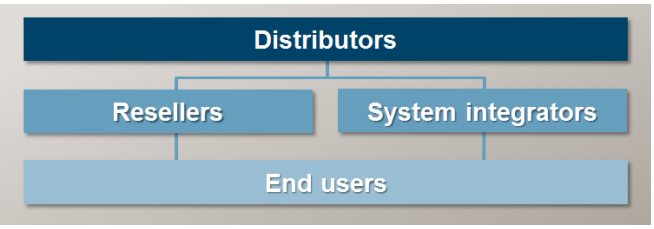

Figure 7: Partner model

The partnership strategy also includes software developers, who develop software for managing the technology systems and other solutions, such as the CCP applications that are the topic of this report. These software partners are called case company development partners (DPs) and the case company has more than 800 DPs in their partner program. The software needed for the devices is a technology management system and on request the optional niche CCP applications. Out of the hundreds of DPs less than 5 % are developing CCP applications. (Case company employee, 2013)

All DPs, distributors and system integrators are invited to become part of the case company's partner program. There are different levels within each program, where the partners with high

sales reach higher levels and get more support and information from the case company. The levels are based on volume of sales. (Case company employee, 2013)

4.2 The analytics industry

The analytics industry, also called the technology content analysis industry, is a growing market in the early stages of the industry lifecycle. The three largest application areas are security, business intelligence and traffic management according to Author, B. (2009) and can be seen in the diagram below. Young industries often struggle and high prices, lack of education, low understanding about the possibilities and products with bugs are some of the challenges facing analytics and slowing the potential higher growth according to Author, B. (2009). Author, A. (2011) agrees with the lack of education and state that to achieve this it is communication to the customers of the benefits of intelligent technology that is needed.

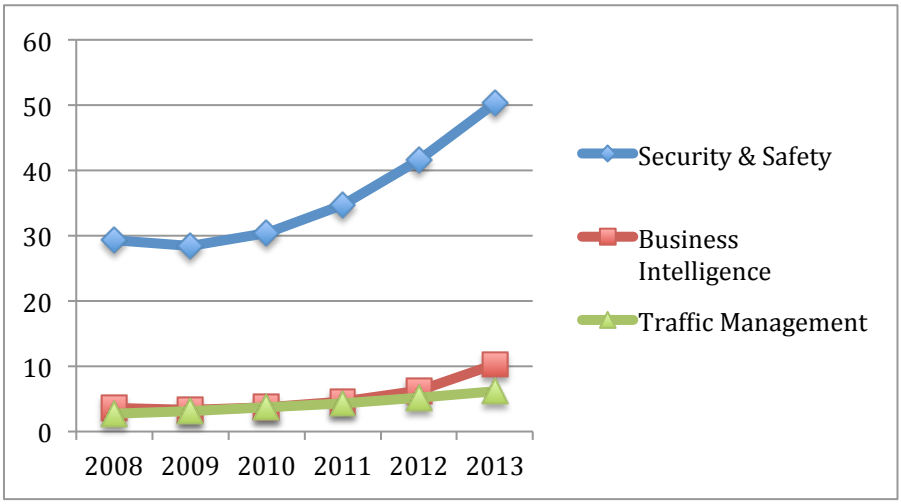

Diagram 1: Prediction of world market for PC-based software per application type in million $US (Author, B., 2009)

Despite the challenges of an immature market the compounded annual growth rate 2012-2017 is estimated to more than 30%, from a revenue of $180 million to $870 million (Industry report company A, 2012). Author, B. (2009) identifies some key factors affecting growth. These concern market limitations, the economic climate and a lack of success stories.

Market limitations include overselling and thus not delivering to expectations, high prices, need of market education and time consuming and difficult installations. Author, C. (2012) confirms that technology analytics still suffer from hypes and underperformance. Though there are also predictions of that during 2013 the security surveillance analytics will take off due to increasing acceptance and more mature products with better quality (Author, D., 2013). A focus on possible savings is important. Guard replacement is an example of how implementing analytics can reduce the costs for surveillance (Author, D., 2013).

Analytics are often installed in large installations requiring big funds so the economic outlook has great impact on the market. The recent and current instable economic environment in the world can thus prohibit growth. Concerning success stories, Author, B. (2009) states that there is a lack of a "killer application" in technology surveillance that could drive growth. The following actions are needed to drive growth:

- More education
- Simplify installation
- Improved products that measure up to the expectations
- More support from OEMs and technology management software (TMS)
- Clear return on investment

- Lower prices
- A "killer application"

Technology content analysis can be run both on the device, which also is called embedded analytics and on a server. There are pros and cons with both of the two types of solutions. The key benefits of each can be seen in the table below. (Author, B., 2009)

Server/PC-based analytics	Embedded analytics
No need of replacing devices	Lower average channel price
More processing power	To limit bandwidth need, meta data can be sent
Easier integration with BI solutions	No need of server maintenance
Re-analysis easier with central storage	

Table 1: The advantages of PC-based compared to embedded analytics

Dividing the market by product type, applications and end-user industries shows interesting predictions of the sizes of the different sub segments of the market. Different diagrams and numbers will below be presented concerning this.

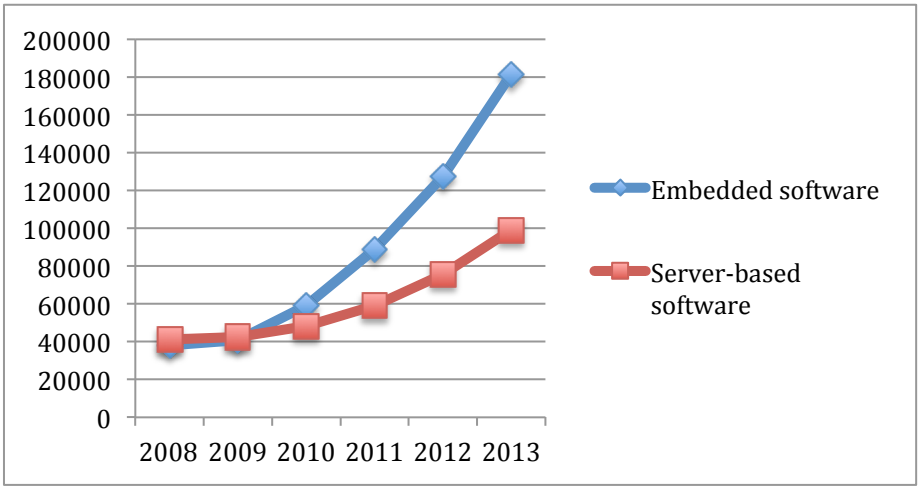

Diagram 2: Prediction of world market by product type in number of channels (Author, B., 2009)

Author, C. (2012) states that the embedded market has grown faster than the server-based market as can be seen in the figure above. The emerging application markets of analytics are Business Intelligence, Automotive and Medical and defense according to Author, B. (2009). Concerning business intelligence the fact that the applications do not have to be fail-proof to contribute is an advantage. It is top tier retailers who will have budgets for this and more success stories are needed to facilitate growth. Author, E. (2012) agree with the fact that business intelligence through technology analytics is the future of retail.

The case company performed survey of retailers in Northern Europe also confirms retail customers' interest in business intelligence applications (Case company, 2012). In Northern Europe more than 50% of the retailers were aware of non-security network IP applications. The main reason according to the case company's survey for adopting network IP devices is integration with business intelligence applications. Further, Author, F. (2012) also states that business intelligence is talking a larger role in the security industry. A general manager of a competitor's Electronics' Security Systems Divisions, states that there is a paradigm shift happening now in their industry (Author, F., 2012). There is an integration trend with business intelligence; an example is an application used with police crime report programs of stolen cars (Author, F., 2012). In the case of automotive, applications are used to aid driver safety. For

Medical the focus lies on measuring changes in patients and in defense an example is missile guidance.

How things are done in different end-user segments vary a lot. Therefore it is important to look into how these are categorized. The sizes of the segments are also an interesting fact, though one should be aware of that the definitions of the segments vary. Two different categorizations can be seen in the two charts below.

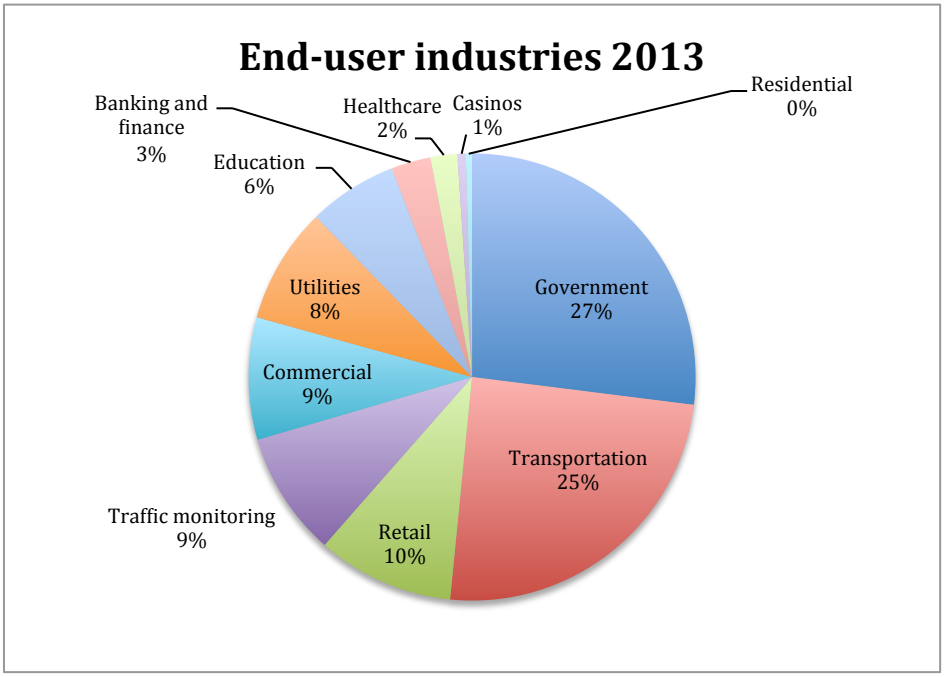

Diagram 3: Prediction of world market for PC-based software by end-user industry percentage of $US in 2013 (Author, B., 2009)

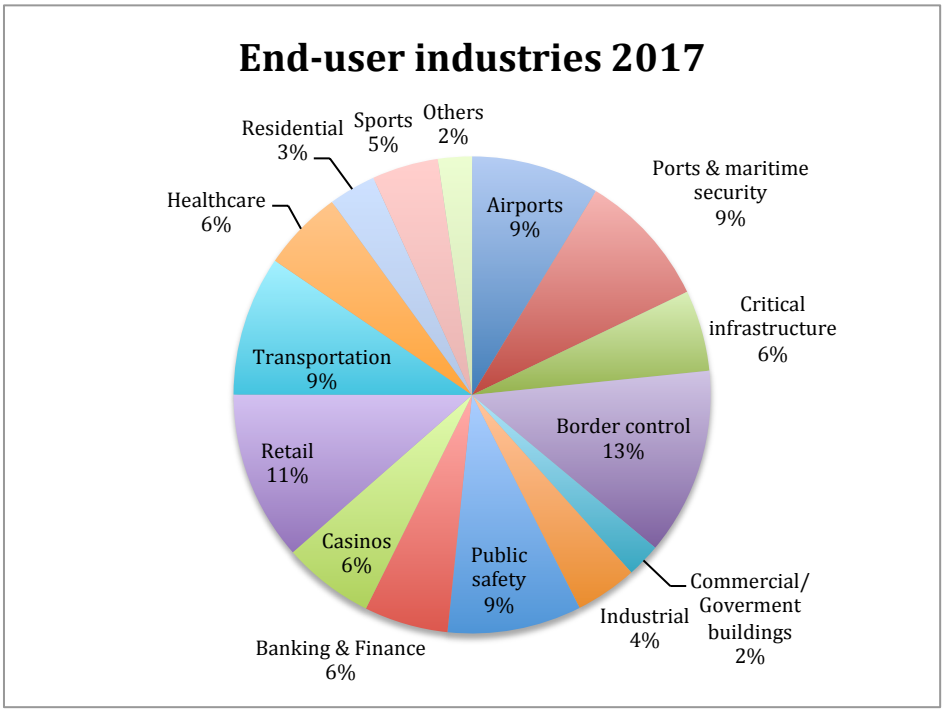

Diagram 4: Prediction of world market for intelligent technology analytics by end-user industry in percentage, 2017 (Industry report company A, 2012)

4.3 Platform business models and two-sided markets

There are many different cases of platform business models for two-sided markets. The first division one can make is business-to-consumer ones like Apples' famous app store and business-to-business ones like Autodesk's app store. In the Apple app store example the two markets that are connected are the supply-side of third party application developers and demand-side of the smartphone users. Business-to-business platforms are of interest to this study. The business-to-business cases that will be presented below are Autodesk and Rightscale.

Autodesk Exchange is a distribution platform for third party developed Autodesk add-on applications. The customers purchase the applications directly online through the platform and download them directly as well. Autodesk also sell their own products directly online in the same way. (Autodesk, 2013) When the marketplace was launched Autodesk exchange had about 150 applications, of which some were free. The marketplace creates a centralized solution for applications and a safe way for the customers to find add-on functionality. The platform has a rating system where customers can grade the products after purchase. It fragments the control over the company's CAD software since the individual users can take decisions of what to download without consulting the CAD managers. (Benton, 2011)

Rightscale is a multi-cloud platform that integrates the entire cloud infrastructure that a company uses. It is cloud-computing management that makes the customers avoid lock-ins and creates control over their multiple clouds. Of the two-sided platform Rightscale has the cloud providers on one side and on the other one the customers who use their services. The payment method works as a subscription fee to the cloud users. Rightscale has various partnership programs for distributors, system integrators, cloud providers and independent software vendors. (Rightscale, 2013)

4.4 The CCP

Four sections are used to categorize the empirical data concerning the CCP. The background and business model of the CCP including the value of it perceived by different actors is primarily introduced. The second part address the problems expressed by interviewees that they believe have inhibited the CCP's growth. This is followed by solution ideas given by internal and external actors. Lastly, The case company's plans for the CCP are covered.

4.4.1 CCP Background

This chapter will start by giving a detailed explanation of what the CCP is. As mentioned above, CCP stands for case company platform. It is an open technical standard creating the opportunity for third party developers to produce applications that can be run on the case company's devices; so called edge-applications. In this report the CCP will also be referred to as a solution for the end-users. Explicitly the technical platform CCP is not a solution for end-users but the applications creates specific solutions, or added functionality, for the end-users. One needs to be aware of the fact that the CCP carries different meanings depending on which actor is referring to it. For DPs the CCP is a possibility of producing case company compatible applications. For the case company the CCP is a possibility for internal software developments, customization and giving a wider offer to technology and channel partners. For distributors and system integrators it creates the possibility of fulfilling more specific end-user needs.

The CCP is well known internally at the case company. But many do not feel certain of what the CCP really is or what the underlying business model for it looks like. The focus of the efforts at the case company are technical and at the moment about ten people are working part time on developing the technical platform, equal to about three to four full time positions. The only

official part reaching the commercial side today is the website describing the available applications. Not all DPs have websites in English, which together with other factors such as malfunctioning search criteria makes it difficult to get valuable information about the applications or an overview of the assortment.

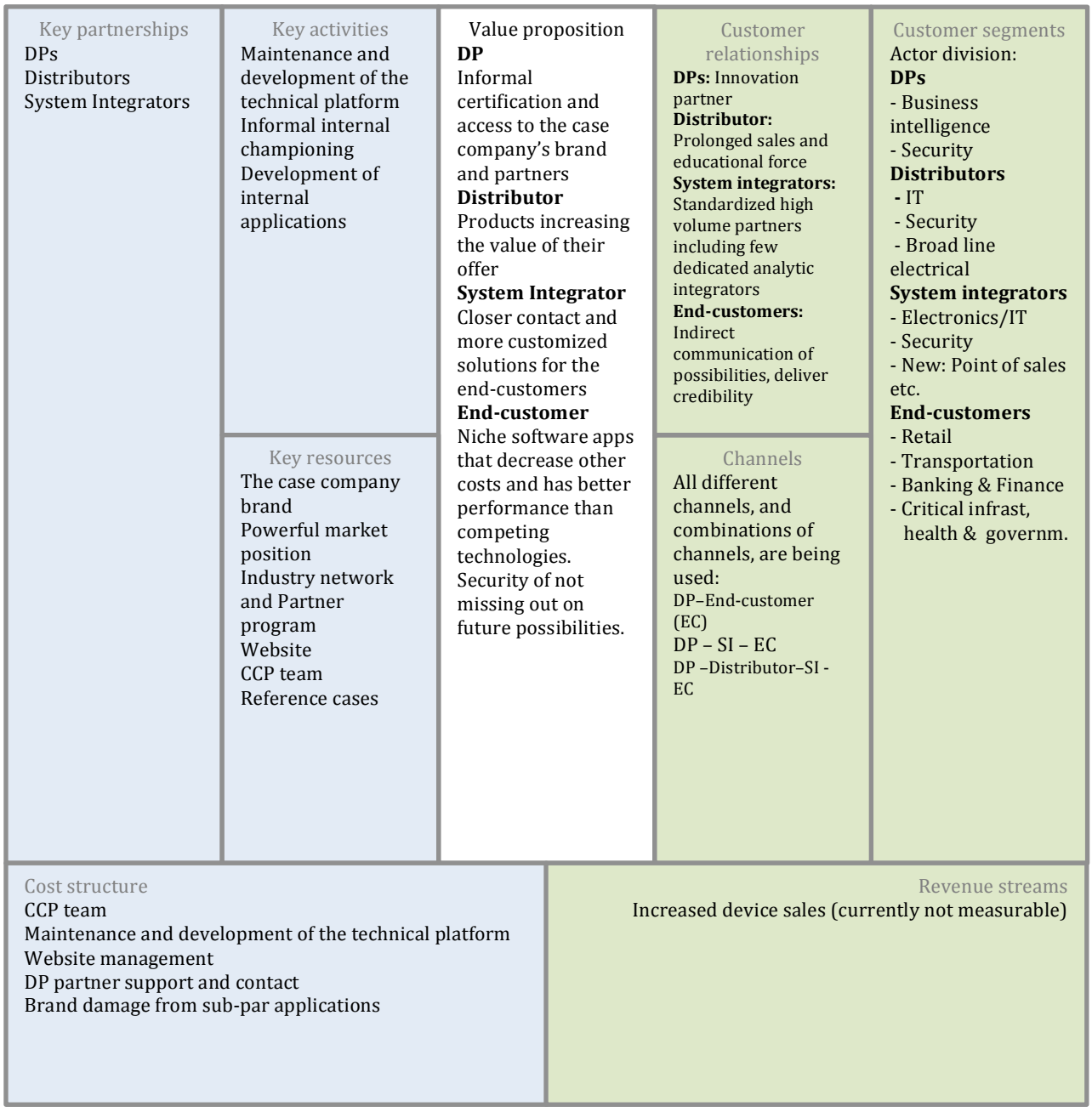

Figure 8: Business Model Canvas of the current situation of the CCP

The majority of all actors interviewed, both internally and externally, see great potential in the CCP initiative. Some even denote themselves CCP Champions (Case company employee, 2013). There are many opinions of what the issues have been with the CCP but also ideas of how to develop and improve the CCP in order to seize the potential. Each type of actor perceives the value of the CCP in his or her own way as can be seen below.

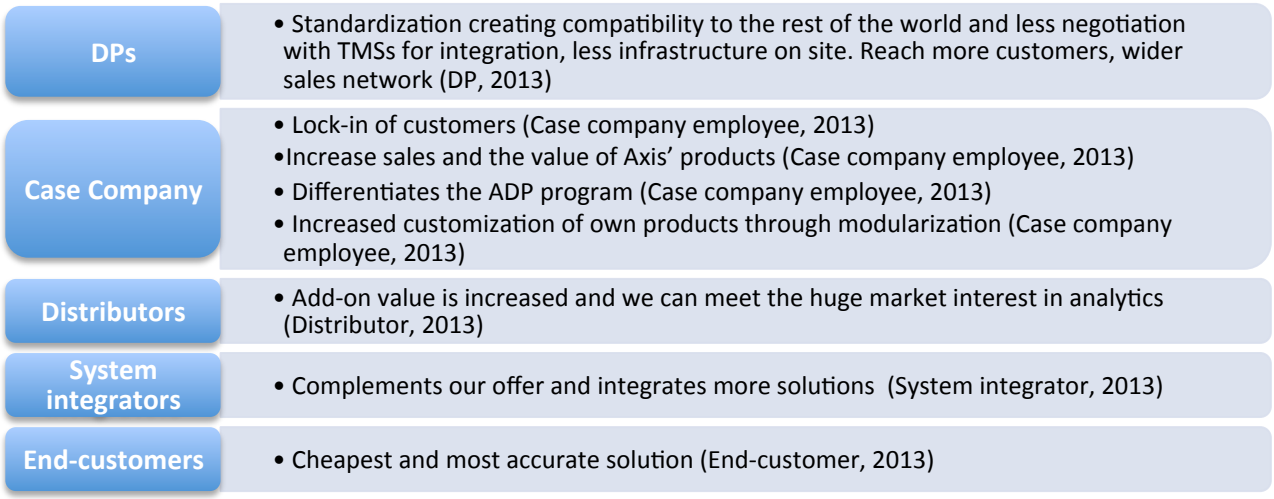

Figure 9: The value of the CCP perceived by each actor

The DPs see value in getting access to the large downstream network of the case company value chain to gain more customers. An interesting observation is that within the case company the value is perceived in many different areas. The agenda includes the DP program, own products and the customers. For the distributors and system integrators the CCP is a complement what helps them create more value for the customers. Finally, the end-customers simply see an opportunity in getting the best and least expensive solutions.

4.4.2 Problems concerning the CCP

Interviews with external actors like the DPs, distributors, system integrators and end-customers have been conducted, where concerns and problems around the CCP has been expressed. A majority of the interviews have however been conducted internally with the case company's personnel. Initially the external opinions are presented followed by the internal ones.

Problems identified externally

The most frequently mentioned factors explaining the lack of success are summarized in the list below. The issues are briefly explained and followed by illustrative quotes from actors expressing their opinion. The problems are arranged in a falling order based on the frequency interviewees have mentioned them in their responses. So the first factor is the one the most of the external actors have mentioned.

1. **Low awareness**

   The concept of awareness does not solely refer to the knowledge of the existence of CCP applications but also how they are used and the purpose of using them. However, the overall problem is that few actors in the value chain know that the CCP exist as is shown in the quote below:

   "Most of our customers don't know these kind of applications exist. More marketing and specific customized case studies are needed." – System Integrator, 2013

   The following quote gives insight in the lack of knowledge about the purpose and expectations of the applications:

   "There are few customers that really understand what analytics is and what is demanded of them in order to use it." – Distributor, 2013

2. **Technology limitations**

The limitations of the CCP technology are a factor that has been brought up in different contexts. One is the fact that device applications are limited in terms of processing power. Another issue is the lack of proactive information from the case company about firmware updates to the developers that cause technical problems. Lastly there are issues with the license keys that do not function smoothly. A system integrator (2013) expresses this in the following quote:

"The handling of the license keys is what is most of a hassle. The distribution of the license keys needs to be easier but also the management of them."

The processing power is lower compared to server-based solutions. The storage space is also comparatively limited, as well as more costly. These limitations in turn limit the types and performance of the applications. They are also a reason to why hybrid applications have been developed, which tries to draw benefits from both versions of the technology (DP, 2013). The consensus among interviewees is that the CCP technology will improve with time and decrease the gap between what is requested in terms of storage and computing power and what can be delivered. (DPs, 2013)

A lack of proactive information is present in the DP-program. The CCP developers have a low status and low access to information due to not having high sales. A request brought up by the CCP developers interviewed was an increased amount of information sharing from the case company, which could be done by upgrading CCP developers in status (DPs, 2013). A quote covering both issues is:

"There is an 8 megabyte limit, our is 10-12 megabyte. Also, *we have had issues with firmware updates, we need better info from the case company."* - DP, 2013

3. Installation, Configuration and Integration

Getting a CCP application up and running include installation of hardware and software, configuration of the two along with a possible integration with other computer systems. Many differing opinions exist about the complexity of this process, which partly depends on what it is compared to. Some DPs describe their products as plug-and-play or very simple to get up and running (DPs, 2013). Others were aware that installation can be time consuming and that a lot of fine tuning is needed to get a system up and running (DPs, 2013). Distributors, system integrators and end-customers interviewed disagreed about the complexity of installation as can be seen below:

"The installation process is complex today. DP X's solutions are extremely difficult to install and requires support as well as training of customers. Simplification of installation is a prerequisite for the scalability of the CCP-platform." – Distributor, 2013

"The installation is easy compared to IR-sensors and other systems. It only takes 30 minutes for an experienced technician to setup and install a device with DP Y's application." – System Integrator, 2013

"It was a learning process but the installment is easy, after a 2-day tech training you know it all." – Distributor, 2013

"The applications work well, but only if the installation is perfect." – End-customer, 2013

However, the issue is that configuration often includes more factors than the actual software configuration. Configuration of the applications involve a lot of trimming of the physical position in terms of height, angles etcetera, that adds to the complexity and time of the total installation. Another factor is the integration with other systems, for example an ERP system. Such integration adds yet more complexity and time to the total installation. In cases, total installation time to get the system working fully can take months (System Integrator, 2013).

4. **Price**

Price is a factor where the opinions differ between the external interviewees. Price have been claimed to be the reason to why potential customers have been lost. It has however also been said that price is not at all an issue and that the CCP solutions often beat competition in a price comparison. There are as many external interviewees who highlight price as a large inhibiting factors as ones stating that it is clearly not a problem. The variation is shown in the quotes below:

"DP Y was chosen since they had the cheapest and most accurate solution." – End-customer, 2013

"[The price] is fair, we have not received any negative feedback regarding price from the end-customers" – System Integrator, 2013

"The majority of the customers that try out demo-versions end up buying the app. The ones who do not are generally because it is too expensive." – System Integrator, 2013

5. **Differences in channels and segments**

Currently, many CCP applications that are available provide a service requested by end-users outside the focus of the security- and IT-sectors that is and has been the focus for the case company. This is especially clear in the case of applications providing business intelligence. These applications compete with, and aim to replace, other systems that rarely build on device technology. (Case company employee, 2013; DP, 2013)

The difference in the type of solutions and the segments' requests outside of the security channel give rise to the need of developing channels, ways and terminology of promoting the products. A DPs largest account, with installations in a global organization with hundreds of locations is an example of this. The project manager for this business intelligence project found out about the CCP solution through a colleague in their IT-department. (DP, 2013)

"Selling to marketing buyers is more difficult as they are less aware of the benefits of IP systems." – System Integrator, 2013

A distributor commented on what was needed to learn about one DP's products:

"The market was much more difficult to learn about, it took us more than a year to develop an understanding. We had to look for the right partners and this is completely different compared to the security channel. These partners are not specialized on technology but on the shops, more niche providers like shop theft prevention or whole solution providers for shops." - Distributor, 2013

The consequences of differences in segments do not solely concern the sales channels but also the case company's products. One system integrator reported that a sales contract was lost due mainly to that the physical devices were not adapted to the retail environment (System Integrator, 2013).

6. **Low availability**

Since no aggregated marketplace exist for the CCP applications and sales are today made through different informal constellations it can be difficult to get hold of somewhere to buy a CCP application, which is clearly shown by the following quote:

"We don't even know where to find these products" – System Integrator, 2013

To add to this it is also difficult to develop the distribution since both distributors and system integrators see obstacles in widening their application assortment. One large system integrator interviewed stated that they would not take in any products into their global assortment unless the supplier of them could offer local support on all markets. This stands in contrast to what a DP (2013) expressed about having experienced success with global reach without physical presence in the local markets. They met for the first time with many of their clients after years of doing business together. This is connected to another type of concern from a system integrator about taking in more applications in their assortment:

"If we would start selling apps from many more DPs it could become difficult since our current model is simple with few actors, we could "get lost in the technology" – System Integrator, 2013

7. **External division of responsibility**

There is an unclear division of responsibility throughout the value chain. An example of this is the distributors' roles in the value chain, where some are not at all involved while others actively invest in CCP application training for their system integrator partners (Distributors, 2013).

Who should be in charge of creating credibility is another common debate. Many, including DPs, distributors and system integrators, request a case company stamp of approval or a recommendation as can be seen below:

"Most importantly there is a need for recommendations from the case company. It is difficult for us to select appropriate applications. Some we can find on your website but how do we tell the good ones from the bad ones?" – System Integrator, 2013

As illustrated in figure ten below, the route an application takes from the developer to the end-customer differs vastly. The darker lines represent the different channel combinations that sales have gone through, identified in the data collection. 3rd party developers have sold applications both directly to end-customers, but also used various combinations of the case company's traditional business model. In practice this means that sales sometimes has gone through the whole value chain including distributor and system integrator to end-customer. Other times the distributors have been left out, and

the 3rd party developers have sold directly to system integrators. Cases have also been found where the 3rd party developers sell directly to the end-customer. From the data collected, there is no clear dominating process or consensus between actors on how applications are sold. What categorizes many of the different processes today is that they are often built as ad-hoc solutions and not for scalability. (System Integrator, 2013; Distributor, 2013; DPs, 2013; Case company employees, 2013)

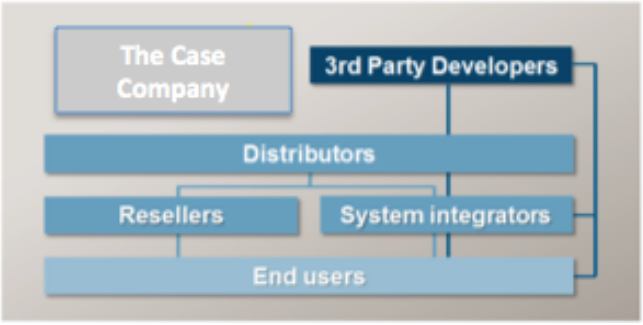

Figure 10: Current sales channels

8. **Stuck in technology trap**

The technology trap can be explained as a situation where mainly the technical functionality of a product is in focus. Customer needs and communication about the solution and market application of the product is kept in the shade. Illustrated by a distributor:

"Today the CCP is struck in a technology-trap and gives an appearance of being super boring." – Distributor, 2013

A DP gives a comment on how the case company can help them in their sales process: *"A lot more information and sexier, create a better shopping experience. More communication and marketing, nobody really knows we exist."* – DP, 2013

9. **After sales**

The after sales issue is closely related to the problem of low availability. Since the DPs are small firms without global presence they cannot give local support in many countries. Just the question of support in different languages becomes difficult to solve. It is not simply solved by letting other actors in the value chain take more responsibility either, as is illustrated by the first quote below.

"Yes, we give support but it is often problematic because distributors rarely know the installation environment. Analytics applications make this even more problematic." – Distributor, 2013

A DP commenting on what the largest challenges they see in the sales process:

"Support and after sales with geographical spread" – DP, 2013

Problems identified internally
The most frequent factors explaining the lack of success stemming from internal interviewees are summarized in the list below. Many factors are similar to the ones identified by external interviewees but these are presented from the perspective of the internal case company personnel. Each factor is briefly introduced and followed by illustrative quotes from employees expressing their opinion. The problems are arranged in a falling order of priority, based on the frequency actors have mentioned them in their responses. So the first factor is the one who the most of the internal interviewees have mentioned.

1. **Low awareness**
   Awareness about applications differ both among different types of actors and among actors of the same category. The awareness of CCP applications' possibilities is low at end-customers, and to some extent also at system integrators. (Case company employee, 2013) The following quote from a case company system integrator key account manager (2013) illustrates the issue:

   "Expectations of end-users are high in the totally wrong direction. They are expecting something impossible but are unaware of the possibilities."

   There is consensus at the case company about the fact that no major marketing of the CCP or of the applications has been made since the launch of the platform (Case company employee, 2013). What has been done is that 3rd party developers have joined the case company's booth at various tradeshows.

   "Not a lot work has been done with CCP marketing. I would love to concretize through a clear customer case. But we do not really know how to market it because it becomes so abstract." – Employee, 2013

   The awareness of what CCP applications exist is fragmented internally. This has consequences for how the sales departments at the case company work. The sales engineers felt that they had limited awareness about what applications exist and what these have to offer. When information about a specific CCP application reaches the sales staff, this single application often gets a lot of attention and is pushed out to customers (Case company employee, 2013). However, for most applications the information does not reach these channels and thus often not the end-customer either. (Case company employee, 2013)

   This is illustrated by a quote from a case company employee (2013):
   "There has been, and still is, a lack of knowledge internally of what to sell and how to sell it."

2. **Installation, Configuration and Integration**
   The process of getting the applications up and running can be complex and inefficient at the same time as the result needs to be perfect in order for the applications to deliver the performance needed. To avoid having dissatisfied customers or system integrators who think the effort needed is too high the installation process needs to be improved.

   "Overselling and/or underperforming is decreasing, but still occur when someone does not install it properly." – Case company employee, 2013

"The work and costs that the applications bring throughout the value-chain needs to be distributed suitably, right now the system integrator has a too complicated installation" – Case company employee, 2013

"The software installation should be able to be done remotely. Having a system integrator install an application on 700 devices through a CD is not scalable. Here the distributors could come in as a provider of bundled solutions where the applications are pre-installed." – Case company employee, 2013

3. **Too many actors in the ecosystem**

The more actors that are involved in a system the more confusing it can get. The role of the distributor is what is most debated concerning the actors in the ecosystem. Opinions vary in whether they should be cut out or kept to not disturb the current "holy" business model of the case company.

"I think there could be one actor too many in the ecosystem of the CCP." - Case company employee, 2013

"CCP can create channel conflicts in our business model. I don't think our distributors can help us commercialize this". - Case company employee, 2013

At the same time a one-stop-shop and a whole solution provider is often referred to as something that customers request.

"The one-stop-shop is important and we should not diverge from the core two-tier business model of the case company." – Case company employee, 2013

4. **After sales**

The questions around who can give after sales support brings doubt to the case company personnel who do not want to recommend CCP applications if they do not feel sure support can be given.

"A big problem is that the DPs can't provide support globally. The DPs have difficulties getting into the selection of the large distributors." – Case company employee, 2013

"It is the job of the sales person at the application-developer to sell the app and travel out to meet the customer. If they don't have resources to travel they definitely do not have resources to handle after-sales support and then I am not comfortable recommending them to the end-customer." – Case company employee, 2013

5. **Concept ambiguity**

Many notions, abbreviations and terms are used interchangeably or with different meanings. This in turn creates misunderstandings, which negatively affect the progress of the CCP. The confusion created is illustrated in two quotes below.

"Everybody internally has their own picture of what the CCP is and no one really knows what the purpose of it is, which makes it difficult to sell. Add a "pass the message game" on top of this and it is impossible to communicate to the customers what the CCP is" – Case company employee, 2013

"Nobody within the organization has the complete picture of the CCP technology" – Case company employee, 2013

"A sub brand is being created and partners/customers refer to it as CCP. There is a need of the case company starting to refer to it officially as CCP" – Case company employee, 2013

"We cannot call it CCP, something else like the case company marketplace is needed" – Employee, 2013

"We are not even permitted to use CCP since it is an in-house tech name and not trademarked" – Case company employee, 2013

The quote below illustrates multiple issues, the confusion around what the CCP is and should be categorized as and the consequence of this:

"No one at the marketing division has taken ownership over the CCP. It is not really categorized in the company; it is not a device, not software. There is an internal specialization at the marketing division and this should probably fall on the software table, but nothing has been done so far." – Case company employee, 2013

As has been stated there is confusion around different types of concepts concerning the CCP. The most common ambiguous terms and their different meanings are presented below.

- CCP – is used to describe both the technical and business platform of the case company's edge-based applications. There is also a lack of clarity regarding the reach of the concept. Sometimes it is talked about as a technology analytics-only platform for the devices. At other times the term is used with a broader perspective including other type of applications and other type of products.
- Technology analytics / Applications / Intelligent technology – connected to the abovementioned term, there is confusion regarding what technology analytics, applications and intelligent technology actually means, when they are used and for what.
- Customer – the subject of the term customer is often confused, as some refer to the system integrators as the case company's customer and others to the end-users.
- Installation – the view of the extent of the term installation differs greatly. It is sometimes used to describe just the physical device installation. Other times it is used to describe just the software installation. Yet other times it includes both of these and might also refer to configuration and integration.

Confusion also exists around the case company's software strategy since the case company provides in-house developed applications and third party applications through the CCP.

"*There is a contradiction in providing case company software and encouraging third party developers to compete with that software. The line to how far the case company can push the territory is unclear.* " – Case company employee, 2013

6. Lack of commercial orientation

There is a lack of responsibility and prioritization concerning the commercial side of the CCP. Internal champions exist who drive application sales but some key tasks have not been executed which inhibits the development of the CCP. No one is in charge of business development concerning the CCP and a role should be created for this (Case company employee, 2013). The market and sales responsibility is also limited due to the product

owner role of the CCP being mainly technically oriented and not leaving enough time for a commercial focus. For example the website with information about the CCP is a grey zone of responsibility (Case company employee, 2013). It is the DP-program manager that is responsible for the publishing of information on the website.

Concerns from the marketing department is that the case company has not been able to mobilize the whole organization to work together in selling and making the CCP available as can be seen below:

"I think a lot of the local offices got a feeling that the CCP is a corporate thing that was pushed out. They do not have the resources or knowledge to sell the CCP at the local level and they cannot work closely with local the CCP developers" – Case company employee, 2013

"*Some structural parts are missing, like an overview and follow up of application sales. An example of this is the lack of data available on the number of applications sold. There is no way to report this information together with sales, and as such the data does not exist despite demand for it*" - Case company employee, 2013

7. **Unclear ROI**
   Should the case company make money on the CCP? If so, how? These are well-debated questions internally and many different views exist.

   "Another important question is how the case company can make money on the CCP. To become successful in the security channel the case company needs to take more responsibility. We need to take some risk and hire people. … There is a patent issue in this too, about 4500 patents exist in the area of technology analytics and everybody is suing everybody. We need to find a model where the ones that are willing to pay and see the value in this can pay for it." – Case company employee, 2013

   "Commercially I don't think it is a good idea to charge a fee for the CCP. It is inconsistent with the way we have run the partner program. It is not openness and it is not consistent." – Case company employee, 2013

   "The case company should be able to make direct money [not additional device sales or value] from connecting the 50 000 SIs and 750 DPs that exist in the company's network today. The case company is the common denominator here and should use it to earn money." – Case company employee, 2013

8. **Technology limitations**
   There are still concerns about the limitations the device based technology give rise to. Even though time is the cure suggested for solving the lack of storage and processing power it is a barrier. The license key situation is an additional technical issue.

   "DPs don't believe in the processing power of the devices, which becomes a barrier." – Case company employee, 2013

   "The case company copy protection keys do not work very well, but they are a necessity to avoid legal issues in the future."- Case company employee, 2013

10. Lack of trust

The lack of trust was brought up in relation to after sales support and how the case company's sales department did not feel comfortable recommending the applications. However, the lack of trust is not just concerning after sales.

"The case company does not trust the CCP-technology internally." - Case company employee, 2013

"Partners who are thinking of making a CCP application are hesitant due to lack of marketing promises from the case company." – Case company employee, 2013

11. Channel and segment differences

The purchasers of business intelligent applications are rarely exposed to the security- and IT-focused marketing and sales channels the case company use today (Case company employee, 2013). It is also recognized that new channels will have different requirements put on the products, sales and marketing (Case company employee, 2013).

"The retail segment needs new channels to sell technology analytics, it is not possible to do through the existing security channels. There is a lack of knowledge about the end-users' data needs in the existing sales channels. The end-customer usually only wants data and do not care where it comes from" – Case company employee, 2013

"The CCP launch was focused towards the security channel." – Case company employee, 2013

"Retail customers are often lead users in this perspective as they often have large possible gains from business intelligence." – Case company employee, 2013

12. Price

Opinions on whether prices are too high vary within the case company as well as it did for external actors. An interesting thought is the relative price compared to the device and that this is what should be looked upon.

"The prices are going to drop, but I do not believe that they are a main factor to bad sales today." – Case company employee, 2013

"The price of the applications is sometimes a problem. In comparison to a standard device, the prices of applications are too high. With thermal and other more expensive devices, the cost for a CCP license is small compared to the overall price and thus a smaller issue."- Case company employee, 2013

13. Availability

Availability vary between regions due to local differences and whether the needed distributors have taken the applications into their assortment.

"There have even been a case when we have had to ask a distributor to put an application into their range only so that we could buy a copy for a project. Not only was it a hassle, but

it also added three weeks lead time." – Case company employee, 2013

The availability of applications is also in some cases limited due to technical differences between markets. This became clear in one case where an application was not transferable between regions due to differences in layout of text on the objects analyzed. As such the application was physically available but not functionally available. (Case company employee, 2013)

14. **Technology trap**
    The CCP was primarily developed with the technical perspective in mind so the customer value and need was not taken into consideration.

    "The technical parts of the CCP were almost finished when we started thinking about who was the target group and value created." - Case company employee, 2013

    "The whole project was a technology push, and market needs were not taken into account until now." - Case company employee, 2013

A further explanation of the lack of success is explained as a need of giving the market more time to grasp the concept as is stated by case company employee (2013): *"Another reason for the lack of large success is that it takes time. We evangelize, a lot of what we did with IP devices was evangelizing, and it took 7-8 years to gain maturity with some actors in IP. The situation is similar with the CCP, it needs time."*

4.4.3 Ideas for improvement

In the same way as the problems were presented the ideas for improvement will be divided into ones given by the external actors: DPs, distributors, system integrators and end-customers and then the internal the case company personnel.

External ideas for improvement

The most frequent ideas for improvement are summarized in the list below. Each idea is briefly introduced and followed by illustrative quotes from actors expressing that opinion. The ideas are arranged in a falling order of priority, based on the frequency interviewees have mentioned them in their responses to how the business model for the CCP should be improved. So the first idea is the one who the most external actors have mentioned.

1. **Marketing/Communication**
    Ideas of improvement concerning marketing mainly focus on that the case company should take initiatives and put resources on it. The format of the communication is suggested to be flashy and more attractive.

    "*What is needed is communication and presence in the market. The case company is very good at supporting their customers but in this case they need to push and show their muscles to create awareness."* – System Integrator, 2013

    "The applications have possibilities, market them flashier! Since the launch nothing has happened, nobody has been or is talking about it." – Distributor, 2013

    "Availability of presentation material could be better." –System Integrator, 2013

2. **Website**
   The improvements that can be made to the current website are many and the larger the CCP becomes the more important the information management will be.

   "A good idea would be to have a log-in where we can test and demo the apps online to show the customers." – Distributor, 2013

   "The more software vendors that sell CCP applications the more difficult it will be to find them. – Distributor, 2013

3. **Education**
   The case company is known for being a good educator and many external actors request an educational focus concerning CCP as well.

   "Honestly, more education to dealers like ourselves is needed. In the past the case company has not been known as a software vendor and there is a need for the case company to show that you have changed the route and started to prioritize and put importance on software too in order to create awareness about applications etc." – System Integrator, 2013

   "Another key is education; there is a need to put resources on this. You (the case company) are very good at education. A one-day course in the basics in analytics could be an idea." – Distributor, 2013

4. **License key system**
   The license key system needs to be improved according to many actors to avoid confusion and time wasted on non-value creating activities.

   "I only have one suggestion for improvement, it is that even with a proper license it is shown in the CCP that there is no license there, no registration key is shown. This really confuses the customers. This needs to be fixed or at least explained for the customer." – Distributor, 2013

5. **Recommendation/Certification**
   The idea about recommendations concerns certification in different levels of the process. Ideas include certifying the installment of the applications but also the applications themselves.

   "Further ideas could be to require a certification in order to buy the software so that only educated and approved vendors can buy and install them." – Distributor, 2013

   "There is a need of a rating from the case company. This would work as a stamp for the developers and an incentive to develop better apps. You are the ones who need to approve the apps anyway so that not non-functional ones are promoted". – System Integrator, 2013

Ideas mentioned by single actors are more customized physical products complementing specific applications and an increased status of the CCP DPs in the partner program.

Internal ideas for improvement
Internally at the case company people have many different opinions of how the issues around the CCP can be solved and what the focus should be moving forward. The ideas are arranged in a falling order of priority based on the frequency actors have mentioned them in their responses to how the business model for the CCP should be improved.

1. **Education**
   Educating the market is something the case company has experience in. Different types of educational packages are suggested for different types of actors in the value chain.

   "The case company is used to volume sales. Maybe there is a need to educate the DPs in this, since simplicity is key in order to obtain scalability. The DPs who often are tech-driven loose the simplicity when striving for technical excellence." – Case company employee, 2013

   "The system integrators should have mandatory training to sell applications so that they know what they sell." – Case company employee, 2013

   "The case company does roadshows demonstrating and creating knowledge of products, there is a need to do this with the applications." – Case company employee, 2013

2. **Marketing/Communication**
   To put more resources on creating awareness is one way to solve the situation around the CCP according to the majority of the employees that agree of the importance of marketing and communication.

   "Awareness might be a more important issue than scalability of the business model." – Case company employee, 2013

   "Promotion is key, now we have expensive apps that no one even knows exist. First to market is important. Take what we have and market that as a start." – Case company employee, 2013

   "It is important for the case company to be less humble and market/communicate what's coming, this is the future, these are the future opportunities." – Case company employee, 2013

3. **Simplification**
   Various actors emphasize the idea of simplifying different parts of the adoption process, like the buying process and installation. Ideas range from not letting complicated applications through to working for standardization.

   "The applications that are too expensive or too complicated do not belong in this setting, then they should be a stand-alone product, because they require too much hand-holding." – Case company employee, 2013

   "Ease of sales is the key. The description of what the application does, the price, the message needs to be decorticated and very easy." – Case company employee, 2013

4. **Recommendation/Certification**
   A majority of the interviewees agree on the need of recommendations. Different types of certifications are suggested depending on segment along with leaving the responsibility of recommendations to the customers. But all do not think it is a viable solution.

   "When you sell a service you have to give some kind of functionality guarantee." – Case company employee, 2013

   "A solution could be to case company-certify only critical applications for sensitive security-environments" – Case company employee, 2013

   "A good idea is to provide customer references through a ranking system and satisfied customer stories" – Case company employee, 2013

   "Challenges for the CCP are that the case company can never guarantee the safety of the applications; we cannot certify the software, it would be too complex and difficult" – Case company employee, 2013

5. **Lack of commercial orientation**
   Commercial ownership of CCP is unclear internally; focus is on the technical parts and not the commercial side. Suggestions to solve this include creating new roles and increase the status of CCP.

   "I am responsible for the technical platform. The second part is marketing. The third part, which does not exist, is business development. I would like to take more commercial responsibility but then I would have to let go of something else. Maybe a BDM role [Business developer manager] should be developed for the CCP, like for Retail and the segments. There is a need for a role like this." – Case company employee, 2013

   "Employee X's role should be developed for the CCP as well; he works as the interface between the technology management system developers and the case company's business development. We need people regionally and a global responsible. We also need rules and frameworks since we cannot let "anything" on the devices." – Case company employee, 2013

   "CCP needs more attention internally. No central account team for analytics exist, "no gold status", formally should not be given much attention." - Case company employee, 2013

   "To make the CCP applications reach the end-customers, we need people locally to drive this. There also exist local DP responsible who work with the developers but since the CCP companies are small they sort of fall out of scope of the DP-program." – Case company employee, 2013

6. **Website**
   There are many ideas of how to improve the information about the CCP applications, how to purchase them and customize this depending on the type of actor. Many different notions are used like an App-dictionary, an online window shop front, a CCP marketplace and an information portal. There is also an internal debate of whether an "app-store"

similar to Apples would be a good improvement idea.

"I have been preaching for two years that the case company should take a lead and build a CCP-store, like the Apple App-store." – Case company employee, 2013

"An app-store is likely not a good solution, an IT-boss would not accept marketing to install applications, and payment conditions vary. A better solution would be a clear database/guide with simple but working links to downloads etc." – Case company employee, 2013

"Today, only the webpage with applications is available for information. The info there is not sorted in any way depending on customer needs, business or application area. A database for information about the apps is needed. Sorting of applications depending on market area etc. is needed" – Case company employee, 2013

"With an information portal we could customize the interface depending on which customer and segment the visitor is." – Case company employee, 2013

7. **Distribution**

How to deliver CCP applications to the end-customer is a debated topic. Many different kinds of distribution alternatives are proposed.

"Exclusive deals with some distributors could be an idea." - Case company employee, 2013

"Distributors main value addition is that they are good at logistics. Software does not require logistics in the same way. There are however also a value-adder who train system integrators about applications." – Case company employee, 2013

8. **Customization**

Since the difference between customer segments varies a lot there are ideas to how the case company can work differently depending on the segment.

"In security we need to work with the efficiency, raise efficiency w/o being mission critical. In other segments, like retail, analytics is driving sales but it is not clear what the case company's role is here. The case company does not own the channel. Two completely different perspectives on getting into this market are:
1. We need an attractive product, customized for retail in order to take on this market.
2. We need to build up the channel first in order to sell the products "
- Case company employee, 2013

9. **Brand name**

Finding a suitable notion and brand name for CCP in order to deal with the confusion around what is meant with CCP and analytics needs to be handled by creating a good brand name.

"The end-customer is not there yet concerning applications. They want intelligent technology, and thus there is a problem of the concept and what word or name to use. But

intelligent technology is negative in the industry, due to previous hypes and disappointments. So what should or can we call it?" – Case company employee, 2013

"We cannot call it CCP, something like the case company marketplace is needed" – Case company employee, 2013

10. Eco-system development

Since the case company is dependent on their partners and the other way around it is important to work towards an optimal organization of the system of stakeholders.

"*It is an eco-system play. The case company needs to create a community.*" – Case company employee, 2013

"The work/cost throughout the value chain that the apps bring needs to be distributed suitably, as an example right now the system integrator has a too complicated installation, there is a need to redistribute the work/make it simpler." – Case company employee, 2013

11. Connect the cloud

A cloud initiative called "the case company technology hosting system" is run at the case company and some connections of how CCP and hosting system can complement each other is given as improvement ideas.

"There is definitely potential to make a connection to hosting and the cloud and draw on advantages that the two create together like subscription. We try to bring the CCP and hosting providers together" – Case company employee, 2013

"The hosting providers could package the CCP solutions" – Case company employee, 2013

12. New separate organization

One of the more radical ideas is to put the CCP in a separate organization. However, the question is then whether this should include applications for all device brands or not.

"Maybe the case company should make a separate company that take care of this. To not get polluted by the current way of doing things at the case company." – Case company employee, 2013

"A solution could be an external company. The case company is unlikely to be the only one with a CCP-like system in the long run. A single marketplace for all these future applications, regardless of device brand, could be interesting." – Case company employee, 2013

Other ideas that were not mentioned by more than one interviewee include incentive structures for the DPs in order to receive better apps, the case company to become an incubator and let the CCP application prices depend on the device model, expensive device with expensive application, cheap device with cheap application.

4.4.4 The case company's CCP plans

The case company has some plans already outlined for the CCP, which create conditions for the further development of CCP. However, the plans are mainly of a technical orientation. The plans should be taken into consideration to evaluate the interplay of the conclusions of this report.

An internal investigation has been ordered and will be delivered in August. The pre-study concerns mainly technical questions (Case company employee, 2013). An update of the technical platform is also in progress and will be released in the first quarter of 2014 when the new firmware that has support for the enhanced CCP functionality will be released (Case company employee, 2013). The plans have a technical orientation but the marketing department has been involved in the planning around the release of the technical update of the platform (Case company employee, 2013).

The scope of CCP application is by many thought to expand. According to a case company employee (2013) the CCP is of strategic importance also with regards to other case company product initiatives. Another employee (2013) also talks about expanding the scope:

"Today CCP is seen as a technology analytic platform, this needs to be redefined into a general platform. Since the strategy is to make this a wider platform - extended CCP - for more applications than only technology analytics."

5. Analysis

The first part of the analysis covers situational factors around the CCP. This section will serve as a contextualization of factors affecting the development of the CCP. The second part concern an analysis of the problems identified empirically. The third chapter contains an analysis of the solution ideas suggested by interviewees, as well as generation of new ideas. The fourth chapter contains an aggregation analysis of the solution ideas and a prioritization of the actions proposed.

5.1 Situational factors for the CCP

This chapter will analyze and highlight key aspects of the case company's and the CCP's situation today. These aspects set part of the structure for future development of the CCP ecosystem, and thus needs to be taken into account. The situational analysis includes the industry and the case company's current business network and the current network effects within the CCP ecosystem. Lastly a comparison between the CCP and other two-sided platforms is presented.

5.1.1 Industry life cycle

Today, the CCP is mainly associated with technology analytics (or intelligent technology) as most applications available fall under that category. It is however important to recognize that the CCP applications operate, and have future possibilities to operate, in a wider context than that of technology analytics. The analytics industry can be classified as in the early stages of the industry life cycle, most likely in between introduction and growth. The key success factors during the introduction phase are innovativeness and credibility (Grant, 2011). Moore (1993) builds on this and claims that cooperation and defining the value of the product with customers and suppliers is key. The case company is strong innovatively but needs to work on the credibility and definitions of the CCP. In the growth stage key success factors according to Grant (2011) are availability and being fast to market. Moore (1993) recommends that established companies stay out of young industries and enter first in the growth stage since it is less turbulent and a lower need of innovativeness is required. The strengths established firms have in the second stage in the industry life cycle is size and power. Dominating key segments is vital and established firms have an advantage in having resources to do this (Moore, 1993).

Another important fact is what kind of adopter categories one is reaching. According to Roger's (2003) adopter categories one can conclude that the CCP has reached the innovators and early adopters and thus will reach the early majority in the near future. Innovators like to experiment, the early majority are more conformists and early majority do not take a lead in adopting (Rogers, 2003). The CCP communication should be developed and adapted to attract each group of adopters as they are reached. One explanation to the lack of scale in sales can be the chasm between early adopters and the early majority that makes innovations get stuck in the adoption process, as described by Moore (1999). The best way to overcome the chasm is described by Moore as a beachhead strategy, where one promising segment should be the initial focus. After success has been proven there, it is easier to spread to other segments. The segments which are best suited for this, in terms of proven success, are ones connected to either security or business intelligence. Given the differences in acceptability and requirements, as well as the ability to get a good return on investment, the business intelligence market is likely the best choice. This will be discussed further in terms of division of segmentation in section 5.3.6.

5.1.2 The case company's network and its effects

Powell (1990) describes network forms of organizations as built upon relations, mutual interests and trust. The case company's business model is built upon a network with strong relationships where trust and loyalty is preferred over contractual agreements. Gadde et al. (2003) suggests that the following three network dimensions should be considered

simultaneously to create a prosperous network: resource- activity- and actor dimensions. Within the case company's network, different actors have resources focused and specialized on different activities that are adapted to each other to together create a scalable and efficient structure. Adaption and specialization of activities does however create interdependencies for all actors involved. However, the case company's strong market leadership position puts many of the network's actors in higher dependency to the case company.

It is however worth noting that interdependencies still exist for the case company, especially regarding the largest actors as well as specialized ones. There are for example a limited number of very large distributors of the case company's products. The combination of these actors being many times the size of the case company and the case company's products being a relatively small part of their inventory skews the power relationship. These interdependencies in the current business model together with Gavin's (2004) notion that any changes in business models are like experiments will have to be taken into account when deciding on altering the CCP ecosystem. If differences are made between the case company's core business model and that of the CCP, the difficulties of running multiple business models (Casadesus-Mansanell and Tarziján, 2012) will raise the complexity of the ecosystem and its interdependencies. Further the risks created by a new business model for the CCP that potentially change the positions and relations in the network need to be evaluated and considered.

5.1.3 Current CCP network effects

Osterwalder and Pigneur (2010) explain that multi-sided platforms are of value to one group of customers only if the other group of customers also is present, and that the value of the platform grows with the number of users attracted. Eisenmann et al. (2006) describes this as cross-side network effects between the two customer groups. The availability of different CCP applications today is limited to less than 30 (Case company, 2013). Numerous of these applications have limited general availability due to geographical constrains and a niche field of use. If each customer's preferences and segment is taken into account, the number of applications available to a single customer drops down to somewhere between zero and ten. As such, the cross-side network effects are low. This is a factor working against the diffusion of the CCP platform. Further, the classification and considerations concerning demand-side customers is complex in the case of the CCP since these can be seen as the distributors, system integrators and end-customers depending on the circumstances and who actually makes the recommendation or decision to purchase.

Lee (2003) describes that supply chains should be developed with clear roles and responsibilities, which can be argued to lower collective action problems. Lee (2003) also states that profits and risks should be distributed in the network. Profits and risks thus need to be considered for all partners, DPs, distributors and system integrators. As an example, there are some indications that the DPs do not have a proportional part of the revenue in relation to the risk taken. This could be part of the reason to why there currently are few firms producing applications for the CCP. Measures to overcome this barrier will be discussed further in section 5.3.

5.1.4 Comparison with other platforms

The Apple App store is an analogy often used internally at the case company when describing the vision of the CCP. Presented below is a table summarizing factors from a comparison of the CCP to platforms from Apple, Autodesk and Rightscale. Network effects, integration risks and multi-homing costs are according to Eisenmann et al. (2006) important considerations for a two-sided market strategy. These are described for each platform in the table below. Further the notion of an open or closed ecosystem is addressed, as explained by Gebert and Boerner (1999).

	Supply and demand sides	Platform products	Notable network effects	Integration risks	Multi-homing costs	Open/ closed ecosystem
Case Company	B2B	Many physical	No customer-side	High	Low	Mainly open
Apple	B2C & B2B	Few physical	Positive customer-side	None	High	Closed
Autodesk	B2B	Few digital	Some customer-side	Low	High	Closed
Rightscale	B2B	Digital	No major	Some supply-side	Low	Closed

Table 2: Platform comparison

The first factor is whether the platform provides consumer products or business products. This creates variance in how the purchasing process works. The second factor concerns what is being sold and what the technology platform is for the app-store products. The CCP platform is a business-to-business platform providing applications to be used on a large array of different physical products. The Apple app-store also has physical platform products, but a much smaller amount. Both Autodesk's and Rightscale's platforms have no physical products. The platform products in the Autodesk case are different software products such as AutoCAD. The Rightscale product is the platform itself. The Apple, Autodesk and Rightscale platforms thus have limited the risk of diluting the platforms by having to adjust each application to many different products. The case company's wide range of products can as such become a barrier that prevents applications from being used across the whole case company product catalogue.

The Apple app store contains many applications that build upon other networks, such as e-mail applications or social networks. The connection to these networks is providing the app store with positive customer-side network effects. The Autodesk example does also have some positive customer-side network effects, mainly stemming from the community built up by the large group of professionals using Autodesk products. The applications available to the case company devices today do not benefit from customer-side network effects since no community exist among the users and these are often competitors that do not benefit from the fact that others adopt the CCP applications.

Integration risks regard, which actors in the value chain have to adopt or accept the platform before the end-users can (Adner, 2006). Apple sells directly to customers, and as such they have a high control of the value chain and no integration risks downwards. Integration risks that only the CCP platform carries are the ones created by the existing value chain with distributors and system integrators. Both distributors and system integrators have to accept the platform.

Homing costs includes all the costs network participants experience while maintaining a position in a platform. Multi-homing costs is thus the cost of using multiple networks or platforms at the same time. (Eisenmann et al., 2006) An example of this is that an Apple app store user would have to invest in both a new device compatible with another platform such as Google's, spend time learning to use the new platform, and invest in the applications once again. The Multi-homing costs for Apple's app store is thus high. The same thing applies to Autodesk's platform, where the applications are customized to the Autodesk software, and participating in another platform would require a full investment in competing software. When it comes to the CCP, many applications available already support competitors to the case company. It is also not uncommon that installed systems make use of devices from different manufacturers in the same systems. The multi-homing cost for participating in platforms other than the CCP is thus low, compared to other platforms where applications are more dependent on system homogeneity.

Implications of low multi-homing costs are that it is easier to switch and loyalty to one platform is low.

A closed ecosystem is one where one or more dominant actors exercise control. One can argue that this brings stability, order and security to a system. Open ecosystems are characterized by less structure and formality that brings advantages of innovativeness, flexibility and quick learning (Gebert and Boerner, 1999). The CCP is a relatively open ecosystem, where the case company exercises very little control on it. Apple contrastingly keeps a very high level of control of their ecosystem. Apple control both content and communication around the app store but also the purchasing process through their use of direct sales. Autodesk also exercise more control over their ecosystem than the case company by using direct sales. The way applications are sold through Autodesk exchange and Apple's app store allows them to control their platforms to a higher degree. The CCP is much more open, and the case company actually does not have the same possibilities to control the ecosystem today even if so was wished.

5.2 Why has the CCP not been a larger commercial success?

The problems identified in the empirical data collection will in this chapter be analyzed with the purpose to determine their relevance and importance. The cause and consequences of each problem will also be investigated.

The empirical data is categorized depending on if the problems originated from an external or internal interviewee and how many interviewees mentioned them. In table three below a summary of the problems identified stemming from external actors in the value chain and internal case company personnel is given. A comparison is made between the two in order to analyze similarities and differences with the purpose to both find important problems that are perceived from both perspectives or less prioritized problems seen from just one side.

External	Internal
1. Low awareness	1. Low awareness
2. Technical limitations	2. Installation, configuration and Integration
3. Installation, configuration & Integration	3. Too many actors in the ecosystem
4. Price	4. After sales responsibility
5. Channel and segment differences	5. Concept ambiguity
6. Low availability	6. Lack of commercial orientation
7. Stuck in technology trap	7. Unclear return on investment (ROI)
8. After sales responsibility	8. Technical limitations
	9. Lack of trust
	10. Channel and segment differences
	11. Price
	12. Low availability
	13. External responsibility
	14. Technology trap

Table 3: Empirically identified problems

As can be seen in the table above, some issues are recognized both internally and externally, while others are mentioned internally but not recognized externally. One should keep in mind that the majority of the interviews were made with internal employees, which partly can explain the more exhaustive list of internal thoughts. The ones encountered frequently both internally and externally are: low awareness and installation, configuration and integration making these potentially more urgent to deal with than others.

Technical limitations, after sales, channel and segment differences and price are mentioned by both sides but with varying emphasis. The differences in how often the problems are mentioned externally and internally are an interesting point of analysis. Most of the ones encountered solely internally, which are: too many actors in the ecosystem; concept ambiguity and lack of commercial orientation deal with how the case company work with the CCP internally and explain why these are not mentioned by external actors. However, the differences in for example

after sales responsibility that is mentioned much more frequently internally than externally could mean that this is solely perceived as a problem internally but not of high concern externally.

As a starting point in the analysis, the internal and external problem areas listed above are categorized according to where in the adoption process they have the largest impact. An overview can be seen in figure eleven below.

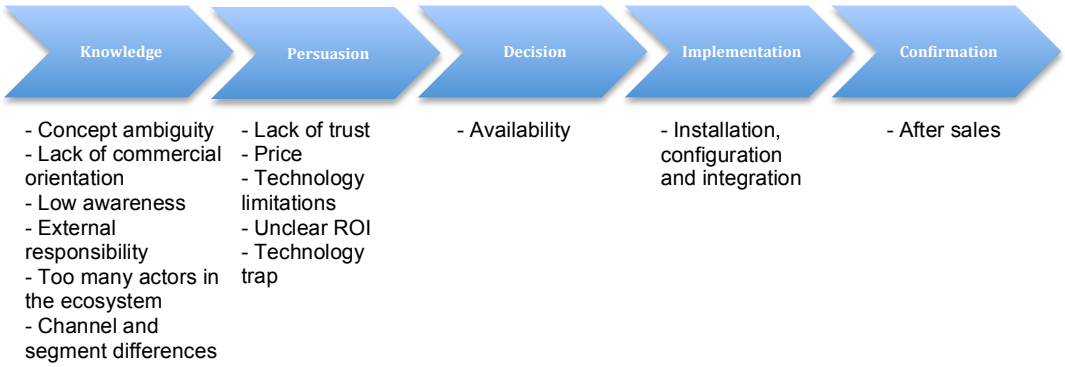

Figure 11: Empirically identified problems classified in the adoption process

The analysis will be performed on each problem identified and it is made with a basis in the literature framework in order to objectively determine the importance or lack of importance of the issues highlighted. The purpose is also to generate further explanations and issues. The problems are evaluated with the following criteria kept in mind:

- Network dimension
- Time frame
- Risk/uncertainty
- Cost
- Further causation of other issues

5.2.1 Knowledge: Concept Ambiguity

Concept ambiguity was brought up both consciously and unconsciously internally. Some interviewees spoke directly of it, but discrepancies in the use of notions between different actors was also identified. One can argue that confusion about the meaning of terms makes it difficult to achieve diffusion. When adding the network perspective on the confusion, where not only ambiguous terms are used internally but also between actors in the network, the ambiguity is likely to increase even more. It can be claimed that the collaboration in the network can suffer since communication and relationship building will not be based on the same understanding. The lack of definitions around concepts also risks becoming even more substantial due to path dependency, mentioned by Sandström (2011) as one of the main challenges with networks. Establishing clear definitions of concepts will be more difficult if different versions of the CCP concept get rooted in different parts of the network.

According to Moore (1993) the success factors in the early stages of evolution of business ecosystems are creating the most accurate definition of customer value and delivering that to the customers. This further implies the importance of solving concept ambiguity as soon as possible.

5.2.2 Knowledge: Lack of commercial orientation

Currently, both focus and resources are mainly put on the technical side of the CCP and the upstream relations in the value chain. A lack of focus on the downstream relations and commercial aspects are evident and likely a cause of low awareness covered in the next chapter.

Internally this problem was well known and even stated to be common at the case company. Since the case company is a technology driven company with centralized R&D, customer value risk to become a lower priority and concerning the CCP is has been stated that it was thought of later in the development process. Becoming too isolated from the market is a risk with centralized R&D highlighted by Sandström (2012).

Working on the business model of the technology developed within a company can be seen as creating a commercial orientation since the customer value proposition is the heart of the business model (Osterwalder and Pigneur, 2010). It has been stated by some internal actors that no business model exist for the CCP, illustrating the lack of commercial focus. The importance of solving this problem can be explained by the following quote from Chesbrough (2010, pp. 354); "a mediocre technology pursued within a great business model may be more valuable that a great technology exploited via a mediocre business model".

5.2.3 Knowledge: Low Awareness

The concept of low awareness refers to that very few actors know that the CCP exist and many of the ones who do know, do not have an understanding of the actual possibilities the CCP give rise to. Further the information that does exist about the CCP is not well designed or easy to grasp. The website that is the main means of retrieving and distributing information was only intended for internal use but became available for external actors even though it does not work properly. Examples of this are that there exist a CCP DP that only has their website in Russian and one of the search functions (numbers of channels) at the website does not work properly which makes it difficult to understand when the applications are appropriate to use.

The issue of low awareness also includes a lack of communication and information sharing internally, as there are not any established channels to use for the CCP communication within the case company. Diffusion of knowledge is one of the most important factors in the early stages of an industry (Grant, 2011). As knowledge is important for the continued adoption process, and a large number of actors lack it, this is a problem of large magnitude. The fact that it was the most frequently mentioned factor both internally and externally further confirms this. According to Rogers (2003) the goal of the first step in the adoption process is to create awareness. The importance of working with creating awareness and creating knowledge is vital since one cannot skip the first step in the adoption process. If awareness is not achieved the actor cannot move on to the next step in the process to later become a user of the CCP.

5.2.4 Knowledge: External responsibility

The issue of external responsibility concerns the unclear division of responsibility throughout the value chain. An example is the abundance of different sales processes. Today the applications are sold through all possible combinations of the distributor, system integrator and end-customer. The consequences are partly that the transaction costs (Williamson, 1985) increase due to a lack of clear purchasing processes. Search and information costs increase with the lack of standardized points of sale. Contracting costs also rise, as they often have to be handled individually with each sale.

This problem does not only refer to the confusion around the responsibility but also the fact that the workload is unevenly distributed compared to the incentives for some actors. For example, the installation process is lengthy and difficult compared to the incentives for large system integrators to learn about specific applications. This is highly important to solve since the integration risks of an innovation concern all the actors that need to adopt an innovation before the end-user can (Adner, 2006). Today the integration risks can be seen as high since the effort is higher than the incentives for some actors.

5.2.5 Knowledge: Too many actors in the ecosystem

In interviews internally, the question arose concerning if there are too many different types of actors in the ecosystem for it to be a prosperous one to participate in. This erodes margins for all participating actors, creating less incentive to join the ecosystem. Eisenmann et al. (2006) explain cross-side network effects and conclude that low participation in one side of a platform leads to less incentives to join the other side. If eroded margins are large enough it will thus hinder the growth of the platform as a whole and the diffusion of the CCP applications.

Too many actors in the ecosystem have internally been stated as a possible reason to inefficiency within the CCP network. An example was given where three weeks of lead-time was added just to get a distributor to add a CCP application into their assortment. The consequences of more actors than necessary is, from a network perspective, increased interdependencies and system dynamics making it more complex (Sandström, 2011). Adner (2006) brings up integration risks as important to consider in networks. Integration risks appear each time another actor has to adopt an innovation before the end-user can. An increased number of different actors in an ecosystem bring more integration risk to it. The large number of different actors in the CCP ecosystem thus provides additional integration risk.

5.2.6 Knowledge: Channel and segment differences

Channel and segment differences are visible in the mismatch between the case company's traditional channels in the security and IT fields versus the new customers of the CCP applications who often not are present in these channels. Both external and internal interviewees mentioned the lack of appropriate channels. Examples of such mismatches include business intelligence applications sold through security channels. Low visibility to customers is a hindering factor to diffusion of innovation (Rogers, 2003). It also indicates higher search and information transaction costs (Williamson, 1985). Path dependence in networks, as explained by Sandström (2011) is likely a cause of this issue. The case company has a tradition and expertise within the Security and IT fields. The current situation with a lack of business intelligence channels is likely not the only new channel that would need development in order to effectively reach the end-customer. Healthcare applications as an example will likely not be bought by security, marketing or IT departments. As such, this is an issue that is important today but will likely grow even more important long-term. Moore (1999) also determine the importance of developing focused channels to reach and dominate specific target groups in order to reach success with high-tech innovations.

5.2.7 Persuasion: Lack of trust

A lack of trust in the technology was only brought up by internal interviewees. The issue revolves around the case company and partners being hesitant to adopt or recommend the CCP solutions due to low trust in it. The issue is likely closely connected to concept ambiguity and low awareness, where too little knowledge of the actual possibilities of the applications leads to misbelief. The most important activity in the adoption process is to reduce uncertainty for potential adopters (Rogers, 2003). At the moment some internal employees drive the diffusion of the CCP whereas others actively reject it. As the case company is an important driving force behind the diffusion of the CCP, it is especially essential that trust exists internally as a starting point, to then spread it externally. Lack of trust must thus be handled as soon as possible in order to make the case company personnel work towards the same goals and spread trust externally as well.

5.2.8 Persuasion: Price

Price is a factor where opinions differ both externally and internally. While it in some cases is portrayed as the one factor to why sales are not higher, it is actually a winning argument in others. The CCP applications have turned out to be the cheapest in some cases. These differences of course depend on many different factors such as the type of application, buyer etc. It is

important to keep in mind that the scope of the CCP applications is very broad which creates a high variety in many factors where price is one of them.

Price is an important factor in two-sided markets where network effects can be hindered if the pricing is not right (Eisenman et al., 2006). It is however worth noting that the purchasing price of the software is just one small part of the whole price. Installation costs are often expensive since the installations are time consuming. Overall, it is the total costs that have to be minimized in comparison to the relative advantage, as described by Rogers (2003), to increase diffusion of innovation. The variance in importance of prices from case to case combined with the difficulty of influencing a third party's price point suggest that price is not a major problem for the case company to focus efforts on.

5.2.9 Persuasion: Technology limitations

Technology limitations have been recognized in both external and internal interviews. Subcategories to this issue include: limited processing power; expensive storage; lack of proactive information on technical updates on the case company firmware and license key management. Concerns regarding low processing power and expensive storage can be explained by Moore's law (Moore, 1965) and will thus be solved with time.

Rogers (2003) names the relative advantage an innovation holds over the technology holds over the one it is replacing as a main driver for diffusion of innovation. The fact that the CCP technology in some ways is limited compared to the technologies it replaces is a barrier for the growth of the CCP. It is however worth noting that the CCP solutions in some specific application areas do not hold any disadvantages versus the technologies it replaces but instead in many ways is superior to them.

5.2.10 Persuasion: Unclear return on investment

Whether the case company should get direct revenue from the CCP is a debated topic internally. Currently, the income from the CCP to the case company consists of increased device sales. The numbers of additional device sales the CCP give rise to is not knows since there currently is no way of tracking this. Some interviewees suggest that the case company should be able to make money on being the only common denominator between their more than a thousand DPs and the tens of thousands of distributors and system integrators. Others think this is inconsistent with the case company's current way of not charging or taking direct revenue from their partners.

5.2.11 Persuasion: Technology trap

That the CCP is stuck in a technology-trap is a concern brought up internally. The platform was initially developed with the technical perspective in mind, without much consideration of customer needs. The technology-trap can be seen as a cause of having centralized R&D that according to Sandström (2012) creates the risk of becoming too isolated from the market. The CCP can be seen as a technology push and many of the other issues like the lack of commercial focus can be argued to be a symptom of this. Verganti (2008) claims that successful innovations need to be based on both market and technology knowledge. There is thus a need of incorporating more market knowledge in the CCP initiative.

5.2.12 Decision: Availability

Low availability of applications is a factor that has been raised by interviewees both internally and externally. Two types of availability will be covered, one is the actual lack of point of sales making it difficult to get a hold of the applications that do exist and the other is the low of range of applications. The issue of availability is partly connected to the previous analysis of channel and segment differences in 5.2.6 and current CCP network effects covered in 5.1.3. According to Moore (1993) defining customer value and delivering it are the most important actions during the early phases of an ecosystem. In order to make something available to the potential

customers, channels are needed, which is one of the building blocks in Osterwalder and Pigneur's (2010) business model canvas. Within the case company current business model there is a need of getting more distributors to take in the CCP applications in their assortment in order to increase the channels for distribution. Grant (2011) states that one of the key success factors in the growth phase is availability. Thus, the issue of availability is considered to be of high importance, especially as sales take off when the competitive advantage lies in availability.

5.2.13 Implementation: Installation, configuration and integration

The basic problem concerning installation, configuration and integration is that it is time consuming and difficult due to a high need of customization and trimming in order to achieve a good result of especially the analytics applications. This leads both to faulty installations when the installation knowledge is low and extra installation costs. Another problem is that installations become even more complex and time-consuming when configuration and integration with other systems are needed. With the increased complexity of the installations the transaction costs in form of contracting and monitoring costs (Williamson, 1985) also increase. With raised costs the relative advantage over other technologies becomes less apparent, which in turn limits the growth and diffusion of the CCP applications (Rogers, 2003).

Complexity is a factor stated by Rogers (2003) that influences the rate of adoption. Innovations that are difficult to understand, implement or use show slower rates of adoption. Rogers (2003) also mentions compatibility with existing systems as an important factor to increase the rate of adoption of an innovation. From this perspective, the ability to integrate the CCP applications into other systems, such as ERP or CRM systems, is an important factor to increase sales.

5.2.14 Confirmation: After sales

After sales responsibility was brought up as an issue by both internal and external interviewees. The issue can be classified as a collective action problem, explained by Sandström (2011). As there are no formal standards or guidelines within the ecosystem, the after sales responsibility varies depending on which actors are involved. The problem lowers credibility since actors do not feel safe in that they will get the help they might need. The CCP DPs rarely have the resources to provide a global support and sales function, while it is often required or expected by other actors. The situation increases transaction costs through higher monitoring and contracting costs (Williamson, 1985). Resolving the issue of after sales responsibility is thus important to improve the trust in adoption of the CCP.

5.3 How can the CCP business model be developed to overcome obstacles?

The purpose of analyzing the solution ideas generated empirically is both to overcome the previously analyzed problems but also to find other, general improvements that will increase the potential success of the CCP. In the analysis below ideas originating from theory will be introduced along with ideas from the empirical data collection.

The empirical ideas are categorized depending on if the idea originated from an external or internal interviewee and how many interviewees mentioned them. Below a summary of two lists of solution ideas stemming from external actors in the value chain and internal case company personnel is given. A comparison is made between the two in order to analyze similarities and differences with the purpose to confirm that the ideas are important from both perspectives or might be less prioritized since for example only internal stakeholders see it as good idea.

External	Internal
1. Marketing	1. Education – DP: Volume sales – DP: Ease of installation – SI: Installation
2. Website – Demo portal	2. Marketing
3. Education	3. Simplification – Standardization
4. License key development	4. Recommendation/Certification – Customer ratings – Formal app certification
5. Recommendation/Certification – Installation certification	5. Lack of commercial orientation – Business development manager
(Strategic status the CCP DPs)	6. Website
	7. Distribution – the case company sales – Role of the distributor
	8. Customization – Develop new channels
	9. Brand name
	10. Eco-system development
	11. Connect the cloud
	12. New separate organization

Table 4: Empirically identified solution ideas

All actors see marketing and education as two of the most important enablers for the CCP. A conclusion from analyzing the empirical data is that the external actors want the case company to take as much marketing responsibility for the CCP as possible. Internally consensus exists that the case company needs to put more resources on creating awareness through marketing and education. Recommendation/certification is also agreed as something important internally and externally. The variation of ideas is vast, with for example formal certification in different categories or customer-rating systems ideas brought up.

Improvement ideas of the website were more reoccurring externally than internally. The fact that the case company personnel do not use the website can explain why it was not as mentioned. Externally the ideas given were creating demo environments and making a separate website for the CCP. Internally the discussion evolves a lot around whether creating an app-store is a good idea or not.

The ideas that were not thought of externally have a different orientation. These ideas are simplification, lack of commercial orientation, distribution, customization, brand name, eco-system development, connect the cloud and a new separate organization. Many of them concern the case company only and/or can only be executed by the case company, like developing a brand name and connecting the CCP with the case company hosting system. Eco-system development is however something all actors could participate in shaping and creating. The lack of external ideas concerning the ecosystem of the CCP could be an implication of the case company's dominant position in the ecosystem.

The solution ideas will below be analyzed and evaluated in isolation with the goal to objectively analyze the importance and viability of them but also generate further ideas. The ideas are evaluated with the following criteria being kept in mind:

- Network dimension
- Time frame
- Cons: Risk/uncertainty and cost
- Pros: Value creation

The innovation-decision process concern not only end-users but also all stakeholders that are needed to adopt the product for it to be delivered to the end-user. In the case of the CCP; the DPs, the case company personnel, distributors and system integrators also go through this process when deciding to adopt or reject the CCP participation. The goal is to find and prioritize solution ideas that will have the effect of lowering the uncertainty for adoption for all actors to be involved.

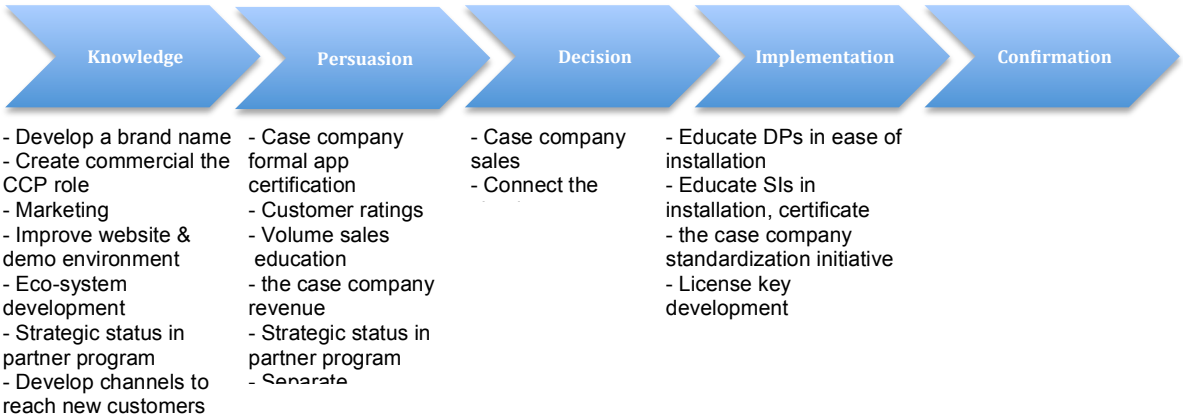

Figure 12: Categorization of empirical solution ideas

The solutions ideas are categorized according to where in the adoption process they have the largest impact. The context of each step and what is needed there to increase adoption will be used in the analysis. An overview can be seen in the figure below. The section about each problem solution ideas begins with a table presenting the problem and the suggested solution ideas.

5.3.1 Knowledge: Concept Ambiguity

Problem	Empirical Solution Suggestions
Concept ambiguity	Develop a brand name

To increase the chance of adoption one of the most important tasks is to lower the uncertainty in the adoption process (Rogers, 2003). Concept ambiguity creates uncertainty and thus needs to be solved. In the buying process the first type of transaction costs are search and information costs (Williamson, 1985). Through lowering these one facilitates for the potential customer to find and understand the concept of ones offering. A brand name is one viable idea that can be used to lower concept ambiguity. Today the CCP is not an official brand name and it is not trademarked. To be explicit regarding the name of the solution a decision should be made of what name to use officially. The brand name should then be spread and information become available for both internal and external actor.

In case a new brand name is chosen, a challenge with this will be that many actors are already familiar with the term CCP. One argument that can be made for creating a new brand name is the fact that the vision for the CCP applications is to be used on more devices than what is implied in the name.

One can reason that by developing clear definitions and work on communicating these to affected stakeholders concept ambiguity should decrease. According to Rogers (2003) it is important to focus on the applications and not the platform when communicating to end-users but also to customize the definitions depending on which adopter category the stakeholders belong to. This can be interpreted as a need of customizing the definition depending on the actor category, like DP or system integrator.

Moore (1993) emphasizes the importance of a dominant player in the early stages of an ecosystem to drive actors to a future vision. Eisenmann et al. (2006) describes the importance and difficulty of setting a platform strategy since there are so many actors involved. When working with a brand name and definitions a coherent strategy and vision for the CCP should be the starting point. One way to communicate a definition is to create a strong brand name that stands for the values and attributes one wants to distribute. Since confusion around what the CCP is and the purpose of it exists internally this implies confusion around the vision and strategy as well.

In addition to the empirical solution idea of developing a brand name, further ideas of creating definitions, a vision and a strategy were developed in the analysis. In summary the suggested ideas to handle the issue of concept ambiguity are:

- Develop a brand name
- Create clear definitions
- Create a vision and strategy

5.3.2 Knowledge: Lack of commercial orientation

Problem	Empirical Solution Suggestions
Lack of commercial orientation	Create a commercial CCP role

To tackle the absence of commercial focus ideas to appoint a commercial oriented role to the CCP team has been given by interviewees. Developing a full time business development manager-role can do this. By creating this role with a clear commercial orientation the prioritization and market knowledge of the CCP initiative should increase. Creating a new full time role does however create a need of funding; one employee can approximately be calculated to cost around 1 million SEK/year (Case company, 2013).

Leveraging internal champions can create further commercial orientation. During interviews with internal personnel some persons have explicitly expressed that they are CCP champions or that they have worked and are willing to work individually on driving and developing the CCP forward. These persons can be classified as change agents that according to Rogers (2003) are valuable in increasing the rate of diffusion. One can thus argue that there is a need to gather these persons to involve them officially in order to both use their potential but also make sure everybody within the case company work towards the same goals.

Hiring a business development manager should be done as soon as possible in order to integrate the market perspective in the daily work with the CCP, which is important for successful innovations (Verganti, 2008). Further the new role should work as a driving force in getting the offer to market. This can be beneficiary for the network dimension as well, since the new role can take responsibility in building and improving relationships strategically important for the CCP downstream in the value chain.

5.3.3 Knowledge: Low Awareness

Problem	Empirical Solution Suggestions
Low awareness	- Improve website - Marketing efforts

In order to increase awareness communication and marketing efforts are needed. Definitions and a commercial role covered above will help to create awareness. Well-developed information and information channels is also needed. Both internal and external awareness will be covered below.

One can argue that common definitions are a prerequisite for communication that will create awareness since the purpose of the product is not known for misinterpreted definitions and thus create no awareness at all. Concerning the internal awareness of the CCP one needs to keep in mind that the case company has over a hundred products, and on top of that continuous new product releases and product updates. It is a challenge to keep the organization up to date with updates concerning specific products. The CCP page on the intranet could be used in this purpose. If it is kept updated with the latest news about the CCP and descriptions of the team behind the CCP it could increase the awareness and involvement internally. A feedback function could also be added to the intranet page so that for example the sales engineers easily can give feedback and ask questions. Working on the intranet page is a task with low cost to carry out. It should be done early in the process since it is a support in creating awareness internally, which is the base of later spreading the awareness to external actors.

Externally, the website is of high concern, as it is currently the only formal means of external communication. The information there should be standardized and developed so that it is easy

to grasp what the CCP and the applications offer. In other words clearly answering what the CCP is, how to use it and why it should be adopted (Rogers, 2003). Customer reference cases that state what return on investment can be achieved can be added to the website as well.

An idea given by an interviewee is to develop demo environments to show how the CCP applications are used. All tools that can be used in facilitating, understanding and spreading the word about the CCP are seen as good suggestions. Both virtual and real demo environments have great potential since they increase trialability, which according to Rogers (2003) increase the rate of adoption. The downside with physical demo environments is that they are expensive to build and run and they have geographical limitations. In this sense virtual demo environments are preferable if these can be developed with high quality and within a reasonable budget.

Increasing external awareness mainly comes down to putting resources on marketing and making sure the information channels are well developed. The channels are the way of spreading awareness and thus of high importance (Osterwalder and Pigneur, 2010). Marketing can be done in all the case company channels, through: press releases, trade magazines, events, e-news, and the website. An idea is to consider timing the marketing efforts with the plans of the general CCP marketing with the release of the new CCP technical update in the first quarter of 2014.

One fact to be aware of is that the CCP and intelligent technology in general is in the early stages of the industry life cycle and the ecosystem life cycle, which means high turbulence (Moore, 1993). Time will be needed to build momentum. However, the case company has the power and experience to drive the maturity of the CCP and could influence to speed this up. This is what the case company did with IP devices. But for this to happen aggressive marketing (Moore, 1993) and developing the information as suggested above needs to be done.

To improve the awareness the following actions can be taken:

- Develop and involve internal actors through a well-designed intranet page
- Improve website
- Develop demo environments
- Marketing efforts

5.3.4 Knowledge: External Responsibility

Problem	Empirical Solution Suggestions
External responsibility	- Eco-system development - Strategic partner program status

The CCP actors can be classified according to the roles of business ecosystems introduced by Iansiti and Levien (2004), where the DPs are niche players, since they produce focused complementary products. A keystone player is an enabler of a well-functioning ecosystem whereas a dominator focuses on extracting as much value as possible from the ecosystem (Iansiti and Levien, 2004), the case company should strive to be a keystone player who gives credibility as a point of reference and robustness to the system. Today the case company is probably a mix of a keystone and a dominator.

Both definitions of the roles in the value chain along with the communication of these are needed to create a well-defined division of responsibility in the ecosystem (Lee, 2003). Norman and Ramirez (1993) build on this and claim that successful companies create social innovations by defining new roles and ways of designing business systems to create value. However, this is difficult to achieve since no one actor can decide over other actors in an ecosystem (Sandström, 2012). One can argue that conditions can be created to influence towards a specific outcome.

One idea of how to achieve this is to create a strategic factor in the partner programs, both for DPs and for distributors and system integrators, with the purpose to increase their status. This strategic factor is supposed to distinguish the important and small CCP partners that today are not prioritized since the only factor determining the attention these partners get is high sales. The idea is to give for example CCP developers and system integrators support and attention through this strategic factor.

To work more generally with the network, the case company should strive to create a community feeling built on trust and collaboration (Powell, 1990; Zott, 2010). It is important to distribute not only the work in the value chain but also the profit and benefits (Lee, 2003). In order to create a division of both responsibility and benefits within the value chain it is important to evaluate not only the actors but also activities and resources (Gadde et al., 2003). Resource heterogeneity is classified as high in the case company's network, as an example the CCP developers have niche software skills compared to the case company's focus on hardware. Concerning activities it is important to adapt ones activities to the activities of others in the ecosystem (Gadde et al., 2003). An example of adaptability is the increased status of the CCP involved actors, mentioned above. Lastly, the actor dimension concerns juggling control for aligned goals and freedom for innovation and responsiveness. The case company should work on becoming a keystone ecosystem player and through that create an increased community feeling and trigger the ecosystem. More explicitly, one can argue that one can trigger the ecosystem by showing devotion and long-term commitment by for example putting resources on marketing the CCP and through that lower the barrier for actors to join.

Rogers (2003) declare that to increase diffusion of an innovation the uncertainty for potential adopters should be decreased. One should however be aware of that there exist a conflict in decreasing uncertainty but still fostering flexibility and creativity (Gebert and Boerner, 1999). The correlation between ecosystem development with the purpose to achieve various types of applications and actors that coexist in an agile and innovative environment is negative to the multiple ideas of creating credibility through control and clarity by introducing criteria and certifications. The risk of slowing down the innovation in the ecosystem arises since formality and control also increase bureaucracy.

5.3.5 Knowledge: Too Many Actors in the ecosystem

Problem	Empirical Solution Suggestions
Too many actors in the Ecosystem	Evaluate the role of the distributor

The idea of how to solve the issue of too many actors in the ecosystem is according to many internal interviewees to remove the distributor. Some argue that they are not necessary when distributing software. This leaves room for better margins elsewhere in the value chain. Such margins could help improve profitability, prices and in turn cross-side network effects by attracting new customers to both sides. The integration risks would also be lower and less effort needed in making sure that all actors needed adopt the product before the end-user.

Lee (2003) argues that different supply lines should be developed for different kinds of products to most effectively reach the end-customer. The CCP applications have, compared to the case company's core products, completely different characteristics. Interviewees have questioned the appropriateness of having distributors who specializes in physical cargo also handle software. However, the distributors still contribute with value through being a creditor, a prolonged educational and sales arm and bundling the software with physical devices.

Removing the distributor means taking on a different business model compared to the core business of the case company. The difficulty of both changing and running multiple business

models is highlighted by (Chesbrough, 2010; Garvin, 2004; Casadesus-Mansanell and Tarziján, 2012). The distributors are still crucial for the case company's core products, and the suggestions of excluding them from the value chain has only been in respect to the CCP value chain. Regardless of whether they are excluded in this part or not, they will still be part of the case company's key partnerships for the core business. Sandström (2011) mentions interdependence and system dynamics as two of the main challenges with networks. The case company's continued dependence on distributors even if they were excluded from the CCP value chain is a major interdependency that has to be taken into account. The system dynamics that give rise to uncertainty, complexity and unpredictability (Sandström, 2011) further makes the decision of excluding the distributors from the CCP value chain risky in regards to the case company's core business. Chesbrough (2010) and Garvin (2004) explain that new business models can encounter barriers to adoption in terms of resistance if conflicts with existing business models exists. In this case it is implied that excluding the distributors for channel efficiency could have negative effects like internal and external resistance that can decrease the rate of diffusion.

Gadde et al. (2003) describes that some level of control is needed for an aligned evolution in a network. An exclusion of the distributor in the CCP value chain would lead to a less open ecosystem, where the power of the distributors would be moved to system integrators and to the case company. This, together with the other factors above, creates incentives to create a value chain without distributors. A solution where the benefits could be reached without the negative aspects could be to passively let the distributors fall out of the value chain by making them obsolete through technological advancements. The value adding activities distributors do today can possibly become automated or eliminated through standardization, thus making the distributors naturally fall out of the CCP ecosystem.

There is no simple or clear solution of decreasing the number of actors in the ecosystem even if the benefits of doing so could be high. The risk of eliminating the distributors is high. Another question is how much power the case company has concerning eliminating the distributors unless they start selling the applications themselves. It can be claimed that the power of changing is low due to collective action problems.

5.3.6 Knowledge: Channel and Segment Differences

Problem	Empirical Solution Suggestions
Channel and segment differences	Develop channels to reach new customers

There is a need of creating new channels to make new customer segments aware of the CCP offer. The analytics industry, which is a large part of the CCP offer, has been classified as an industry in early stages of the life cycle by industry reports. The CCP users can be argued to be in between the adopter categories innovators/early adopters and about to reach the early majority. In this stage, with these adopter categories, the method to scale sales is to use the crossing the chasm process (Moore, 1999).

Crossing the chasm includes selecting a smaller target market, a niche to start with and conquering that one first (Moore, 1999). The point is to start with a segment where the competitive advantage is high and customize the offer to that segment. The retail segment has a high acceptance for analytics and return on investment is often easily achieved. This has made many of the CCP applications within business intelligence applications successful within the retail segment. Hence it would be a good beachhead. However, retail is the segment where the case company today lacks channels. Developing new ones take time and it is costly.

The following steps in the chasm process are developing a complete product offering, defining your position and launching your product (Moore, 1999). Important areas in doing this successfully is to make sure all is in place for the niche customer to buy, for example the education and training, which is relevant for the case company due to the low awareness and understanding of what the CCP is. The idea is to define oneself as the leader in this niche, which the case company can do by marketing their solutions to the retail segment. Lastly when launching, direct sales is recommended as the best way of approaching customers since more control is given to the own company.

Awareness of the need of new channels should be created as soon as possible. It should be created both internally and with partners so that all can keep their eyes open for new potential collaborations. A more time consuming solution, which can be achieved long-term, is to work with the current channels to educate and develop them in the differing needs of buyers they currently do not serve.

5.3.7 Persuasion: Lack of Trust

Problem	Empirical Solution Suggestions
Lack of trust	- Case company formal app certification - Criteria - Customer ratings

In the early stages of the industry life cycle, which the CCP can be classified as being in, the key success factors according to Grant (2011) is diffusion of knowledge and credibility. Here the case company has an advantage with its strong brand name and large stable organization. However, the case company needs to actively work on creating credibility. This can be done in different ways. Ruyter et al. (2001) claim that trust and commitment can be created in high-tech markets by working with offer characteristics such as performance and relationship characteristics such as cooperation and communication. Rogers (2003) state that trust can be gained by customizing solutions to end-users' specific needs.

By working on the offer characteristics the case company can create mechanisms specific for the CCP, for example certifications to enhance credibility and thus include a kind of guarantee in the offer. Communicating a clear focus and investment in the CCP, with the purpose to show commitment to the future progress of the CCP is an idea of how to work on the relationship characteristics. The case company cannot afford that actors think that the CCP initiative is something that the case company may abandon any day.

Certifications increase qualitative network effects by working as a quality screening mechanism, which is important for platforms (Li and Pénard, 2012). Certifications can be made in different ways and be both formal and informal. Formal certifications can be argued to clearly and officially increase credibility. An idea would be to solely certify critical security applications since they are the ones appearing to have the largest need of credibility. This would however be a risky action but if a few critical applications can be tested in-house and close partnerships formed with these application developers it could be a feasible option of how to persuade security users in starting to use the CCP applications. But the case company could get blamed if a certified application would fail. This would threaten the case company's brand of being a quality player. It also involves much work and resources. A risk assessment covering legal aspects would be needed along with calculations of the investments required would be needed in order to make a thorough decision.

One can argue that the case company already indirectly gives the applications an informal certification by simply keeping them on their website as it is today. Since the external actors do not know what kind of involvement and responsibility the case company has taken when bringing the applications to their website. There is a risk today that this actually decreases the

credibility for the CCP and the case company since the website does not give a good impression and the customers might believe that the case company stands behind the applications more than they actually do. Transparency would solve the grey zone of what statement the case company has made by keeping the applications on their website. Transparency could be created by using a set of criteria that needs to be met in order to be published on the website. These criteria could also be available for potential customer so that they become aware of the case company role in approving the applications.

The criteria for certification could concern the application itself, the installation process but also the company having produced it. Creating and evaluating the set of criteria is a costly task. Making sure the companies lives up to the criteria creates monitoring costs. But this would strongly decrease the transaction costs for the potential customers since the case company would partly take care of the contracting, monitoring and enforcement costs by working with standardizing the application sales (Williamson, 1985). Examples of criteria include:

- Language requirements
- Requirements on applications user interface
- Learning material

To further develop the criteria, an interesting idea is to develop different level criteria. This would make it possible to categorize applications and allow a larger range of applications through for example clearly stating that some applications are new and untested whereas others have gone through an extensive checklist and have been used by a certain amount of customers. Attractiveness will then vary depending on the actor and their adopter category. The ones who are innovators that accept risk and are willing to try out new things can do it at the same time as others can choose safer and better-tested applications.

In addition to certifications and criteria the idea of creating a customer reference system was made. Through recommendations from users a rating system can be created which also brings credibility and lowers the uncertainty for the potential customers. Moore (1999) states that potential adopters reference each other in their adoption decisions, speaking for a reference system. The prerequisite for this to work and give trust is an installed base of customers willing to make recommendations.

5.3.8 Persuasion: Price

Problem	Empirical Solution Suggestions
Price	Education in volume sales

Empirically opinions varied in whether pricing was seen as a large problem or not. Independently of this, if lower prices can be obtained the relative advantage towards competing solutions will increase which could increase the rate of adoption (Rogers, 2003).

An empirical idea of how to influence the value chain towards lower prices is through education. Moore (1993) states that it is an important part of being a leader in an ecosystem to drive the development towards a certain vision. Education can be a part of driving the ecosystem towards a common goal. Education can also be argued to reinforce relationships and promote cooperation, which is important in well-functioning networks (Powell, 1990). The case company has revolutionized their industry segment by educating and shaping the IP device market. Now this needs to be done concerning the CCP as well. The case company has the power to create and shape the market through education. Since education is an activity the case company is used to and has executed when driving the shift from analogue to IP devices this seems like a viable idea. The case company's current education packages are called case company academy and a CCP module could be added in the academy.

In terms of affecting price it is a volume sales education that could be delivered to the smaller DPs but also to other partners like smaller niche system integrators. The case company's focus is volume sales and they know how to think around this theme and the CCP developers are small players who are used to providing highly customized solutions to their customers. An educational module in the basics of volume sales can create awareness and shift the focus of the CCP developers. But since the issue of pricing not has been evident as one of the most pressing concerns the prioritization in educating DPs in volume sales is not seen as the most urgent one.

5.3.9 Persuasion: Technology Limitations

Problem	Empirical Solution Suggestions
Technology limitations	- Time - Strategic partner status - License key development

There exist two types of solutions to the different types of technical issues. Limitations due to low processing power of the device will simply be solved with time supported by the theory of Moore's law (Moore, 1965), which makes the processing power increase as the cost for it decreases. So there is really nothing that the case company actively can do to solve these types of technical limitations. The majority of the actors who highlighted technology limitations also stated that they were confident that this would be solved with time.

The other category, limitations due to the lack of information about updates of the case company's firmware to the CCP developers, which causes bugs in the applications, is something that the case company can take action on. An idea already suggested in chapter *5.3.4. Knowledge: External Responsibility* is to increase the status of the CCP developers in the DP program which could mean that they get information about updates in advance so that bugs can be avoided. A higher status DP program brings additional costs for the case company but it can have a positive impact on the amount of applications available, which is important to get the ball rolling for the CCP.

Another issue the case company can work on solving is the trouble with the license key system. Since the scope of this report not is the technical parts this will not be further discussed but since many external actors have seen this as a hazard it would be a good idea to develop a better system for handling the license keys.

5.3.10 Persuasion: Unclear return on investment

Problem	Empirical Solution Suggestions
Unclear return on investment	- Platform participation fee - Percentage of application sales

Due to the lack of data concerning the correlation of the CCP application sales and device sales it is difficult to make an objective analysis of whether the device sales have increased with the CCP. Concerning the idea of the case company receiving direct revenue from the CCP, one should consider the fact that the case company is one of the most dominant players in their ecosystem today. In terms of Iansiti and Levin's (2004) classification of ecosystem players one can argue that the case company can be seen as a value dominator. If the case company would chose to charge money for the CCP through a percentage of sales or some a platform participation fee the case company dominance would increase, which not always is positive. Already the margins of the software developers are low, even for technology management system developers who have a larger market and are more mature companies. The risk is thus high that the ecosystem is starved and destroyed which would kill the innovativeness and variation of the CCP applications.

The only situation where case company direct revenue from the CCP could be motivated is if the case company clearly creates value in the value chain through for example increased credibility through certifications or increased availability through an online marketplace. This is further analyzed in a later chapter *5.3.12. Decision: Availability.*

5.3.11 Persuasion: Stuck in Technology Trap

Problem	Empirical Solution Suggestions
Stuck in technology trap	Create a new organization that takes care of the CCP

The case company has a technology driven tradition. One can argue that the case company is limited by the path dependence created by their focus on hardware and technology. To overcome this, an idea is to start thinking in terms of offering a solution and not just state the technical characteristics of the product when defining the value proposition for the CCP.

Moore (1993) explains that the established organization can hinder a new innovative initiative of realizing its potential due to getting stuck in the old way of doing things. In order to avoid the path dependency and hinders of the established organization's way of doing things, ideas of creating a separate organization for the CCP has been given. However, Gavin (2004) states that organizations need to find the right match between independence and integration and that separate organizations do not work for long. One solution to finding this balance is to create an ambidextrous organization that means a separate organizational unit tightly integrated solely on a higher management level (O'Reilly Ill and Tuschman, 2004).

Concerning the case company the cost and risk are unknown for creating a separate organization. In network terms one can argue that risks exist of getting partners of high importance for the case company unwilling to give a smaller decoupled corporate start-up the help and support that would have been given if kept as a part of the case company's established organization. Since the large case company organization gives credibility and stability, creating a separate organization might increase the uncertainty for adopters, which is the opposite of what should be strived for. Putting effort in finding a middle-way suitable for the case company and the CCP seems like a viable idea. One way of doing this could be to let the CCP be a separate unit within the current organization, which only is integrated on a senior management level.

5.3.12 Decision: Availability

Problem	Empirical Solution Suggestions
Availability	Case company sales or distribution platform for applications

The analysis of a possible case company sales or distribution platform will take a starting point in the issue of availability. With a limited number of demand-side customers available, the platform is less attractive to adopt for supply-side customers as well, which in the case of the CCP are the DPs. Eisenmann et al. (2006) describes such vicious cycles to be common in the early stages of multi-sided platforms. To overcome this barrier it is often required to initially subsidize one side of the platform. Osterwalder and Pigneur (2010) explain that the key issue is whether the platform can attract sufficient number of customers for each side. Official subsidization efforts of either sides of the CCP network were not found. Internal champions working to promote applications, both inside and outside the case company's organization, did however exist. Such championing, although not official, has been very valuable marketing and sales efforts for the developers (supply-side) of applications. Thus, the supply-side of the platform is in fact indirectly subsidized today while the demand-side is not. The question whether this is the right side to subsidize or not becomes more complex considering that the platform consists of more actors than developers and end-customers.

Between the supply-side and the end-customer in the CCP there are currently two more actors: distributors and system integrators. As mentioned in the previous paragraph, this makes the question of who to subsidize in the platform more complex. Eisenmann et al. (2006) describes integration risks as risks connected to other actors having to adopt the platform for it to work. The large number of actors prevalent in the CCP brings integration risks at many stages in the value chain. As such, subsidization within the platform should take into account both price sensitivity of actors, integration risks regarding each actor and the required amount of actors needed in each step.

The system integrators and distributors are both buyers and suppliers. Further, the purchase decision sometimes rests with the end-customer. At other times the system integrator sells a complete solution to the end-customer where the actual application purchase is made by the system integrator. As such, the current state regarding supply- and demand-sides is difficult to pinpoint and an analysis of subsidization will need to be made on an actor level. Eisenmann et al. (2006) describes that it is often the most price sensitive actor in a two-sided market that needs to be subsidized for the cross-side network effects to grow large enough to create a stable platform. The question of who that actor is and what form of subsidization that should be made will need to be investigated further. Whatever subsidization is made it should be made officially and not through personal relationships.

That the case company should start selling 3rd party developed applications has been repeatedly suggested in interviews internally. Such a solution would create a more closed ecosystem, where the case company would have more control (Peltoniemi and Vuori, 2004). More control can help to increase the rate of diffusion (Moore, 1999) and would mean more control over both applications and other actors in the ecosystem. Control can also create negative effects, as it can lower responsiveness and innovation, particularly if one actor becomes too dominant (Iansiti and Levien, 2004).

Adner (2004) brings up interdependence and integration risks as important to address when creating or changing an ecosystem. The interdependence in a closed CCP ecosystem would make actors become more dependent on the case company than they are today, while the case company's dependence on other actors would become lower. Increased interdependencies for others in the network would increase lock-in effects for these actors to the case company. Regarding integration risks there are actors who would oppose an increased level of control in the CCP ecosystem, especially so if that would hurt their margins. The value created by the case company by forming a distribution or sales platform needs to be higher than a potentially lower margin for other actors. Resistance could however cause both increased costs for implementing a new system, as well as hurt the cross-side network effects should actors choose not to adopt the new solution. Such risks are likely to be higher for the case company with a sales platform compared to a distribution platform, as interdependencies are higher all over with the former.

Gadde et al. (2003) describes that some level of control is needed for aligned evolution in a network, but that too high level of control hinders innovation and responsiveness. To what extent a higher degree of case company control would create value is difficult to pinpoint due to the sheer complexity of the network. Clearer benefits regarding a more closed ecosystem, where the case company sells or distributes applications, are however evident regarding transaction costs. Williamson (1985) divides transaction costs into four different categories. Search and information costs would be reduced if all applications were available at the same place. Contracting costs would be greatly decreased if the transactions were standardized. Monitoring costs could however increase. Many applications today require support from the developers to be installed and kept running. Contacts between the developers and buyers of applications would as such have to be created through another channel than the transaction itself. Regarding enforcement costs, a more closed ecosystem opens up the possibility to standardize

enforcement measures. The cost to standardize and create such is however something that would have to be taken into account.

During internal interviews, the costs of creating a legal framework and organization behind a global 3rd party software sales department of the case company were estimated to be substantial and alone outweigh any benefits of handling the sales. Casadesus-Mansanell and Tarziján (2012) further states that running multiple business models is very difficult. Despite this, enhancing availability, credibility and increased control over the network by forming a sales or distribution platform could provide key benefits and factors of scalability. A delivery platform would likely carry lower legal costs compared to a sales platform. There is also a possibility to build a cloud-based delivery platform for more efficient delivery. Such a solution could be connected to the case company cloud hosting system.

For the case company to start selling applications would require investments in building a sales and/or a distribution mechanism, which would also take time to realize. The costs would have to be valued against the value addition to the ecosystem and to what degree the case company can capture that value. Given the small size of the ecosystem today, the costs are likely to outweigh the benefits. However, with time and with a thorough investigation concerning the costs of a case company sales platform it could show to be a viable option. A delivery platform does provide a lot of the benefits that a sales platform does, but with lower risk and lower investment in legal costs. Such a delivery platform could also help scale sales of the CCP applications in the growth phase thanks to increased availability and credibility of applications.

5.3.13 Implementation: Installation, configuration and integration

Problem	Empirical Solution Suggestions
Installation, configuration and integration	- DP education in ease of installation - Case company simplification initiative - SI installation education and certification

The issues concerning installation, configuration and integration was perceived as a problem by many actors both internally and externally. Suggestions that have been proposed to fix this stem mainly from interviewees inside the case company. Efforts to reduce the complexity of the installations should lower the total costs, and thus increase the relative advantage over other technologies, which should increase diffusion of the CCP applications (Rogers, 2003).

One suggestion in handling the complex installation process is to educate DPs in standardization and building products for ease of installation. Connected to this suggestion is a proposal that the case company should create criteria of standardization of applications with the purpose of reducing complexity. Such a measure would address the same parts of the problem, just with different measures. Due to the fact that this would be a proactive measure to eliminate future problems of the same kind, it should be acted on as soon as possible. Education gives rise to costs but these are limited since the number of the CCP DPs are currently below 30. This idea is classified as a valuable one since it should make the installation and the products easier at the same time as the relationships with the CCP DPs are improved through the attention and education given to them.

The issue of conformity versus innovativeness discussed previously in the analysis needs to be considered for all ideas about education. New combinations give rise to a larger amount of possible innovations (Schilling, 2011). By limiting developers' frame of reference through what is possible to sell, one would also limit the spread of future applications. Similarly, guiding DPs efforts to some specific areas could potentially lead to fewer new the CCP applications, as focus will be lifted from other areas to the ones pushed by the case company.

A second measure proposed is to educate system integrators in CCP installation, which would also improve the relative advantage through more effective installations and avoidance of faulty installations. It would however have little effect on the factors of compatibility and complexity. Education of system integrators does also carry a cost. When the amount of system integrators are considered, the case company works with more than 55 000 system integrators globally, compared to the low number of the CCP application developers, the relation of how expensive educating the system integrators can become is evident. Thus, the recommendation is to start with simplifying and standardizing, as well as educate the DPs in standardization and the importance of ease of installation, configuration and integration of applications as a first step. This action can, with smaller funds, create a large difference and with time the case company can develop education for the system integrators that can be incorporated in the current the case company academy modules.

Another way to make the installations more efficient is to clearly state on the website or in product information what is needed in terms of knowledge and equipment to make the installation. This could be done through a rating system where the complexity of installation is declared. This would serve as an incentive system for the DPs to facilitate the installations of their applications.

Some smaller, specialized system integrators fear becoming less important through standardization and simplification. Their key competences of customizing specific solutions to complicated applications are what differentiate them today. These specialists have in some cases proven to be very important for both sales volumes and information spread. As such their role is currently important. A transition to a more standardized and simple environment brings an integration risk in regards to the specialists. A way to cope with this is creating a strategic factor in the partner program, which was discussed further in section 5.3.4. Knowledge: External Responsibility.

5.3.14 Confirmation: After sales

Problem	Empirical Solution Suggestions
After sales responsibility	None

The issue of unclear division of after sales responsibility can be classified as a collective action problem, as described by Sandström (2011). A solution for such problems can be for a dominant actor to push a decision through (Gadde et al., 2003). As the leading actor the case company should thus take a prominent role in the standardization of the after sales responsibility. Gadde et al. (2003) states that some degree of control is needed for an aligned evolution of a network. It is however unclear if the case company holds enough power over the ecosystem to do this, even as the most dominant actor. There are currently no channels through which such standardization can be made effectively. With solutions discussed above, such as a sales- or delivery-platform, more ways to standardize after sales responsibility would be open.

5.4 Aggregated analysis and prioritization

The first step of the analysis consisted of a separate analysis of the different problems and solution ideas as has been shown in the chapters above. The chosen format was the five-step adoption process described by Rogers (2003). In order to analyze the problems and solution ideas collectively three dimensions were chosen as a categorization of the exhaustive data with the purpose of making them easier to grasp. These dimensions are organization, network and information as can be seen below.

One can see the categories on a scale from internal to external issues. Organization treats issues of how the case company could work internally and what problems exist and what changes should be made. Network consists of the interrelation between the case company and its partners, how responsibility should be divided etcetera. The last category, information concerns how to build information channels and what communication is needed to flow between the actors in the ecosystem. This categorization can also be seen as a base for prioritization since it is argued that the internal organizational actions need to be handled primarily, then the responsibility of actors in the network and lastly information about the previous decisions and how to proceed.

A further categorization was made in order to prioritize the factors. The dimensions are two-folded, urgent and visionary. This categorization was made with inspiration from Furr and Ahlstrom's (2011) concept of developing a minimum viable product and the effectuation principles introduced by Sarasvathy (2001). Starting a new business is like an experiment, by getting it to market fast one can learn and improve with time and lower the risks of high investments on "the wrong thing" (Nathan and Furr, 2011). The idea in brief consist of acting upon the market instead of trying to predict it and simply getting to market fast with a good enough product instead of developing something into guessed perfection through a lengthy process. In accordance with this reasoning, the solution ideas are developed in different phases. A primary phase called urgent with the goal of getting to market fast through cheap initial improvements and learn during deployment so that the second phase, called visionary can give rise to further improvements on a more long-term basis.

A quote from a case company partner responsible demonstrates the idea as well:
"First to market is important. Take what we have and market that as a start." –Case company employee, 2013

5.4.1 Urgent actions

Within organization the most important problems are determined to be a lack of commercial orientation, concept ambiguity and lack of trust. The solutions of high priority is thus hiring a business development manager and creating definitions, a vision, a strategy and a brand name. Thoughts of how these can be developed are given below:

- **Definition:** Adapt definitions to each actor**;** general platform for DPs, more focus on the solutions for the end-customer.

- **Vision:** Case company products will be chosen due to its offering of the most flexible options for software applications.
- **Strategy:** Develop incentives for all actors in the ecosystem to work to develop the CCP.
- **Brand name:** Make sure it does not limit the future vision. For example: "Case company Edge". There is a risk that the current name is limiting.

Both the business developer manager and working on the definitions, vision and strategy is claimed to enhance the trust of the CCP internally. By lowering confusion and increasing the commitment to the CCP, credibility internally should increase.

Within network the unclear external responsibility and low availability is seen as the most pressing problems and thus the solutions to these are creating a strategic factor in the partner program and developing new channels within business intelligence. Here one should notice that the faster and less expensive option is to start doing this for the CCP DPs since they are less than 20 companies today. The idea is that this with smaller funds will create a larger leverage than if the same thing would be done for the system integrators that are tens of thousands more in numbers. Further, to tackle availability the development of channels within business intelligence solutions and especially within the retail segment is to be pursued. An example of this is to initiate partnerships with point of sales vendors.

Within information the more urgent problems are low awareness and the information regarding installation, configuration and integration. The solution paired with these issues are website development, marketing efforts, education and standardization.

Developing the website is of high priority since it is not well functioning today. The risk is that the impression from the current website creates an opposite effect and credibility of the CCP is lowered. The website could as a first step be improved by developing the layout and the information about the applications, making sure simple things like that all applications have information in English or are just shown in the countries in which the available languages are spoken. The visual appearance of the website can be enhanced to give a professional and more interesting impression. An easier search function should be developed since today one search criteria does not work well, it is the *numbers of channels* that does not add value and is malfunctioning. Further, reference cases should be added for all applications. Inspiration can also be taken from Autodesk Exchange that has a store for their applications.

The case company market through press releases, trade magazines, events, e-news and their website. Efforts in as many of these means as possible are to be strived for in order to increase visibility. Currently marketing efforts are planned for the technical update of the CCP in the first quarter of 2014. One can argue that it is a good idea to combine the effort in marketing the technical update, even though this is mainly of concern for the DPs, with the newly set definitions, vision and strategy concerning the CCP as introduced in the network dimension.

Concerning the information regarding installation, integration and configuration that is complicated and communicated in various ways, education and standardization is a first step of improving it. A case company academy for DPs in volume sales and standardization should be initiated. With the same reasoning as starting with a strategic factor for the DP partner program the education can also be done with smaller funding and create a leverage if started with the smaller group of the CCP DPs.

All suggestions given to urgently deal with the organization, network and information categories are calculated to need investments of 1,5 million SEK/annually. By briefly looking into the economics of this, a calculation is made of how many additional devices would need to be sold each year to cover the investment. By exemplifying this with the margins originating from the

devices supporting CCP applications, about 2000 additional channels would need to be sold, which compared to one CCP developer who sell 6000 channels a year, does sound like a viable investment.

The pros with the approach of urgent action is to leverage investment, hopefully increase sales fast and learn from the market's reaction to the improved CCP solution. Business intelligence is in itself is a growing market with large potential and thus further motivate the direction of focusing on business intelligence solutions within retail.

The cons with the urgent approach are that there is a risk of path dependence where it will take more efforts to change the direction later. This risk is however argued to be lower than the costs of waiting to develop more complex solutions for the "new the CCP" which consist of not realizing potential sales and bad will from not correcting what does not work at all today. One should also be aware of the time and cost associated with creating new channels. The new channels are thought to be needed in the future anyway and thus need to be initiated as soon as possible. Critical uncertainties with the package of urgent solution ideas that should be investigated more thoroughly are actual numbers of the market possibilities within business intelligence and the time it will take to build new channels.

When prioritizing the actions the general approach is to start by improving this internally in the organization dimension and then network and lastly information. However, as an example the website is of immediate need of improvement. Below the actions are prioritized with the first as the most critical:

1. Hire a Business development manager
2. Create definitions, vision, strategy and decide on an official brand name
3. Improve the website
4. Create a strategic factor for the CCP DPs in the partner program
5. Develop business intelligence channels
6. Marketing efforts
7. Volume sales and standardization education for DPs

5.4.2 Visionary actions

The visionary actions and their interplay are in general more complex and give rise to potential larger changes than the urgent ones does. The emphasis is laid on the urgent actions since they can solve the most pressing issues. The inputs that will be given from developing the CCP through the urgent actions can be used to understand and shape the visionary actions at a later stage. Hence, many of the visionary actions need further investigation after the urgent actions are realized.

Within organization on the visionary dimension the issues treated are availability, lack of trust and unclear return on investment and technology trap. Solutions suggested are case company direct sales through a case company marketplace, case company direct revenue, certification and customer rating systems and a new separate organization.

A case company marketplace can be argued to improve availability, credibility and enhance control for the case company which then should improve the lack of trust internally as well. Concerning the issue of unclear return on investment it has previously been stated that the case company should only take direct revenue if value is created in the ecosystem. Direct revenue is made possible by creating a marketplace since enhancing availability and credibility creates value. The idea is an online marketplace that facilitates for the distributors, system integrators and end-users to find out about the applications, get them delivered and possibly make the economic transaction as well. Through the marketplace the case company would gain a higher

degree of both product and process control, since the products chosen to be in the marketplace can be evaluated and the case company would control a larger part of the purchasing process. One should be aware of that a marketplace can take many forms; distribution and economic transactions do not have to be intertwined. An example would be that the case company gathers the applications and distributes the license keys but the economic transaction is still made directly to the CCP DP.

Certification is a viable idea in order to increase trust in the value chain. An idea is to certify a smaller amount of security applications, which can bring a faster market penetration in the security segment. Product control would also increase and give the case company more influence in the innovation diffusion process. The risks and costs are however unclear. Legal factors, technical feasibility along with the investment in creating and running a certification practice need to be investigated. A customer reference system is in this case easier to implement since the case company's role is solely to build up the infrastructure of the system.

The issue of being stuck in a technology trap can be handled by creating a separate organization for the CCP, so that the mentality of the case company's core business and technology focus can partly be avoided. This idea is closely correlated with the degree of change that is made compared to the case company's established business model. The larger changes, the more relevant a separate organization or an ambidextrous organization that is a mid-way of separation would be.

Within network on the visionary dimension the issue of too many actors in the ecosystem is covered with the solution of evaluating the role of the distributor. This issue is a complex one since it creates risks outside of the CCP and could potentially affect the case company's core business negatively. Therefore further investigations are needed in the potential scenarios of eliminating the distributor. Another fact is that it is really only if a case company marketplace is created that real power exist in deciding the role of the distributor.

Within information on the visionary dimension the same problems as in the urgent dimension are apparent; low awareness and information regarding the installation process. Solution ideas to further develop the website with demo environments and system integrator education are given. The website can be further developed with ideas like customization depending on which segment the visitor belongs to and which type of actors. Demo environments include both virtual and physical ones. Since virtual once do not have any geographical limitations and thus create a larger potential value these should be focused on.

A CCP education in the case company's academy for system integrators in order to improve their installation skills for the applications can improve the installation quality. Since the CCP is very broad and consist of niche applications that vary a lot in their deployment there is however a question of how much a general education can help the system integrators. This would need to be investigated along with the possibility of making sub-educations for different groupings of applications.

An issue that is not directly covered by any solution ideas is after sales. Education and standardization will hopefully decrease the need of after sales but when it arises the responsibility of who can cover it is still unclear due to the fact that the DPs are small local actors that cannot give global support in multiple languages.

The visionary actions will not be prioritized in the same manner as the urgent ones. Since the purpose is to start with the urgent actions and learn from the market responses of getting the "urgently fixed CCP" to market it is not as clear of how to prioritize the long-term actions. Further, the problems covered in the urgent section are classified as severe, so full focus should be given to solve them before visionary actions are evaluated further.

6. Discussion

This chapter will bring up topics that are relevant, but either is not fully empirically supported or falling outside the scope of the study. Some of the topics are also suitable for future research, whilst others are considered important to take into account during the future development of the platform.

6.1 The use of the term "app-store"

Closely related to the issue of concept ambiguity is an issue with the use of the "app-store"-term. While it is a simple example to use, as almost everybody can immediately understand the concept, one must be aware that use of the term has cognitive anchoring effects, as suggested by an employee in the quote below.

"When talking about an app-store, people immediately associate it with low prices and one-click installation." – Case company employee, 2013

When using the term for the CCP platform, peoples' experiences with smartphones and the like are projected onto the CCP. While this might at first sight seem like a good term to brief someone on the concept, it is the authors' belief that the misunderstandings stemming from the use far outweighs the benefits. It is most likely not only price that give rise to biases but also the simplicity of the Apple app store. Since Apple does not provide mission critical applications the complexity can be lowered. While the possibilities of a future app store for the CCP applications do exist, the situation today is not comparable to that. The CCP has completely different prerequisites and the authors recommend not using the term to explain what the CCP is today or could be in the future.

6.2 Wider market possibilities

The ability to connect and integrate the CCP applications smoothly with ERP systems is likely to open up many new doors and huge market possibilities. In terms of business intelligence this is especially relevant. If a standardized interface between large enterprise management systems and the CCP existed there is a good chance that the case company could supply customers with otherwise unavailable or difficult-to-attain statistics through the CCP devices. Such possibilities would require the case company to go further up in the value chain and cooperate with the developers of those systems and thus create completely new types of partners and channels. Given the complexity of such an endeavor and the consultancy-heavy structure of the ERP-system market today it also opens up for the possibility of the case company or a partner to take a strategic service or consulting role in the implementations way beyond the scope of what the system integrators do today.

6.3 Should the case company acquire the CCP developers?

The question regarding if the case company should acquire the 3rd party developers was frequently encountered during this study. The current strategy applied to software is that the case company should provide only non-differentiating applications. The limit where a non-differentiating application becomes differentiating is however unclear and up for debate. An application that is differentiating today will likely not hold that quality for all future. This brings the question if the case company should acquire developers or develop more applications in-house. The CCP applications the case company sells are likely to need expansion as more and more functionality becomes non-differentiated or standard. Such applications will either need to be developed in-house or bought in from outside.

6.4 Case company to carry more after sales responsibility?

To cope with the issue of after sales responsibility and credibility a more widespread division of responsibility within the case company could be a solution. The case company could hire more sales engineers whose responsibilities would be to learn about and be able to give support regionally for the different the CCP applications. The sales teams in different regions would require training to then take responsibility of applications and since value is created revenue could be made on this. Such a measure could help boost initial sales and increase the customer-base by delivering credibility through after sales support.

7. Conclusions

As described in the first chapter, the research topic of this study has been two-folded. One part has been to identify why the CCP platform has not developed as expected commercially. The second part has been to find out how the business model for the platform can be improved. The two research questions of the report are:

1. Why has the CCP not been more commercially successful?
2. How can the business model for the CCP be improved?

7.1 Why has the CCP not been more commercially successful?

The reason to why the CCP has not been more commercially successful is to a large extent due to a lack of commercial focus in the case company's organization. The platform was a technology push, where customer value and commercial aspects were not taken into account. This led to low awareness of the applications downstream in the value chain. Further, the existing information on the CCP is inadequate which complicates the situation even more. Low availability of applications is evident due to both low cross-side network effects and lack of awareness. Unclear division of responsibility further led to inefficient combinations of resources throughout the value chain. The channel where the CCP applications hold the strongest competitive advantage is not one associated with the case company's core business, leading to a mismatch that further hinder diffusion.

7.2 How can the business model for the CCP be improved?

As was shown in the analysis, the improvement measures for the CCP business model hold different levels of urgency. The recommendations for improvement have thus been divided into two sections: urgent recommendations and visionary recommendations.

7.2.1 Urgent recommendations

In summary, the urgent recommendations proposed are prioritized as follow, starting with most urgent:

1. Appoint a business development role responsible for the commercial side of the CCP platform.
2. Create clear definitions, a strategy, a vision and brand name and communicate these to cope with concept ambiguity.
3. Improve the CCP webpage to limit damage and create a good basis for marketing.
4. Implement a strategic factor in the partner programs to give strategically important partners incentives and create clear division of external responsibility.
5. Build up the channel towards business intelligence customers in the retail segment, as the CCP has a high competitive advantage and return on investment is quicker there than in other segments.
6. Market the CCP through relevant channels to increase awareness.
7. Educate DPs in volume sales and ease-of-installation to cope with issues of complex installation, configuration and integration.

With these actions, the majority of all urgent problems that inhibit sales will be addressed. Availability in the security channel and after sales responsibility are issues not directly addressed with these actions. The total cost of the proposed urgent actions is estimated to approximately 1.5 million SEK per year. For such an investment to reach payback it would require increased sales of 2000 channels per year, calculated without overhead. To put this into

perspective, one example CCP developer alone sells around 6000 channels each year. A more detailed analysis of each part can be found in section 5.4.1.

7.2.2 Visionary recommendations

The long-term recommendations are in summary to:

- Investigate the possibility of creating a case company delivery- and/or sales platform for the CCP applications to gain more control over the ecosystem and solve issues of availability and credibility. A customer rating system would be a good idea to add to the marketplace.
- Improve the website further with demo environments of the CCP applications. Educate system integrators to create an extended marketing arm and decrease the number of faulty installations.

The remedy that would address and create possibilities to fix most problems long-term is for the case company to take on more responsibility and create a more closed ecosystem through either a distribution or a sales platform. Such a platform would greatly increase the availability of applications as well as the credibility of them. It would also bring the case company increased control over the network and the products that exist in it. The downside of creating a more closed ecosystem is that it can inhibit innovation. It would also bring risk and investment costs. The risks are not limited to the CCP platform, as network externalities exist with the case company's core business.

There are however a large number of uncertainties associated with the endeavor of creating a sales and/or delivery platform, mainly associated with the costs. It has been suggested that the legal costs for creating a global sales platform for software might alone outweigh any possible value created from it. Such legal costs are likely to be much lower in a distribution platform where the economic transaction is handled by a third party. Further, the cost of creating the actual infrastructure behind the platform is likely to be substantial and thus need further investigating.

Improvements through creating demo environments can enhance awareness in the ecosystem. Educating system integrators in installation can improve quality and awareness for end-users, through working as an extended marketing and education function. Such efforts will also decrease the number of faulty installations and reduce the problem of after sales responsibility. The division of the after sales responsibility is however not fully addressed with these solutions. Increased control over the ecosystem through a delivery or sales platform does however open up more possibilities of standardizing such responsibility.

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Appendix 1: Interview templates

Presented below are the interview templates used for the semi-structured interviews with developers, distributors, system integrators and end-customers.

Interview template: Developers

Name:
Position:
Company:
Products:

-What different customer segments use your applications?
    -Which segments are the largest?
    -Who is the typical end-user of your application?
        -Who makes the purchase decision?

- Can you describe your sales process?
    - Indirect/direct, both?
    - What steps does the sales process consist of?
    - What types of actors are included in the sales process?
    - What knowledge does these actors have? (IT/Security/BusinessIntelligence/Market)
    - Have you experienced any challenges in the sales of analytics? What kind, why?
    - How many applications do you sell per year?

- How do you market your products?
    - Why do you use those channels?
    - What is your view on giving potential customers trial versions of your products?

- What is your price model for the apps?
    - Upfront/subscription fees
    - Why do you use this model?
    - Have you considered other price models?

- What is required by the customers to start using the product in terms of setup, installation etc.?
    - How can these requirements be simplified?
    - Do you provide service or maintenance after the purchase? Why/why not?

- Do you have any key partnerships?
    -What does the relation provide?

-What benefits do you see with device-based software compared to server-based?
    -What drawbacks?
    -What is your view on the CCP? Why?
    -How does your company benefit from the CCP?
    -What challenges do you associate with the CCP?

- In what way does the case company support your application marketing and sales today?
- How could the case company support or facilitate your sales and marketing more?

Interview template: Distributors

Name:
Position:
Company:
Products:

-What kind of analytic applications do you sell?
- -What different customer segments do you provide with analytic applications?
- -Which segments are the largest?
- -Who is the typical end-user of the applications?
- -Is the end-user also the one who makes the purchase decision?
- -Do the customers ask for specific applications?
  - -Do you recommend specific apps to your customers?
  - -What criteria do you have for taking in apps/companies into your assortment?

-How did you get in contact with the application developers?
- - Why are you interested in distributing their products?
- - How does your relation with these companies work?
- - How much do you need to learn about how the applications work?

- Can you describe your sales process?
- - Indirect/direct, both?
- - What steps does the sales process consist of?
- - What types of actors are included in the sales process?
- - What knowledge does these actors have? (IT/Security/Business Intelligence/Market)
- - What challenges do you experience in the sales process? Why?
- - About how many analytic applications do you sell per year?

- Do you market analytic applications?
- What is your view on giving potential customers trial versions of applications?
- Do you follow up after the trial period?
- What is your price model for the apps?

- What is required by the customers to start using the apps in terms of setup, installation etc.?
- - How can these requirements be simplified?
- - Do you provide service or maintenance after the purchase? Why/why not?

- Do you have any key partners?
- -What do these relations provide?

-What benefits do you see with device-based software compared to server-based?
- -What drawbacks?
- -What is your view on the CCP? Why?
- -How does your company benefit from the CCP?
- -What challenges do you associate with the CCP?
- In what way does the case company support your application marketing and sales today?
- How could the case company support or facilitate your sales and marketing more?

Interview template: System Integrators

Name:
Position:
Company:
Products:

-What kind of analytic applications do you sell?
-What different customer segments do you provide with analytic applications?
-Which segments are the largest?
-Who is the typical end-user of the applications?
-Is the end-user also the one who makes the purchase decision?
-What kind of interest do you get from the customers regarding apps?

-What criteria do you have for taking in apps/companies into your assortment?

-How did you get in contact with the companies providing the applications?
- Why are you interested in selling their products?
- How much do you need to learn about how the applications work?

- Can you describe your sales process?
- What steps does the sales process consist of?
- What roles at the end-customer are involved in the sales process?
(IT/Security/Business Intelligence/Marketing)
- What do you see as the largest obstacles for an effective sales process? Why?
-About how many analytic applications do you sell per year? (If not eager to say, in % of device sales?)

- Do you install both hardware and software, configure and integrate the apps?
- Which of these steps are the most complicated?
- How long does this process take?

- What is required by the customers to start using the apps in terms of learning, installation etc.?
- How can these requirements be simplified?
- Do you provide service or maintenance after the purchase? Why/why not?

- Do you market the applications to the customer?
- What is your view on giving potential customers trial versions of applications? Why?
-Do you follow up after the trial period?

- Do you think the apps have an appropriate price model?
-What benefits do you see with device-based software compared to server-based?
-What drawbacks?
-How does your company benefit from app sales?
-What challenges do you associate with app sales?

- How do you think app sales can be simplified?
- How can the case company support or facilitate app sales and marketing?

Interview template: End-customers

Name:
Position:
Company:
Application:

- Could you start by telling us a bit about your role?

- What kind of analytic technology applications do you use?

- How did you get information about the applications?

- Who was involved in taking the decision to buy the app?
- What criteria did you use when choosing the application?

- What was required for you in order to start using the apps in terms of learning, installation etc.?
- Who is the user of the application?
- In what way do you use the data it provides?
- Is this data integrated into your other systems, or is it used as a stand-alone resource?

- If you experience any problems with the applications, where do you get support?
- How do you find out about new similar applications?