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Power in the Birth of Ecosystems

An Exploratory Case Study

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Preface

This thesis is written as part of the Master of Science in Economics and Business Administration at the Norwegian School of Economics (NHH) with specialization in New Business Development. The research contributes is a part of a bigger research project at NHH addressing ecosystems. This thesis is written in cooperation with Telenor Norge as a part of the hub Digital Innovation for Growth (DIG) located at NHH.

I wish you success with the further work!

Bergen, 01. June 2021, 23.59

Sigurd Singelstad

Executive summary

This thesis investigates the following: W*hat sources of power enable influence from the participating parties in the establishment of an ecosystem, and how do they use this influence to position themselves in the ecosystem?* The thesis is based on an explorative single case study of the establishment of an ecosystem led by Telenor, aiming at developing a shared infrastructure of health data. The data is gathered through interviews of central participants in the project, observation of meetings, and through documents available.

I have used existing literature on ecosystems, competitive strategi and organizational theory to develop a theoretical foundation for the research, and to analyze the primary data gathered. Existing theory have been used as fundament for the developed theory presented in this thesis which complement existing ecosystem literature.

The findings of the paper reveal that a firm's power in the development of an ecosystem can come from *expertise*, *corporate network*, *influence on reward*, *brand* and their *value proposition*. Firms can use this power to gain influence in the development of the ecosystem through activities such as workshops, project meetings, develop blueprint and be represented in teams working on the technical design. Through their influence in the birth of an ecosystem, firms gain power in the final ecosystem through centrality, increase switching costs, and become critical in the ecosystems value creation.

Additionally, this research contributes with findings regarding the importance of trust among the participating firms in the birth phase of an ecosystem. High level of trust enables a firm to gain influence in the process, and to achieve favorable positions in the established ecosystem.

These findings are significant because they can contribute to the firm's ability to increase the creation of value in ecosystems, and enable them to capture value from emerging ecosystems.

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1. Introduction

The acceleration in the development of new technological advancements has increased the uncertainty in the organizational environment. This trend has led to a growing popularity of the ecosystem-concept in business strategy and business management research (Adner & Kapoor, 2010). The term "ecosystem" is used to explain a market's or a specific firm's competitive environment and describes a group of heterogeneous, yet complementary organizations that, to some degree, depend on each other's activities and jointly create output (Jacobides et al., 2018; Thomas & Autio, 2020). Acting in this new and fast-moving competitive environment demands a high ability of innovation from organizations, and ecosystems are becoming more and more recognized as crucial for the success of an organization's business model and innovation strategy (Adner & Kapoor, 2010; Shipilov & Gawer, 2018). Therefore, many organizations face the challenge of successfully developing an ecosystem around their products and services.

The evolution of ecosystems is often driven by a leading focal organization, which is committed to the ecosystem (Thomas & Autio, 2020; Adner, 2016). This focal organization then exercises active control to gain commitment from other organizations towards the ecosystem, thus strengthening the ecosystems' resilience against competitors (Thomas & Autio, 2020). While research suggests that size and power might affect the firm's influence on the ecosystem (Adner, 2016), there is not a lot of literature to be found on the specific sources of power and how firms can enable taking active control in the development of an ecosystem.

From a business standpoint, power is related to dependence on external factors, and high dependency may force the company to take certain activities, or leave others despite the organizational goals (DiMaggio and Powell, 1983). For businesses in general, power is therefore important to increase control over external forces and improve performance (Pfeffer and Salancik, 1978).

Understanding power is important to understand organizational dynamics (Pfeffer, 1981). Research by Kipnis (1976) argues that equalization of power affects communication and coordination positively. This is also true when companies are participating in ecosystems. Increased power enables control, increased influence within the ecosystem, and enables the company to improve and capture more of the value created (Dattée, Alexy and Autio, 2018;

Adner, 2016). Power might also enable a leading firm to tie in complementors and increase the value of the ecosystem (Jacobides et al., 2018). Understanding power relations is therefore important to firms understanding opportunities and threats in the development of ecosystems.

Additionally, the understanding of power and power relation might be essential in terms of securing the competitiveness of the ecosystem as a whole, and making it thrive. Ability to attract key partners, and achieve alignment is fundamental for all participants to create and capture value (Adner, 2016). Common understanding of power relations might also be relevant in the birth of ecosystems, when reducing internal turbulence and establishing a cooperative environment is important (Dedehayir and Seppänen, 2015).

While there is some literature addressing how firms increase power within an established ecosystem, there is limited research addressing the sources of power in the birth of an ecosystem, how to strategically use these sources to gain power in the established ecosystem, and how this affects the development of an ecosystem. Therefore, I will in this research investigate the process of establishing an ecosystem, identify sources of power differences between participants, and find how these power differences are used to gain influence in the process. Within this context the following research question will be addressed:

What sources of power enable influence from the participating parties in the establishment of an ecosystem, and how do they use this influence to position themselves in the ecosystem?

To understand the influence participating parties have in the creation of the ecosystem, defining participants in the ecosystem is necessary. Also, to gain understanding in strategic dynamics, understanding of the ecosystem structure and governance is important (Jacobides et al., 2018). In order to answer the research question I will therefore (1) identify different participation parties in the ecosystem and their roles; (2) understand the power differences between them; and (3) understand how they use this power to influence the development of the ecosystem.

In the work of gaining this in depth knowledge and answering this research question, I have conducted an embedded case-study of a project that currently is a collaboration between Central Norway Regional Health Authority's IT-department (Hemit), Telenor, Infiniwell and Microsoft Norway.

This project was started to understand how 5G and its possibilities can contribute with solving problems regarding capacity constraints in the future. The project is a part of a bigger project called "The Outpatient Hospital". In this project, the Central Norway Regional Health Authority (CNRHA), intends to move a lot of procedures happening in the hospital today, closer to the patients. Examples of this could be simple noninvasive operations done at regional medical centers through a robot, steered over the 5G network by a surgeon from the hospital, and to equip the patients with devices that are monitored contactless from their home instead of being monitored at the hospital. One of the core issues enabling this kind of solution is developing a secure, stable and standardized infrastructure for health data. This enables total control for health authorities of the data and data transfer, and decreases switching costs if suppliers of Medical Technical Equipment (MTE) were to be substituted. The expected gain from The Outpatient Hospital is to decrease circulation of patients going in and out of hospitals, being able to treat more patients faster. The sub-project building a common infrastructure for health data is part of the solution enabling decentralization of operations, but it also makes data collection, and processing more accessible and secure, and opens the possibility of using AI and big data as part of the daily treatment.

1.1 Restrictions

The scope of this thesis is restricted to the project of establishing a common infrastructure for health data in Central Norway Regional Health Authority, involving Telenor, Hemit, Infiniwell, and Microsoft. By doing this restriction, side projects within the scope of the decentralized hospital are excluded. Additionally, this research concerns the birth phase of an ecosystem. Hence, the uncertainty whether this project will succeed and become a stand alone ecosystem is present.

Because of the early phase of the ecosystem, few companies are involved. Infiniwell is representing the suppliers of Medical Technical Equipment (MTE) in this case study. However, the fact that Infiniwell is a startup, does probably have a strong effect on their attitude towards this project. One of the most interesting issues in this case is whether established firms with high power, and ownership of data gathered from their proprietary network, as an important part of their existing business model, will align this project. This issue is not included in this research, except from a brief discussion within the sub-chapter of barriers for further development of this project.

1.2 Outline of the paper

In presenting the conducted research, I will first introduce a review of literature found relevant to help answering the research question. The literature review is followed by a description of the methodology used in the research including research design and setting, in addition to how data is collected and analyzed. An elaboration of how research quality is secured is presented at the end of the chapter. Thereafter, the empirical findings that are used to answer the sub-questions presented in the introduction. The findings are divided into themes developed in the data analysis. After the empirical findings, a discussion based on the theory and the empirical findings is presented. The discussion contains reflections drawn from the findings and enables answering the research question. I am presenting the most relevant findings in a conclusion to specifically answering the research question, and implication of the findings.

2. Literature review

In order to answer the research questions, the two concepts *ecosystem* and *power* need to be defined. In addition, we need to develop an understanding of what is meant by *participating parties* in an ecosystem. Therefore, I will in this chapter present the concepts and a selection of existing theories about them, enabling us to understand how existing theories find them related. Because literature suggests that power relations might change over the lifecycle of an ecosystem, I will also present the existing literature on this specific topic.

2.1 Ecosystems

The term "ecosystem" has its origin in biology, and is introduced into the field of strategy and management to describe a complex phenomenon of interdependent actors interacting to create an ecosystem output. Adner (2016, p.42) describes an ecosystem as "[...] the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize". Ecosystems are distinguished from value chains by not being reliant on contractual relationships, and the roles are therefore not defined by formal contracts but by modularity (Jacobides et al., 2018), power differences (Thomas & Autio, 2020), and are often more fluid (Tiwana, A., 2015). Ecosystems are distinguished from value networks by the customers' opportunity to choose from a set of complementors interdependent to each other.

In recent literature several suggestions to divide ecosystems into different types have been developed. Thomas & Autio, (2020) suggest that the different types should be defined by two dimensions; ecosystem output and research emphasis. While ecosystem output could be either a value proposition, business model innovation, or knowledge; research emphasis could be community dynamics, output co-creation or interdependence management. Adner (2016) presents a common distinction between ecosystems as a community of associated actors, or configurations of activity defined by a value proposition. The first is often referred to as "business ecosystem", while the latter is called "innovation ecosystems" or "platform ecosystem" (Thomas & Autio, 2020). The distinction is important, because in an early stage of ecosystem development, both the structure of the end product (innovation ecosystem), and the structure of the project participants could be referred to as an ecosystem (business ecosystem). Because the business ecosystems and innovation ecosystems are different both in terms of community dynamics, output co-creation and interdependence management

(Thomas & Autio, 2020), a common understanding of what type of ecosystem that are referred to is needed when discussing, developing, and applying theory.

While both platform ecosystem and modular ecosystem have similar characteristics, the platform ecosystem is distinguished by focusing on a shared connectivity interface called "platform" (Thomas & Autio, 2020). The leader of this platform is the technical architecture (Schmeiss, Hoelzle and Tech, 2019), and ensures compatibility (Thomas & Autio, 2020). Thomas & Autio, (2020) define a modular ecosystem as: "A non-contractual collaboration between structural independent, yet interdependent agents contributing to deliver a unique product or service towards targeted customers".

Consequently, the goal of the Outpatient Healthcare Platform-project (OHP-project) is to establish an innovation ecosystem where the end product is dependent on several products and services of other participants such as data collection, secured data transportation and storage and analysis. This opens up for both a platform ecosystem or a modular ecosystem, defined by Thomas & Autio (2020). The classification is determined by architectural decisions still under development.

2.2 Ecosystem participants

Research suggests that control in an ecosystem is highly influenced by the participants in the ecosystem and their relative roles (Tiwana, 2015). However, even though the roles within an ecosystem to some extent must be agreed upon, they also tend to reflect the power relations between the participating companies through influence and control (Adner, 2016).

Ecosystems consist of the focal firm(s), also called *the hub* (Jacobides et al., 2018) or *leading firm(s)* (Adner, 2016), and the *complementors* (Thomas & Autio, 2020; Adner 2016). Jacobides et al., (2018) suggest unique complementarity, explained by A is maximized with B, and edgeworth complementarity where "more of A makes B more valuable", as the two most important categories of complementarity.

While the ecosystem depends on complementors that agree on the terms set, it also benefits from having a participating leader establishing a vision, crafting rules and shaping the process of the development of the ecosystem (Thomas & Autio, 2020; Adner, 2016). The focal firm(s) advantage comes from size and bargaining power, and is made visible by increased influence and contribution to the ecosystem (Adner, 2016). The focal actor can also increase its

bargaining power by increasing the number and intensity of participants (Adner, 2016). Hence, possession of relative power enables the lead firm to take that position, and the position enables influence within the ecosystem through control mechanisms (Jacobides et al., 2018).

Most participants, however, are complementors contributing with value in terms of added value proposition for customers (Jacobides et al., 2018; Adner, 2016). Even though they often have limited power (Jacobides et al., 2018) also the complementors have influence within an ecosystem. However, the power of the complementors is more fragmented, and might have different sources (e.g. unique value proposition) than the leading firms (e.g. centrality).

Drawing from the presented research, a firm's position is both affected by the firm's power, but also a source of influence in the development of the ecosystem.

2.3 Birth of an ecosystem

While influence in the ecosystem is dependent on roles, power relations also change over time (Adner, 2016). James F. More (1993) argues in his paper about the life cycles of business ecosystems, that the ecosystem development comes in four distinct stages; *birth*, *expansion*, *leadership*, and *self renewal* or *death*.

Moore suggests that in the birth of an ecosystem, the focus is on defining what the customer wants. It is beneficial having a cooperative strategy with other participants trying to define and implement the customer value proposition. A cooperative approach is also found more easy to implement during the early stage of the ecosystem because the growth, profitability and stability of the ecosystem is often uncertain, and not worth fighting over (Moore, 1993) In the invention phase, established companies are suggested to wait and watch the market change carefully. The reason for this cautious approach is that traditional corporate cultures make it hard to succeed with the iterative process needed to innovate rapidly according to customers' needs, and that bigger companies are able to replicate the successful ideas while they are recognized (Moore, J. F., 1993).
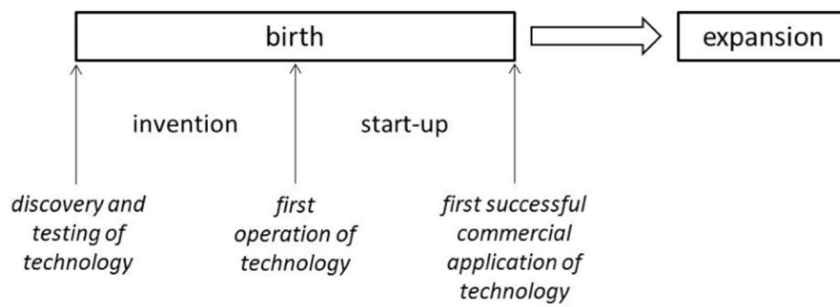
(Figure 1: The birth and expansion phases of ecosystem life cycle, Dedehayir and Seppänen, 2015)

Building on Moore's theory, Dedehayir and Seppänen (2015) divide the birth phase into two sub-phases; *invention* and *start-up.* The *invention* phase revolves around a new technology and validation of the ability of implementation, for example through pilot testing. In this phase, progress is dependent on individuals such as scientists and engineers working on the application of the technology. Dedehayir and Seppänen underline the necessity of an ecosystem leader in the invention phase, represented by an organization that brings together and connects the actors contributing to successfully develop the ecosystem. The start-up phase is introduced when the technology is put to operation for the first time. In this phase removing bottlenecks is important. Often this means reconfiguration of the ecosystem, and participants might get a different role in the ecosystem, be added, or be excluded from the ecosystem. When bottlenecks are removed, the technology works as intended and the first commercial application represents the transition out of the birth and into the expansion phase.

Additional theory by Dattée, Alexy and Autio (2018) suggest that the lead firm should take specific actions to *influence* the process, *monitoring* the development and *updating* the influencing strategies, in order to protect their position and maintain control within the ecosystem. The high uncertainty in the birth phase addresses the importance for agile leadership and dynamic control (Dattée, Alexy & Autio, 2018). The success of involvement in this phase of the ecosystem is critical to steer the process of discovery value creation and enabling value capture in the future.

2.4 Strategic Power

The concept of power is highly studied within the fields of management (Bennis & Nanus 2007; Bolman & Deal 2008), and strategy. Bennis & Nanus (2007) define power as "the ability to make intention into reality", while organizational theory understands the concept of power as "the capacity to make others do what they would not otherwise do" (Tjosvold, 1990). More specifically, power can be understood as the enabled level of influence on others behavior to achieve organizational objectives (Yan & gray, 1994). Coming from this understanding one can also differ between power and influence, by the fact that power enables and can be identified by influence. However, they are not synonyms, because power is not always used through influence or management control. Hence, one might possess power without having influence on a process. While there is some literature addressing how ecosystems can gain market power, there is not much literature on how to gain this bargaining power in the birth of an ecosystem. Adner (2016) suggests that there might be strong interactions between ecosystem strategy and competitive strategy, and that bargaining power increases the ability of taking an active control of the development of an ecosystem.

2.4.1 Power in competitive strategy

According to competitive strategy, bargaining power can be explained by industry characteristics (e.g. Porter 1979), or based on competitive advantage from key resources (e.g. Barney & Hesterly, 2019, Wernerfelt 1984). This is in line with resource dependency theory (Pleffer & Salancick, 1978) suggesting that control of critical resources is highly influential of power in corporate relations. Drawing on this research, we can understand the ecosystem participants' power based on the value propositions dependency on the different actors' resources. This resource based view is widely accepted within the field of strategy, explaining how companies gain competitive advantage through strategic resources (Barney & Hesterly, 2019). The resources can be "tangible and intangible assets that a firm controls that it can use to conceive and implement its strategies" (Barney & Hesterly, 2019, p. 86). The firm's assets can be divided into four broad categories; *financial resources, physical resources, individual resources,* and *organizational resources.* Based on RBV, the VRIO framework has been developed to identify to what degree an asset is a strategic resource and contributes to sustainable competitive advantage. By analyzing whether the asset is *valuable* for the firm in enabling strategic moves, *rare* and not easily accessible for competitors, proves *imitability* by

contributing to either increased revenue or decreased profits, and whether the firm is *organized* to exploit the advantage of possessing the resource.

Because of the dependency of individuals in the birth phase, the importance of individual resources such as experience, knowledge, and personal relationships is reasonable to assume high. Hence, expertise might be the reason a leading firm is able to attract complements or make a complement or during the invention of the ecosystem. The importance of financial resources might depend on the level of investments needed to gain cash flow and the level of uncertainty which is high in the birth phase. Even though physical resources are not a direct input factor, it might be necessary in delivering digital solutions and components to the ecosystem, such as Microsoft's data centers and Telenor's physical infrastructure enabling 5G. In the birth phase, uncertainty whether the ecosystem actually will be commercialized is high, hence the leaders brand and reputation might be a signaling effect both for complementors and for potential customers investing and relying on the ecosystem's success. Organizational resources such as culture, brand and reputation might therefore be of high importance regarding credibility and trust in the birth of an ecosystem.

Another perspective within the field of competitive strategy is the network approach. Rather than focusing on resources in ownership of the company, the network theory argues that lack of resources can be covered by access to these resources through corporate relations (Powel, 1990). In network relations, the power between the firms are often balanced, given that both parties contribute with key competences (Gereffi, Humphrey & Sturgeon, 2005). These networks are often relying on trust and reputation, rather than contractual relations (Bair, 2008). Through a network approach businesses can quickly get access to resources without further investments. Hence, the network approach toward resources is most feasible when the assets are intangible such as knowledge and technological innovation, and when uncertainty is high (Powel, 1990). The network approach is strongly related to the ecosystem perspective, focusing on aligning key partners rather than ownership of strategic resources (Adner, 2016). The complementary resources and knowledge enables the participants to solve complex problems, and the more unique this competence is, the more it increases the attractiveness of the partnership and the participants bargaining power.

2.4.2 Power in organizational theory

In the classic work of organizational theory, French & Raven (1959) identified five sources of power; *reward power, coercive power, legitimate power, referent power,* and *expert power. Reward power* is dependent on the magnitude of the reward that is perceived. It is also dependent on the receiver's perception of the leader's ability to increase positive or reduce negative valences (French & Raven, 1959). In a commercial setting the end goal of establishing an ecosystem is to capture monetary value. Hence, the firm perceived to have the ability to realize this value capture for ecosystem actors is in possession of this power. Whether it is the lead firm of the customer having this power, might be of importance regarding the influence of the development of the ecosystem. *Coercive power* is the other side of the coin, and is present when the receiver perceives that the leaders are able to punish undesirable behavior. *Legitimate power* is defined as "that power which stems from internalized values in P which dictate that O has a legitimate right to influence P and that P has an obligation to accept this influence" (French & Raven, 1959). This source of power is similar to what earlier research has defined legitimacy of authorities, but is distinct in that it does not have to be attached to a role relation. *Referent power* is present when the receiver is attracted to the leader's ID and therefore wants to become like the leader and/or become closely associated with the leader. *Expert power* is dependent on how much knowledge the receiver attributes to the leader within a given relevant subject. Referring to the presented importance of individuals, and complementary expertise the different firms bring in the invention phase of the ecosystem, expert power is expected to be strong in the birth phase enabling the individuals to influence decisions regarding e.g. design within their circle of competence. However, when the technology is validated, the ecosystem is commercialized and gains momentum, the importance of expertise might expect to decline, and also the influence based on expertise.

Additionally, management theory suggests that bargaining power is dependent on the participants dependency on the negotiation and the availability of alternatives of achieving what the participants intend with the negotiation (Bacharach & Lawler, 1988; Yan & Gray, 1994). The latter can easily be related to the uniqueness of a complementors value proposition to whom a customer depends and whether the firm holds a critical role in the value creation of the ecosystem.

2.4.3 Power in ecosystems

In the field of ecosystem theory, Adner (2016) suggests that expected power increases with increased centrality in the ecosystem. Centrality is related to the number of actors linked to a focal actor. Adner (2016) argues that in reference to classic theory competitive strategy that focuses on bargaining power, "the focus is expanded to include partners who play a critical role in determining value creation" (Adner, 2016, p. 49). Adner (2016) also points out the uniqueness of ecosystem strategy in being aligned with key partners rather than acquiring key resources. Hence, similarities with the earlier presented network approach is remarkable. The competitive advantage in competitive strategy has its analogy in search for alignment in ecosystem strategy. Similarly the strategic resources are extended to multilateral partnerships. And the sustainability of strategic resources is found in the ability to sustain the relationships (Adner, 2016).

In an ecosystem, power might become visible in influence on the ecosystem´s structure, choices and timing of value creation (Adner, 2016). Also complementors' role in the ecosystem can be contested over time. Even though their activity and position is critical to the ecosystem, the complementary can be substituted with another competitive complementor. Hence, relative uniqueness is important to sustain competitiveness and protect the actors activities, position and roles in the ecosystem (Adner, 2016).

While there is limited literature regarding how companies can maneuver towards powerful positions in ecosystems, Dattée, Alexy and Autio (2018) suggests firms to establish control over the creation process. Firms should opt for influence, monitoring and update strategies to ensure that the ecosystem develops in such a way that the firm is able to capture some of the created value (Dattée, Alexy and Autio, 2018).

2.5 Summary

An ecosystem can be defined as an alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize. We distinguish between modular ecosystems and platform ecosystems. The latter is different from modular ecosystems by being focused on a shared connectivity interface. A firm's power is affected and depends on its role in the ecosystem, and at what stage the ecosystem is in the life cycle. Ecosystem actors can be divided into leader(s), and complementors. The leader is dominant in vision, crafting rules and shaping the process of the development of the ecosystem. The

ecosystem's life cycle can be divided into four stages; *birth*, *expansion*, *leadership* and *self renewal* (or *death*). The birth of an ecosystem often begins with an *invention* sub-phase, with discovery and testing of new technology. When the first operation of technology is present the ecosystem goes into the next sub-phase of the birth; *start-up phase*, and when the first successful commercial application is achieved the birth phase goes over in the expansion phase. The birth phase is often an object of high uncertainty and in this stage a cooperative approach between participants is beneficial. While there is limited existing literature addressing how actors can gain power, literature addresses the importance of centrality, critical role in determining value creation, alignment with key partners, and multilateral partnerships. Enabling these competitive advantages, firms should opt for high influence in the birth of the ecosystem. While there is a lack of literature addressing how firms gain the power enabling them to position themselves and secure intended influence, there is found rich literature in strategic theory. From cooperative strategy, management and organizational theory there are identified sources of power such as; *strategic resources*, *corporate relations*, *reward power*, *coercive power*, *legitimate power*, *referent power*, *expert power*, *dependence on negotiation* and *dependence on alternatives*.

Taken together, the literature leaves open intriguing questions about what sources of power are valid in the birth of an ecosystem, how participants can leverage these sources and maneuver in the birth of an ecosystem, and how the power differences and strategic maneuvers of participants affect the development process.

3. Methodology

This chapter describes the methodology conducted to answer the research question. First, the research design is presented, followed by a description of how the data is collected and analyzed. In the end the research quality is discussed, and finally a discussion regarding ethical issues is presented.

3.1 Research design

The research design is the logical and systematic plan that directs a research study and guides the researcher in the process of collecting, analyzing and interpreting data (Krishnaswami & Satyaprasad, 2010).

The aim of the research is to understand what role each participating party adopts in the development of the ecosystem, understand the power differences between the parties and how these power differences affect the developing process of the ecosystem. Since this research area is still relatively unexplored and further understanding is needed, this research is based on an exploratory approach to address this gap in the literature and previous research. An exploratory approach to research allows us to ask open questions to gain insight into a topic of interest and to explore an issue, problem or phenomenon (Saunders et al., 2019). Another advantage of an exploratory approach is that it is flexible and adaptable. This is crucial in the proposed field of research since I do not know where the research will lead us and I have to be willing to change direction as I collect data and new insights occur (Saunders et al., 2019).

3.1.1 Research approach

The research question is open-ended and complex and can therefore not be answered by quantitative/numerical data. Consequently, the research is based on a qualitative approach to gathering data. Qualitative research allows for an in-depth understanding in the form of rich, contextual and non-numeric data by interacting with the respondents in an informal setting (Ponelis, 2015). Given that existing literature does not address the concept of power specifically in the birth of an ecosystem, it becomes necessary that an inductive approach to theory development is adapted to fill this gap (Eisenhardt & Graebner, 2007). An approach is inductive when the research is initiated by collecting data to explore an issue, problem or phenomenon, followed by the analysis of the collected data to build a theory or to enrich the

already existing theoretical perspective in the literature (Saunders et al., 2019). However, because existing theory has been central in developing interview guides, and some of the codes for analysis, parts of the research also have some deductive tendencies. Besides, this research is a longitudinal study, being a representation of events over a given period of time as opposed to cross-sectional studies which provide "snapshots" taken at a particular time (Saunders et al., 2019). For this research project, a longitudinal time horizon is necessary in order to study the roles of and power differences between participating parties over the time period of the development process of the ecosystem and how the power differences affect this process.

3.1.2 Research objective and strategy

The research objective is to identify patterns to further develop the field of ecosystems with new understanding of (1) what roles different parties intend to have in the ecosystem, (2) understand the power differences among the participants, and (3) how power difference affects the process of developing the ecosystem.

In order to do this, a case study approach will be used to gather data. A case study is an in-depth inquiry into a topic, process, behavior, change, performance or relation within its real-life setting (Yin, 2018). The "case" refers to a person, a group, an organization, a change process, an event or another type of case subject (Saunders et al., 2019). As mentioned in the introduction, the case used for this case study is the OHP-project which includes the IT-department of Helse Midt Norge, Telenor, Infiniwell and Microsoft Norway.

Within the case study multiple qualitative methods have been used. The first of these methods will be the observation of meetings between the companies in the project, as well as internal meetings within Telenor. During a participant observation, I was able to enter the social world of participants and take part in the activity of interest and observe how the participants shape and are being shaped by this social world. This method is especially suitable for research regarding dynamics in the group, coordination of the project, and in general how the participants interact (Saunders et al., 2019). The observation was being used to get an overview of the project, and was the fundament for developing semi-structured interviews designed to dig deeper into specific topics.

The second method is semi-structured interviews with decision-makers of the participating

companies of the OHP-project. The semi-structured interviews were prepared with use of a predetermined list of themes and key questions that guided the conduct of the interview. However, this list was flexible and was adopted depending on the flow of the conversation. Given the context of the interview, new themes emerged from what the participant shares while other themes were omitted (Saunders et al, 2019).

The third method is the data collection and analysis of documents provided by the companies of the OHP-project. While the first two methods collect primary data, the third one collects secondary data. The documents of analysis used are emails, PowerPoints, internal reports and external reports. The emails analyzed were able to observe how participants interacted, agenda and reports for the meetings. While observing discussions might be a bit chaotic, the PowerPoint helped the research by structuring and explaining technical suggestions and how the vision of the project was at the time the PowerPoint was presented. Lastly, internal and external reports were helpful in getting an understanding of the context of this project, and also a deeper understanding of the company's activities, resources and objectives in general.

3.2 Research setting

3.2.1 Outpatient Healthcare Platform-project

This section presents an introduction to the co-creation process with the goal of developing an ecosystem, which has been the object of study in this case-study. First we will take a look at the intention and scope of the project, then what firms are involved, and in the end the project will be presented in a timeline.

3.2.1.1 The inception of the project

In January 2020, Hemit contacted Telenor to investigate how 5G and Internet of Things (IOT) can be used to improve the public health sector in the coming future. As a consequence, Telenor established a research team which in the fall 2020 presented a report that summarized the questions asked and presented the findings. While Telenor in this report focuses on secure and reliable connectivity, several potential use-cases were presented with the intention to increase efficiency of used space at the hospital and reduce the need for transportation of

patients. A problem addressed in this report is that; as of today, several medical suppliers collect and control the data themselves, for then to sell it to the regional health authorities. The protocols these vendors use are highly fragmented, and the report states that to be able to build for efficient and secure use of data from MTE in the future, a infrastructure of health data should be developed. This infrastructure needs to be based on standards, and within boundaries that Hemit has total control over security, ownership and use of the data. While the most known benefits of the coming 5G network is low latency, it also has the benefits of "slicing", which represents an opportunity for establishing an isolated logical network for the health trusts only. This opens up an opportunity for building a totally isolated network, not only for the Central Norway Regional Health Authority, but also for a common network for health data in Norway.

Immediately after the report was presented, phase two of this project began. Telenor suggested focusing on business models and technical security. Hemit argued that the most important thing going forward was to build a Proof of concept to show the decision makers internally in Hemit that the technology actually works and can solve problems. Hemit also suggested onboard Infiniwell, a startup based in Trondheim offering contact less surveillance of electrocardiogram (ECG). Also Microsoft was introduced in phase two, being able to put the software of Infiniwell in Microsoft's cloud service Azure.

3.2.1 1 Firms involved

Hemit

Hemit is a department of Central Norway Regional Health Authority and delivers technological solutions and services to hospitals in mid-Norway. The daily work involves operation and management of IT-infrastructure used for increased efficiency and quality for the hospital operation in the region. This includes running more than 1000 applications, and 1750 servers (hemit.no). In 2019 Hemit had 367 employees and revenue of 935 million NOK (Hemit Annual report 2019, n.d.). The costs in 2019 was 926 million NOK, hence profit ended 8 million NOK.
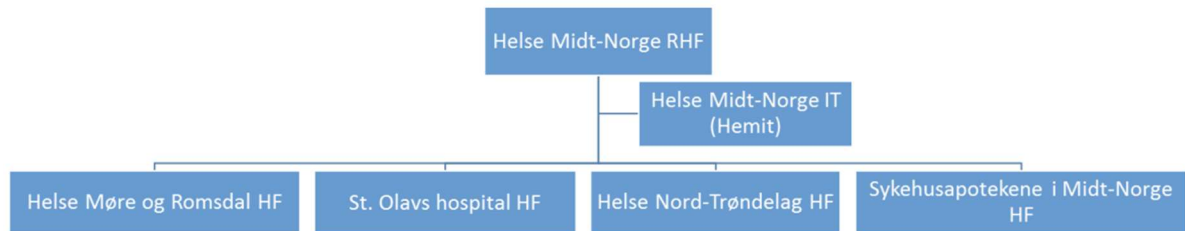
(Figure 2: Organization map showing the structure of Central Norway Regional Health Authority, from Hemits Annual report 2019)

The strategic goals of Hemit involves; (1) being an active partner for digitalization within the health sector; (2) secure stable operations and efficient deliveries; (3) manage information secure, efficient, and uniform; and (4) being development oriented, open and willing to change. Most of the presented KPIs however, are focused about stable operations of the digital infrastructure.

Hemit is organized into four operational departments: *system development*, *project and digitalization*, *management*, *basic operation* and *service operation*.
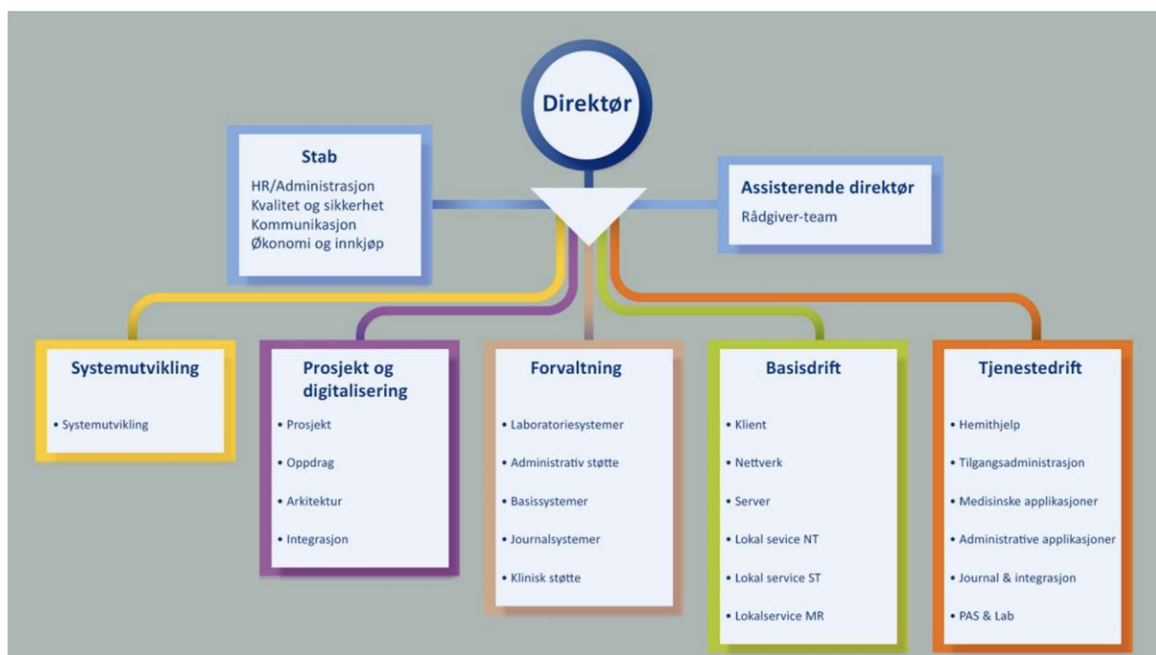
(Figure 3: Organization map of Hemit from Hemits Annual report 2019)

Through research and development projects Hemit aims to develop the hospital of the future, leveraging opportunities within IT to increase efficiency and quality in health services. These projects are managed by the department of projects and digitalization.

Telenor

Telenor is one of the leading telecommunication companies with operations in the Nordics and Asia (Telenor.com, 2021). In 2020 revenues reached 123 billions NOK (Telenor Group Interim report Q4 2020, 2021), where 93.4 million came through subscription and traffic revenues. In addition to mobile operation, Telenor also delivers Internet and TV-services in the nordic countries. In 2020 Telenor began to roll out the new generation of mobile network(5G) in Norway, starting with Trondheim. 5G opens up the ability to connect a lot more devices to the network, transfer much more data at the same time, and increase the speed of data transportation.

Telenor is one of the largest companies at the norwegian stock exchange Oslo Børs. On 07.05.2021 the market value was 204,2 billion NOK, and 54% of the equity is owned by the norwegian government through the Ministry of Trade and Industry. Telenor Norway has about 3 300 employees, mainly divided into the departments Telenor Mobile, Telenor Business, and Telenor Research. In the OHP-project, Telenor Business and Telenor Research are represented.

Infiniwell

Infiniwell is a Norwegian start-up established in 2018, based in Trondheim. Infiniwell is currently developing AI-based tools used for diagnosis based on ECG-measurement of patients. They have established a partnership with the Indian company Clarity Medical producing the hardware for collecting this data. The hardware (Recobro) is connected to the internet, enabling the patient to be home while continually streaming data of analysis to the hospital.

The company has four employees and no revenues from sales as of today. The vision of Infiniwell is to be able to take operations happening on the hospital, and take them (closer) to the patients home, and by doing that, be a part of the solution for reducing the capacity problems for hospitals and health care in the municipalities in the future.

Microsoft Norge

Microsoft Norway is a subsidiary of the American based Microsoft Corporation. Microsoft Norway has 291 employees (proff.no, n.d.), and works as a consultancy company targeted at

specific markets and customers. Microsoft delivers software, consultancy and solutions to Hemit. The two companies have over a longer period established a strong partnership, and several people that are included from Microsoft in this project have already worked with Hemit in other contexts.

Azure is a Microsoft service for data data processing in the cloud. In short, azure offers infrastructure (storage of data), platform for developing, run, and administrate applications, and a marketplace for software developed so that the developer can put together already existing solutions and dont need to start from scratch (Basefarm, 2020).

3.3 Data collection

3.3.1 Data sources

The primary data is collected by observations of the meetings within the project, and semi-structured interviews with decision-makers in the different organizations participating in the process of establishing the ecosystem.

3.3.2 Sample

Observations of both project meetings and internal meetings within the participating is used in the research. There is collected data of 15 project meetings and 4 internal meetings in Telenor. The sample of meetings is every meeting I have had an opportunity to attend based on time and access to meetings within the period of research stretching from September 2020, until the end of data collecting in April 2021.

There are 4 interviews conducted in this study. The intention was to conduct one interview per company involved. However, because of complications with getting an interview with a representative of Microsoft, and problems getting through the list of topics in interview with the informant representing Telenor, two interviews were conducted with Telenor, one with Hemit, and one with Infiniwell. The informants represent the company in this research, and are selected on the basis of decision influence in their company and high degree of involvement in the OHP-project. The sample is done on the basis of observations of both internal and project meetings.

3.3.3 Observation of meetings

Observations of meetings between the different companies in addition to some of the internal meetings within participating companies, contribute to an understanding of the process and the interaction between the participants. The data is collected through notes written under and right after the meeting.

I was introduced to the OHP-project in the beginning of september 2020. However, it was the first 4th of october that the first data was collected in the database. The reason for the delay was that it was first at that time that the research was accepted by Norsk Senter for Forskningsdata (NSF). In the meantime I was participating in nine meetings, where short notes and summary was collected. The data from observations was collected until may 2021, when I stopped gathering data to finalize the data analysis and prepare the report.

Date	Type of meeting	Participants	Data	Summary
22.09.2020	Project meeting	MC /T	Medium	No
23.09.2020	Project meeting	MC /T/H	Rich	Yes
24.09.2020	Project meeting	T/H	Poor	Yes
02.10.2020	Internal meeting	T	Poor	No
07.10.2020	Project meeting	T/H	Poor	No
28.10.2020	Internal meeting	T	Medium	Yes
28.10.2020	Project Meeting	T/H/I	Medium	Yes
02.11.2020	Internal workshop	T	Poor	No
03.11.2020	Internal meeting	T	Poor	No
04.11.2020	Project meeting	T/M/I/FOR	Medium	yes
04.11.2020	Internal meeting	T	Medium	yes
10.11.2020	1 to1 meeting	T	Poor	Yes
17.11.2020	Internal meeting	T	Rich	Yes
17.11.2020	Project meeting	T/FOR/M/H/I	Rich	Yes
03.01.2021	Project Meeting	T/H/I/FOR	Rich	Yes
19.01.2021	Project meeting	T/M/H/I	Rich	Yes
26.01.2021	Project meeting	T/H/I	Rich	Yes
03.02.2021	1 to1 meeting	T	Recorded	No
10.02.2021	Project meeting	T/H/I/M	Rich	Yes
17.02.2021	Project meeting	T/H/I/M	Rich	Yes
17.03.2021	Project meeting	T/H/I/M	Medium	No
07.04.2021	Project meeting	T/H/I/M	Rich	Yes
14.04.2021	Project meeting	T/H/I/M/FOR	Rich	Yes

(Table 1: Overview over observed meetings and the amount of data collected)

Before every meeting, a meeting document is prepared presenting the date, time, agenda, and participating people and whom they represent. During the meeting, the notes are written either as topic discussed, content in what an informant is saying, or direct quote. Straight after the

meeting ended, a summary was written with the most discussed themes, and observations of specific interest.

In the beginning of the research period, the quotes were immediately sent to the informant together with an interpretation, enabling the informant to confirm or correct the interpretation before adding the data into the database. However, this routine appeared very time consuming, and sending it to the informant for confirmation of interpretation was skipped in the continuing observations.

Some of the meetings, the project group also wanted to hear my opinion of the project. This happened in the project meeting 03.01.2021. I was also involved in the work around establishing a business model for the planned infrastructure by participating in an internal meeting with P3 10.11.2020, contributing with theory regarding the issue.

3.3.3 Qualitative Semi-Structured Interviews

The *semi-structured interviews* with decision-makers in the different companies of interest were done by the use of Zoom. In the interviews the informants were asked open questions to give the informant an opportunity to give deep and insightful answers regarding the topics. The interviews were between 45 and 90 minutes long, and were recorded and transcribed, before put into the database for analyzing.

Before the interviews, there were prepared some questions guiding the conversation, presented in appendix. The interview-guide was based on observations gathered, and theory that was operationalized in specific questions. In the beginning of every interview, an introduction was read to the informant. The introduction included a short description of the research-project, and information about how the data is gathered, analyzed, and deleted after the research is finished. In the end of the introduction, the concept of ecosystem was briefly explained, and I also specified why this case was relevant, and some issues that were of special interest in this case. The introduction-script is included in the beginning of the interview guide presented in appendix.

Date	Data coletion	Informant	Company
23.03.2021	Intervjew 1	P1	Telenor
24.03.2021	Interview	P18	Infiniwell
26.03.2021	Interview 2	P1	Telenor
09.04.2021	Interview	P11	Hemit

(Table 2: overview of interviews conducted)

The interviews were conducted alone with the informant by the use of zoom due to the restrictions during the Covid-19 pandemic. The scheduling of the interviews was done at a time suggested by the informant in order to prevent that lack of time or other distraction to take the focus away during the interview. While interviewing, the informants spoke freely and without interruption. If something was unclear, the informant was instructed to ask for a reformulated question. All interviews were conducted without bigger issues. The only problem was some technicality during interview 1 and 2 regarding the lost sound when the computer went to hibernation mode. The problem was fixed by the informant to log out and in again. Another minor issue was delay or 1-2 seconds of lost sound. Delay was present in interview 3 with P18 from Infiniwell, and made the interviewer interrupt the informant a couple of times. The issue of short parts of lost sound was most visible during the analysis, when some important description was lost. However, despite this issue, the content or meaning is still possible to grasp.

3.3.4 Secondary Data

The secondary data collection is done by *document analysis* of emails between participants in the project, PowerPoints used in the meetings, miroboard, internal reports directly or indirectly related to the project, and external reports such as annual and interim reports.

Emails were specifically useful in studying the interaction between participants. It was also important in documenting what happened when, and as a support for the interpretation of discussion in meetings. Before most meetings the project leader sent out the agenda to all participants, and often after the meetings a summary was sent out. Agenda and summary was added into the data gathered from the meeting.

Powerpoint was also used during some of the meetings. The slides appeared more structured than the discussions, and contributed to the work of understanding the scope and context of

the project, and at what stage the project was in. The biggest contribution, however, was that the PowerPoint showed the detailed design of the planned infrastructure while under development.

During the project, miro-board was used. The miro board can be explained as a digital blackboard, where notes and post-it notes could be structured during workshops. For each session a new part of the miro-board was being used, hence nothing was deleted. This made it possible to study the notes from the workshops in retrospect. This was beneficial in the work of mapping different participants in the co-creation, and analyzing how the project has been working in the workshops that I was not able to attend.

The most important internal report was the report presented by Telenor to Hemit at the end of Phase 1. This document was in detail explaining what questions Hemit asked, the context of the questions, and also the reasoning behind initiating phase 2 as further investigation.

External reports such as annual and interim reports were used to identify resources such as financial assets, number of employees, global abstinence, network, international knowledge etc. These numbers were used as indicators of financial resources, and help us understand the power differences among the organizations within the process of establishing an ecosystem.

3.4 Data analysis

3.4.1 Data Preparation

In order to prepare the gathered data for data analysis, the recordings from interviews were first transcribed. In addition to what was said by whom, the transcription describes how things are said (Saunders et al., 2019). For example, in the first interview, the informant several times quoted questions asked by the corporate leadership. To make the reader of the transcript able to understand that it is not an actual question from the informant, brackets are added to the text to guide the reader. Also specific emphasis on words, irony, enthusiasm or other ways of expression is clarified or described similarly. Even though transcription was very time consuming, it enabled me to get a view about the data gathered (Saunders et al., 2019), and several times during the transcribing process ideas and findings were noted. By doing this a better engagement in the analysis was possible (Saunders et al., 2019).

3.4.2 Template Analysis

In order to organize and analyze the data, a template analysis was conducted. A template analysis is a hierarchical representation of themes and codes (Saunders et al., 2019). During the analysis the preliminary coding was done by first categorizing the data into themes. These themes were chosen out of, and are directly related to the sub-questions presented in the introduction of this paper regarding; *roles* in the ecosystem, *power* of participants , and *coordination* of the project. By presenting the findings divided into these topics, I was able to sort out and connect the findings to the specific sub-questions and facilitate an informed discussion to answer the research question. During the research, data were further divided into different sub-groups and 2nd sub-groups of codes based on the presented theory. This way I was able to e.g. identify how the sources of power found in the case study relates to the existing literature, and how they inform the research question. In addition to the mentioned themes, *the project* was added to understand some important contextual findings such as *motives* and *vision* which were chosen as sub-themes.

1.0 The project	1.1 Development	1.1.1 The backdrop
		1.1.2 Phase 1
		1.1.3 Phase 2
	1.2 Motive	1.2.1 Problem to be solved
		1.2.2 Output of the project (reward)
	1.3 Vision	1.3.1 Value propesition
2.0 Roles	2.1 Pre-project relations	
	2.2 Roles in the rpoject	
	2.3 Roles in the ecosystem	

(Table 3: Example of templates and sub-themes used for analysing the data)

Because this research was conducted with an explorative approach there has been an iterative process of adjusting research questions, and adding relevant theory when new information were gathered through interviews and observations. Also the templates in the coding were adjusted during the period of research. Some themes and sub-groups were developed, some were put under another theme, and some sub-groups were merged together.

Because the themes are interrelated, which is the reason they are all included to answer the research question in the first place, some quotes or observations were difficult to decide what theme to relate it to. In such situations an evaluation of what theme that it was strongest

connected to based on theory and the overall findings was done. In the cases where data was strongly related to two themes they were put under both templates. This was e.g. done when the applied leadership was described, both informing the coordination of the project but also the power relations between actors.

Quotes from the interviews, and quotes and field notes from observations were then organized into an excel spreadsheet categorized into the different themes and sub-themes. In addition, the date of the quote, who said it, company represented, and context of the quote was added in the spreadsheet. This made it very easy to draw out relevant data for the different themes of analysis, without losing the context of the data and inform the interpretation during analysis (Saunders et al., 2019). The excel spreadsheet worked as a dynamic tool during the analysis enabling changing themes and sub-themes easily and get a nice overview of the findings during and after collection and analysis of data.

3.4.3 Citations

In order to select only the relevant data from the quotes presented in the findings, the "[...]" is used to indicate that parts of the original quote are removed. Sometimes in the interviews, the informant left out some words in the sentence. Consequently the meaning might be more difficult to read compared to when listening to the interview. Therefore some words are put in parenthesis to make the text more fluid and easier to understand. Because the interviews were done in Norwegian, the quotes needed to be translated. The translation was done carefully so that the intention of the quote was remaining the same. In order to achieve that, some sentences needed to be rearranged, and some other words than the direct translation needed to be used. The original norwegian quote, and the english translation are both presented in the excel spreadsheet for comparison.

3.5 Research quality

Reliability and validity are central concepts to judge the quality of quantitative research. Internal validity describes to what extent the findings can be attributed to the researched intervention rather than to flaws in the research design and external validity describes to what extent the findings can be generalized to other contexts. Reliability refers to whether the findings could be replicated if the research were to be conducted again (Saunders et al., 2019). For qualitative research, however, the use of reliability and validity is contested (Saunders et

al., 2019). For this reason, it is found more appropriate to use the criteria of dependability, credibility and transferability to assess the research quality. In this chapter, these issues of data quality will be addressed. Furthermore, this section will consider the research ethics.

3.5.1 Credibility

Credibility is the parallel criterion to internal validity and is concerned with ensuring that the representation of the informants' understandings match what the informants intended (Saunders et al, 2019). Credibility is ensured by asking all informants the same questions and avoiding leading questions. An additional concern when observing the meetings is that participants might speak quickly and it might therefore be difficult to write everything down during the meetings. To solve this problem, I have used participant validation to further assist credibility. Participant validation is the process of sending back research data to the participants/informants so they can confirm whether it is accurate or not and comment or correct it where necessary (Saunders et al., 2019). The notes used were sent back to the informant with the context of the quote and the interpretation of the quote so they can confirm that the context and the quotes have been understood correctly and they can comment on our interpretations.

Another measure to increase the credibility of our research is triangulation. Triangulation involves the use of more than one source of data and method of data collection (Saunders et al., 2019). The fact that there is used data from observations, from semi-structured interviews and from company documents to confirm our analysis and interpretations will increase credibility. I was also careful to rephrase questions if they appear unclear to the informants to avoid misunderstandings. In addition, follow-up questions were used to let informants explain their intentions further if the answers seemed unclear.

3.5.2 Transferability

Transferability is a criterion similar to external validity and refers to the degree to which the research findings can be generalized (Sinkovics et al., 2008). The exploratory, qualitative and focused nature of a case study may reduce its transferability and poses a limitation of this research. The uniqueness of this case might lead to less relevance for development processes of other ecosystems. The fact that it is a municipality that initiates and is a core participant in

the process might be an important element making this different from other ecosystems. The size of companies, investments and the scope of innovation driving the OHP-project might also be elements that make the development process of this ecosystem different from the development process of other ecosystems. Nonetheless, there is reason to believe that the findings can still be used as a foundation for future research in the field of ecosystems establishments and might contribute to generalizable findings in time to come.

3.5.3 Dependability

Dependability is a criterion similar to reliability that is concerned with the stability of the results over time (Sinkovics et al., 2008). Replicating semi-structured interviews was difficult since the respondents' answers were dependent on the particular setting. However, to strengthen the dependability, I followed a strategy of recording and transcribing the interviews so the data collection process can be understood and evaluated by others.

3.6 Ethical Considerations

In the context of research, ethics refers to "the standards of behavior that guide your conduct in relation to the rights of those who become the subject of your work or are affected by it" (Saunders et al., 2019, p. 252-253). Research ethics need to be considered throughout the research process due to their potentially significant impact on research quality (Saunders et al., 2019). Because the research project includes the handling of personal information gathered for example during the interviews, I have reported our project to the Norwegian Centre for Research Data (NSD) to ensure that our research is in accordance with their standards. I have also ensured that I have handled personal data in accordance with the General Data Protection Regulations (GDPR). I have got consent from every individual to use their personal data. To ensure that the informants are being handled according to proper ethical standards, I have ensured that data which in one way or another can identify the informant, will not be used without confirmation of the use of data and the context it is used in the final report. All data is stored and encrypted in the cloud, secured by password protection, and will be deleted once the research project is completed. In addition, all participants are informed about the project in advance and will have the ability to withdraw their consent at any point during the project without needing to provide an explanation.

4. Empirical findings

In this chapter, I will take a descriptive approach presenting the most central findings based on the data analyzed from observation, interviews and documents. The empirical findings will provide the foundation for the discussion in chapter 5. I will first present a summary of the findings, followed by a more detailed presentation of the specific topics found relevant to discuss how a firm's power relates to influence and established power in an ecosystem. These topics are divided into the contextual themes; project development, motive, and vision which is found important to understand the findings of the more directly related topics; *roles*, *influence* and *power* which are presented thereafter.

4.1 Summary

The project of study was started as a request from Hemit to Telenor regarding how 5G and IOT can contribute to a better health service in the future. Four firms are found to be participating in the development of the ecosystem, namely; Telenor, Hemit, Microsoft and Infinwiell. Telenor is found to be the leader, and together with Hemit they maintain high influence of the development through active and dynamic control of the project. All participants are found to have an influence within the project through participating in workshops, project meetings, providing input to the blueprint of the ecosystem, and being involved in smaller teams working on specific parts of the technical design. The vision of the ecosystem is found aligned across the companies, while the individual motives of the firms are somewhat different though not in conflict. When digging into roles in the project, and the ecosystem I find that Telenor as a leader in the project also opt for ownership and centrality in the ecosystem. The dynamics in the group is highly cooperative with a low level of conflict. When digging into the ability of influence in the project I find *expertise*, c*orporate network*, *influence on reward*, *strong brand*, and *value proposition* as potential sources of power. In an ecosystem, power is highly influenced by *centrality*, *switching costs*, *modularity*, and *unique value proposition*, which might enable the firms to both create and capture value from the ecosystem.

4.2 Project development

The presentation of the project development is divided into "the backdrop", "phase 1" and "phase 2" in order to give insight to the development of the project over time. "Phase 1" and "phase 2" are names used internally in the project to describe different periods of the project.

4.2.1 The backdrop

Before the beginning of the project, important things were happening both from the technological perspective and from the perspective of governance in the health sector. Technologically, 5G and IOT was on the rise, and together with other telco suppliers, Telenor had started the out rolling of 5G already in 2018. Also, a rapid increase in data from Medical Technical Equipment (MTE) that is sent out of the country is observed, showing a doubling since 2018 (statistics from mail 17.11.2020).

"5G and AI are drivers for what triggered the investigation" P2, T

In parallel with technological development, the Health Authorities in Norway have addressed capacity problems for hospitals (specialist health service) and for the health service in the municipalities (primary health service) in the years ahead with a rise in the elderly part of the population. Therefore, solutions to reduce these constraints and more efficient operation of the health sector have been on the government's agenda in several years. Also Hemit have continually been governing and contributing to the development of digital services. In 2019, Hemit signed an agreement with the American company Epic Systems Corporation for delivering a common digital journal system for both primary- and specialist health service.

4.2.2 Phase 1

The starting point of this project is an inquiry from Hemit to Telenor in january 2020. Hemit asked Telenor to investigate what opportunities 5G and IOT gives health services in Norway. To address this question Telenor settled a team to dig deep into the issue. In september 2020, the report was finished and presented for Hemit. The report discusses both technical and practical opportunities in 5G and IOT. The main takeaways is that the highly fragmented market for Medical Technical Equipment (MTE) is a bottleneck for efficient usage of data and cost savings (p.41). The report suggests standardizing technology and sharing of infrastructure to address this problem. It is stated that it is possible to use the same physical network and IT infrastructure for MTE, IT and communication and additionally secure robust

data security with the existing technology. Going forward, the report recommends establishing a team that explores the opportunities for cooperation and developing an ecosystem for operation and management of MTE. More specifically the team should address opportunities such a platform can give, and also what kind of business models this should be based on.

4.2.3 Phase 2

The handover of this report marked the end of "phase 1" and the beginning of "phase 2" in this project. The scope of phase 2 was to initiate a co-creation process with Telenor, Hemit and others to establish a test arena with the goal to validate hypothesis and test pilots regarding "the outpatient hospital" (mail & PP 05.10.2020). The end goal was defined as establishing a robust communication infrastructure for health data. At request from Hemit, Telenor also included Microsoft into the project to get their expertise of data storage and analysis. As a pilot, Infiniwell was also included into the co-creation. Infiniwell delivers software for distanced observation of patients and AI for diagnosis and decision support for cardiologists.

In the continuing months, Hemit, Infiniwell, Microsoft and Telenor designed the infrastructure, and created a pilot with ECG-measurement with the use of hardware from Clarity Medical Pvt Ltd, software from Infiniwell, network from Telenor, and cloud service from Microsoft (Azure). Pilot 1.0 with data streaming from the patient through Telenors 5G network and into Infinwells software in Azure was ready in february 2021.

Current Design (MS Azure cloud)
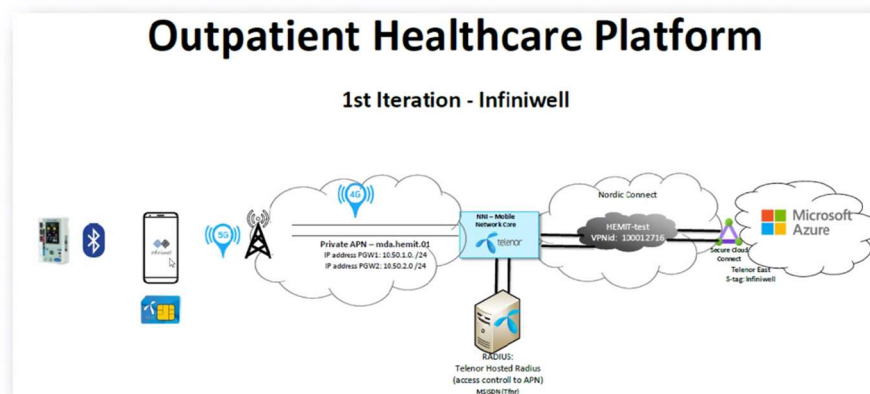
(Figure 4: Visualization of data stream from MTE to platform in Azure. From internal PP presented project meeting 10.02.2021)

This MVP was able to show how medical data could be sent securely to the cloud with low latency. However, the platform in Azure was not ready, and Telenor and Microsoft continued the work of designing the solution in Azure.

> *"We have worked with integration 2 where they (the engineers) will have a tenant in Azure and will be able to scale better. Now they have made a breakthrough on that, because now an MCA agreement has finally been signed between Microsoft and Telenor so that they can start building profiles within Azure. " [...] "I expect we can build a tenant in Azure pretty fast. Maybe next week or the week after "[...] "That means we can start on integration 2 which is to build better scaling in Azure " P2, T in project meeting 14.04.2021*

In parallel with the technical development, P3 in Telenor has been delegated the work of developing a business model for the ecosystem. Together with the other participating companies, the different components of the infrastructure were addressed. While this work was ongoing, Telenor presented two types of scenarios. The first scenario was to deliver the platform or infrastructure as a service. In this scenario, Telenor will take the position as a platform owner, and order the different components of services from suppliers (e.g.. Microsoft) in addition to be responsible for operation of the platform. In the other scenario, Hemit themselves take the ownership and responsibility of the platform, and the suppliers of components sell it directly to them. The participants seemed positive to both the scenarios presented, but Hemit had to take this discussion internally. An important factor in the decision of what scenario to go for is the price, but in this stage of the project, no numbers have been discussed.

> *"Now after we have discussed this with you, we will also develop this with an architect at Microsoft and a health architect in Microsoft Europe. Then I think we have to work together on the alternatives. Look at the pros and cons, and then we must work out together the advantages and disadvantages of these models. We must do this together because you have issues we must take into account and I think Infiniwell also has considerations about what are the advantages and disadvantages of the alternatives. AND then we have to look at what components we need to put this together as a service. This is a service to Hemit, so what does this require of licenses from MC [...],and what components are needed? Once we know that, we can start*

> *counting on a price for the service. This is the plan, so feel free to comment on it if it is a passable road.* "P2 in project meeting 26.01.2021

A third objective in the project was promotion of the value that the ecosystem will be able to create, towards decision makers in the health authority. When the pilot with streaming of ECG to Infiniwells software on the platform was ready, promotion of the project was addressed. Straight away P18 from Infiniwell and P19 from St. Olavs hospital put up a demonstration internally for the clinicals. In addition both the local paper Adresseavisen, and the journal Teknisk Ukeblad (TU) posted articles about the pilot and how this potentially can be an important part of healthcare in the future.

4.3 Motives

Telenor, Microsoft and Infiniwell are all commercial companies, and a long term goal is clearly to gain or increase profit. However, digging deeper into the objectives in this specific project, I find that the companies have short-term objectives enabling them to capture value further down the road, which makes this project attractive. These objectives are found as; drive usage of data to sell services (Microsoft), gain deep knowledge in a potential new business (Telenor), and to develop and promote services in core business (Infiniwell). However, Hermit's objective of initiating this project is to gain understanding on how the technology the companies possess could potentially contribute to solve capacity problems and increase quality of health service in the future. In addition to the firm's objectives, there is a personal motivation among the participating people to contribute with solving an important problem for the society.

4.3.1 Learning, developing and commercializing

The most prominent short-term objective of the firms in this project was learning. During the research period, the project has had an explorative approach in terms of understanding how the technology of 5G and IOT can deliver value in the health service going forward.

> *"The starting point is a report regarding use of 5G in the health services, and what the technology will provide of opportunities in relation to the needs of the health service now and in the future. We have pulled that study in a specific direction of need. And that means that two key innovation areas in the health service today, [...] these are the two areas known as medical distance treatment, or digital home*

> *surveillance, and the other is the which applies to smarter use of health data / AI services."* P11, H

Telenors motives for their involvement in this project relates to learning about the customers needs, the industry characteristics of the healthcare sector, and how this learning can be leveraged by enabling Telenor to capture value in new areas of business.

> *"This is about gaining insight for us. It gives Telenor value to gain insight into understanding how hospitals think, how they operate, [and] what is special about them. We need to understand this when we start with new technology such as 5G. What is 5G and what should we do to make money on 5G?"* P2, T

The learning does not only include learning about the customer and potential new business, but also the process of co-creation together with customers.

> *"Then it is important that you document what is done and the experiences you make so that we can reuse this. Because we will do similar processes in collaboration with other actors on other projects."* P2, T on internal meeting in Telenor 04.11.2020

What makes the project attractive for Infiniwell relates to the opportunity to show their technology and to establish partnerships with strong, global companies.

> *"It is two very important things for us as a startup; that is to show the teknology and that we offer value to the world. [...] But it is also very important for us that we have come into a partnership and ecosystem with strong partners, so that we stand shoulder to shoulder with Telenor and Microsoft. It increases our credibility [...]"* P18, I

> *"We want to use this as a marketing tool actually. [...] We have been very lucky; we got good media cover through Adressavisa, and Teknisk Ukeblad is going to write about it as well."* P18, I

Because of the ability to copy solutions developed in this project, the invested time Infiniwell puts into this project can be leveraged when going to other markets, which is a clear strategy going forward. When asked specifically about the importance of ability to scale internationally, Infiniwell where quite clear:

"Yes, exactly. [...] The fact that we develop, or adopt our solution to Microsoft's Azure cloud e.g., makes us able to put the same solution we have today and place it in Mumbai, or in Washington DC or wherever." P18, I

"Yes, we see Norway as a very small market, and the large markets are going to be more important to us financially. But Norway is important to us because we want to develop as much as possible here. We want our product to be an export product from Norway…" P18, I

In an introductory meeting, Microsoft presented their motives for participating in this project. They highlighted that (1) all data is drives usage of Azure and the service they delivers; (2) storage costs money, and Hemit is willing to pay for that; and (3) Microsoft offers many ways to use the data, and can easily connect it to other platform and digital services such as Teams, analytic software, etc. (from observation 22.09.2020).

4.3.2 Solving a problem for the society

However, while it was very clear through the analysis of data that all participating firms had commercial benefits that made the project attractive, I did find clear indications towards enthusiasm and internal motivation related to how the project could contribute to solving real societal problems in the future.

"I feel, being first out with something gives a lot of energy to many of the people in the project group. We (Infniwell) are also prior with what is happening now. I guess it is an area of interest for many in the group." P18, I

"Bringing specialist expertise to the primary health care service is worth fighting for." P18, I

The project leader appeared very energetic speaking about the opportunities that this project reveals, and reminded me several times during the interviews of the underlying problem that the health service is standing up front of.

"What we are aiming at is to have a sustainable healthcare system. Our demographics in Norway indicate that the average population is getting older, and when we get older we also get more chronic diseases. And the health service has a huge challenge in that it is not sustainable as it is today. So they have a very short

time to find a solution on how to solve these challenges. Covid-19 has revealed this as well. That there are capacity problems in the hospitals, so they look at "the outpatient hospital" as they call it." P2, T

In addition to the importance of being able to help more people with less skilled personnel, issues regarding data and ownership of data has been an important topic during the project. Today, several medical suppliers gather, store and process data from patients. This situation constructs two issues; (1) the fact that private international companies collect, store and process sensitive data, (2) and that a fragmented market for technical medical equipment reduces the ability to integrate equipment/software, and leverage the access of big amounts of data by using AI.

"It is exactly that it (market of medical technical equipment) is so fragmented and there are so many solutions, which is Hemit's problem, and that is why they come to us. There are plenty of existing solutions, the problem is standardization so that this becomes easier for those who will manage this." P20, T in internal meeting 17.11.2020

"The big barrier for the health services can be summarized as security risk regarding the handling of data. So to be able to schale, wide, and so on, the key question is around the architecture to be able to make it, and for the safety of the data." P15, M

These problems create an opportunity for the participating firms to be able to jointly develop and create an infrastructure based on secure end-to-end data streams within the control and ownership of the health authorities. This infrastructure is the ecosystem that is called the Outpatient Healthcare Platform.

4.4 Vision of the ecosystem

The work with the Outpatient Healthcare Platform is in an early stage, and the ecosystem is not yet constructed as it is planned to be. However, we find that there is a quite aligned vision among the participating firms of how it is going to be constructed, and what kind of value it is meant to deliver to the users.

"The visions are highly coordinated here" P18, I

4.4.1 Ecosystem blueprint

In the development of the project, a blueprint of the ecosystem, showing participating parties, their input factors, their responsibility, and the flow of data between devices and softwares have been used to gain a common understanding among the firms. This blueprint has been central in visualising how the construction of the ecosystem is planned.

During the project, the blueprint has developed from a very simple illustration, to being a more detailed map of components, roles, and responsibility. The most updated blueprint during the time of research was presented in january 2021, showing two scenarios that have been discussed during the project; one where Telenor takes ownership of the platform, and sells it as a service to Hemit, and one scenario where Hemit takes ownership themselves.

(Figure 5: From Powerpoint for internal use in the project showing scenario 1- Telenor take platform ownership)

HEMIT case – Scenario2: HEMIT is the platform and service provider
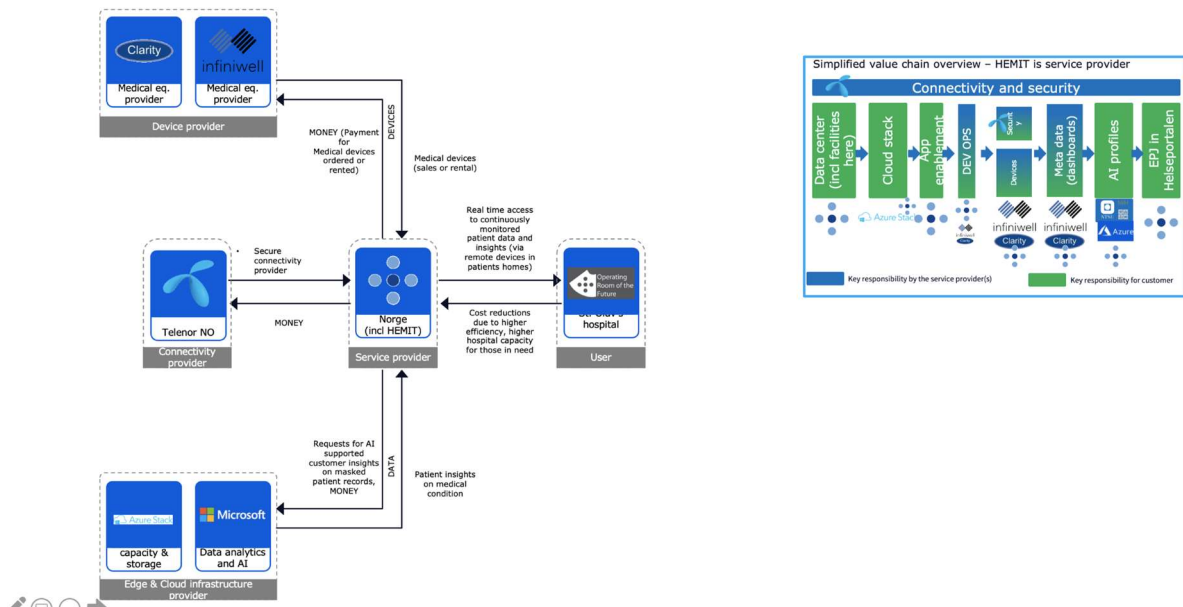
(Figure 6: From Powerpoint for internal use in the project showing scenario 2 - Hemit take platform ownership)

Related to the problems addressed in the previous chapter, the value that the ecosystem will create by solving problems for the customer has begun to crystalize.

4.4.2 Value creation

Throughout the project, there have been several specific value propositions discussed. The core of the value created by the platform has been secure transfer of data from the medical devices, store it in a cloud-based server, and securely distribute the data to the ones who are supposed to use or take a look at it (doctors or other professionals).

> *"We believe that the Health Authorities will get better control of the data and that we will then have an ecosystem that is in the best interests of the municipality, Health Authorities and patients."* P2, T

Additionally, the platform aims at using standardized protocols so that MTE and software that the health trust wants to use can easily be plugged to the platform, enable using data across different softwares and to utilize the amount of data by use of AI in diagnosing or in scientific contexts.

" [...] And that is what this product is about. We throw a web over the whole country, which is very secure and efficient, and streams data into the big data centers where we actually can do very good diagnosis to help people anywhere." P18, I

"[...] One thing is that you can more easily predict things before they happen. That is, if you are undergoing treatment for something and you are sent home with an ECG monitoring. Then someone in the hospital can monitor and predict that, ok, now the values are .. When you use AI modeling then: You can connect values from other types of technologies, you can connect it to a large user database that indicates that patients with this type of DNA , with this type of medication, and this type of course they have a prognosis to develop this way and that way, so when this value increases then you should take the patient to the hospital and get the patient in. [...]" P2, T

While the fundamental vision of the value that the ecosystem is going to deliver is clear, there have several times been pointed out that this is just the fundament, and that the participants do not fully understand every specific opportunity the infrastructure opens up for into the future. This issue of clarifying how the end products are going to be like in terms of construction, usage, and practical implications in the daily service of health authorities gives the project an exploratory appeal. The lack of specific use cases where the need for the ecosystem can be demonstrated to the clinicians has implications when it comes to convincing decision makers within Hemit and Central Norway Regional Health Authority. Therefore a proof-of-concept was developed, not only to validate the technology, but to use it as promotion towards decision makers on the customer side.

During the development it has been focused on the user experience, which is an important part of the value that a common platform of MTE and software suppliers can deliver. P3 from Telenor have been specially focused on this perspective, and have used the model "customer journey" to explore important issues for designing a process and product that improves the working situation for health personnel.

"This is also about clinicians in the operating room or emergency department not having to deal with X number of systems and screens, but that they can sew the unit together in it. To put it this way: There is no doubt about where the health trusts want - in that direction They want distance [surveillance], but they are important that when you do that you have to avoid many suppliers of proprietary solution" P11, H from project meeting 17.11.2020

4.3 Roles

When analyzing the roles of the participating companies I found it relevant to distinguish between *pre-project*, *in the project* and *in the ecosystem*, during the data analysis. Dividing the findings into these three contexts is helpful in order to understand how the roles of the firms have affected the power and influence in the project, and also how the project have affected the relation between the firms.

4.3.1 Pre-project relations

Both Microsoft and Telenor have a long history as partners with Hemit delivering support and consultancy services, but also as suppliers of digital infrastructure used by the health authority. The partnership between Microsoft and Hemit is found quite strong, and they have monthly meetings often discussing what opportunities lie ahead within digital development. These pre-project relationships are the reason for why Hemit involved Tleenor and Microsoft in the project.

> *"Microsoft has long been a large and steady and strong supplier of Hemit."* P11,H

> *"We have a commercial relationship with Hemit. We run Wifi solutions at the hospital there, we deliver solutions to Hemit daily, and we have a lot of hired consultants / resources, but they are in a way disconnected from what we are doing."* P2, T

In the case of Infiniwell, it was more of an incident that they got involved. After working together with St Olavs hospital and Hemit, regarding long distance surveillance where they deliver products, Hemit connected them with this project because of the need for a proof-of-concept to demonstrate, test and validate the Outpatient Health Platform.

During the interview, P2 from Telenor presents his thoughts about the importance of good customer relations, and that such a good relationship with Hemit enabled Telenor to establish and take lead in this project.

> *"[...] That was the mission they asked us about - "can you help us with that?". Because they trusted us, we had built up a very good trust before that time. So this is long-term accumulated trust."* P2, T

Answering the question about why exactly Telenor was contacted to investigate the research questions regarding 5G which was the startpoint of the report in phase 1, P11 commented:

> *"[...] there are certainly more players than Telenor who can provide insight into the 5G domain. The choice of Telenor in that sense is made by Hemit management, as part of a procurement. So I was involved after the procurement was done and the project had started."* P11, H

Even though Telenor and Microsoft had strong relations before the beginning of this project, few of the people involved across the companies have worked together before, and there is not found indications towards that personal relationships have been important for why it was exactly these four companies that now are cooperating in this project.

4.3.2 Roles in the project

Even though there has clearly been a flat structure with an open and close cooperation between the firms, their group structure has settled in terms of roles and contributions to the development during phase 2 of the project.

Through high involvement in the project meetings, introducing firms into the co-creation, and giving feedback during the development of the ecosystem, Hemit has taken an active role as a potential customer in the project. Hemits contributions have been especially important regarding insight into use-cases, connections within the health sector, and communication with decision makers in the Central Norway Regional Health Authority. Hemit showed big influence in the process by being highly involved in the project meetings, and settling requirements such as standardization enforcing modularity / low switching costs of suppliers, and high level of data security.

Despite high involvement from Hemit, it is clear that Telenor fills the role as a leading firm in the project. Among the participants, P2 from Telenor is referred to as project leader. As a leader, P2 has a holistic perspective of the whole project, and is constantly taking initiative to drive the project forward through arranging and leading the agenda at meetings, sending emails, and connecting people.

> *"[..] so Sigbjørn and his team have... they are the ones who make the plans. We support, provide input and suggestions and such, but when it comes to planning, he is the one who has the best overview."* P18, I

When asking T2 whether the role as a leader was given by Hemit or taken on their own initiative i got the following answer:

> *"We took that role a bit. Me and P1. This was new to us, we had never done a co-creation before, we just wanted to experiment and test what it was like to do co-creation [...] "* P2, T

In contrast with Telenors active leadership, Microsoft showed a different approach in the project, being less prominent, and seemed to be comfortable with Telenors lead. Microsoft contributed as a sparring partner in the project meeting, working together with Telenors and Infinwels engineers to design the infrastructure in Azure, and provide the "building blocks" in the development.

> *"[...] Microsoft is probably more comfortable with being a subcontractor, so they are not very central in setting the direction and deciding what to do and such. They are probably more interested in delivering the building blocks to us who build [the ecosystem]. [...] ",* P18, I

Microsoft's contribution of knowledge regarding integration of other platforms, such as the new journal system Epic, is also significant. Epic is chosen as a shared system for all departments in Central Norway Regional Health Authority, and a good integration to that platform is necessary in order to leverage the use of health data in the future.

P11 in Hemit explained the backdrop of Infiniwells introduction in the project as a suitable company contributing in the work of developing a MVP for a specific use-case.

> *"It was me who included them into the project. [...] Because we... Well. Because I had knowledge of what Infiniwell was working on. Then, [I] mentioned them in the process with Telenor, and eventually Microsoft was connected on [the project]. And when we began to see that we were mature for a use case that we could work more concretely with, then the start-up company Infiniwell was an interesting player to bring in. [...] We see that we have benefits from this, especially in relation to concretizing the opportunities and dialogue with clinicians about "what can we really achieve in the future?". "* P11, H

This confirms the observations that Infiniwell is introduced for one specific task: Enabling to build a MVP which has a central role in testing and validating the infrastructure, and also for promotion for stakeholders.

4.3.3 Roles in the ecosystem

Even though the interviews and observations from project meetings reveal that the participants do not have a crystal clear vision of the roles in the ecosystem being distributed and how the ecosystem will look like in detail, these issues have developed and become more clear during phase 2 of the project. Both specific use-cases and the blueprint (presented in the chapter "ecosystem blueprint") of the Outpatient Healthcare Platform have been important tools during this phase to clarify the plans going forward and how it should be constructed.

The most interesting observation is Telenors initiative to take ownership of the platform, and deliver it as a service to Hemit. This implies being responsible for assembling components, managing, and operating the platform.

> *"And then we take as our starting point two scenarios: One is Telenor owns... goes in and takes a platform ownership, and delivers "as a service" secure health data or what we should call this product, to the health authority as a service.[...]The second scenario is the opposite case: Okay, what if Hemit does and orchestrates all this here himself? Then they have to build their own data center, they need to have the servers in place in their data center, they need to have firewalls, they need to have software, they need to have operating personnel, they need to have access control, they need to have security, they also have to shop agreements in from Microsoft Azure to get it in there. Cloud. Private cloud in there. They have to shop connectivity from the telco suppliers, they have to shop hardware from the manufacturers of MTU and AI and so on. And this must be orchestrated, and have security end to end, and it must have a quality-of-service end-to-end. They then have to orchestrate all this themselves, and then Telenor becomes a connectivity supplier to Hemit, where we then focus only on an access that we deliver after an order from ... or a contract from Hemit. [...]"* P2 T

Despite the fact that such a central role in the ecosystem might give Telenor substantial power in the ecosystem, it seemed like no one of the parties in the project had conflicting notions about that.

> *"In the scenario where the customer wants to buy it as a service, it is Telenor that has taken the lead and will take the lead based on the fact that all other partners have said that Telenor can take that position."* P2, T

> *"[...] So they (Microsoft) have a slightly more secluded role in the ecosystem right now at least. But I would probably think that it ... When you start talking about business*

models, it could be that they ... Maybe their marketing apparatus will take on a bigger role, I do not know." P18, I

T2 in Telenor explains this position as part of the core strategy of Microsoft in doing business through partnerships.

"Microsoft is very... They have said that "we want to go behind you, we want to support Telenor in this case", because they have a business strategy of partnership. They usually sell through partners, and see this as an opportunity [for doing that]." P2, T

Microsoft's role in both presented scenarios is presented to offer the cloud service of data storage and data processing. Hence, they will contribute with the building blocks of the infrastructure either built and owned by Telenor or Hemit.

"Well, they (Microsoft) are also part of the infrastructure. So it's an infrastructure company. [...] They deliver some of the parts, so to speak." P18, I

"They(Microsoft) are a supplier of compute power. [...] And AI support." P2, T

Even though Infiniwells role in the final ecosystem is uncertain, meaning that the ecosystem might be established without Hemit purchasing the software from Infiniwell, Infiniwell has a clear potential role in the ecosystem as a complementor. By the use of their software, patients can be monitored 24/7 from their homes, streaming data to Infiniwells software which by the use of AI can contribute as support in the cardiologists work of diagnosing the patients. Their role in the MVP will therefore be the role a supplier is planned to have in the Outpatient Healthcare Platform, where suppliers of Hemit can just plug in to the infrastructure and instal their software on the platform.

4.4 Influence

During the observation I have had the opportunity to study how the participating firms have coordinated the development of the ecosystem, and how they have contributed in the process and influenced the development in order to fulfill their individual and collective motives of the project.

4.4.1 Dynamics

The dynamics of the group have been highly cooperative, characterized with a unified core people, enthusiasm, honesty and a high level of trust. Despite having a lot of discussions, there have been no observed disputes during the project meetings.

> *"This is a collaboration project. It is a co-creation, and it has kind of been the spirit from the first moment [...]"* P18, I

An interesting finding regarding the dynamics between the participating firms is their focus and intention of making the project advantageous for all participants. During the interviews and observation of meetings I often found the firms talk about how the project could have positive synergies for others than themselves, as long as they did not counteract their own motives.

> *"They (Infiniwell) have their interests, they have their ambitions. They see us as an enabler, who can realize their business. Of course, they have their ambitions and their business, and were also willing to share.... ehm, co-creation, openness, they wanted to share the business models, with the prices and all this, they had no secrets from us. They did not look at us as a competitor, they see us as enabler for their service and their product."* P2, T

> *"Infiniwell's entry as, call it use-case, has been positive. They have experienced what is important to them in their journey of innovation: Getting that interaction with Telenor, and Microsoft and Hemit. At the same time, the use case will be developed together with them."* P11, H

The cooperative dynamics is also found through open dialogues where the participants listen to each other's ideas and needs regarding parts of the ecosystem that they are directly involved in technically, or have a specific knowledge.

Also the individuals representing the firms have built social bonds. The atmosphere is found relaxed and kind, which was experienced by myself when I entered the project for doing the research for this thesis.

> *"They have been absolutely magical to work with, and I have thought about it a bit, I think it is very personally dependent."* P2,T

> *"So I think it has something to do with people, quite simply, in the beginning. Finding a good relationship, being open, understanding that we are on our way to somewhere that we do not know what is."* P2, T

Another finding is the individual's enthusiasm regarding this project. In addition to being of commercial interest, it is clear that the issue of improving the health service and developing solutions for capacity constraints within the health sector in the future is something that they feel personally engaged in.

The open and cooperative dynamics do however take some time to develop. This was also found when new firms such as Microsoft entered the project, when it took a couple of weeks to get them really enthusiastic about the project.

> *"So we started, but it took a while to get Microsoft with us, but after two weeks we have a presentation and start to go into what this could really mean. So now Microsoft is also very positive, and understands what this potentially could be."* P2, T

The cooperative environment in the project group has been supported by the firm's openness and honesty during discussions, and how they have managed to align their intentions and build trust in each other.

> *"So we have to try to understand that(the problem and the solution) together. And in understanding that landscape, i.e. working with that understanding together, it requires trust and openness, honesty, tidiness. Which I feel is well in place."* P11, H

> *"I think the key (for succeeding with the project) must be openness and cooperation."* P18, I

> *"But of course we know... In the end, it is the conditions that develop between the actors. It's not the technology and the "cold" that keep this together, it's ... The fact that you trust each other and know that you can deliver to each other, that's probably what keeps the ecosystem together in a world where we build with standardized building blocks."* P.18, I

In addition to the participants integrity, the trust is also found related to the proven ability to deliver value to the ecosystem.

"But trust must be built anyway, so the fact that we have managed to deliver the "proof-of-concept" project here, for example, I think has given a lot of trust to everyone." P18, I

4.4.2 Leadership

The humble and cooperative dynamics observed between the firms is also reflected in the leadership performed by P2 from Telenor Business. P2 several times assured that the description "leader" could equally be described as "orchestrator" or "facilitator", he describes his work as the role of connecting people and holding the structure of the process, rather than lead it in forms of technical development and decision making.

"[...] I mostly facilitate, but it is also a project manager trait to "make people talk", put people together; "Ok, you have to talk to him", and "you have to talk to her", so I orchestrate all this in a meeting and then magic happens. So I pull the strings and connect together, and create an arena where magic can happen." P2, T

"Yes, I would say that Sigbjørn sets the tone though. He is the project manager for this, and he is ... What do they say in Norwegian? "Left, right and center". Heh, he's on. And I call to get people to do things and get feedback and such, so I think that chemistry is very good, at least from my point of view then. [...]" P18, I

The explorative approach of figuring out how to realize the visualised ecosystem and fulfill the motives of the project, have been led by an agile leadership enabling high degree of influence from all participants.

"The idea is that we will take small steps on the way forward towards a final big goal. So if there are any changes you want to make within Azure, API or something like that - just let us know." P2, T from internal meeting 10.02.2021

"We have to do this with the customer. It is important that everyone is heard, everyone is seen, everyone is taken into account." P2, T Internal meeting 17.11.2020

Telenor was also open for feedback on leadership and how the process has been working for all participants. For example, at the end of the status-meeting in April, Teelenor initiated a short workshop evaluating the process and leadership in the project so far. During this workshop a lot of positive feedback was given. Of the negative ones, it was mentioned that

lack of clear milestones and short-term goals might hinder the pace of the development and make it more difficult to identify important action points going forward.

4.4.3 Interorganizational contact persons

The most important arena where the companies interact in the project is through the project-meetings that during the project have become weekly status-meetings. These meetings have been initiated by P2 from Telenor, and he is also taking control of the agenda of the meetings. Representatives from Telenor, Hemit and Infiniwell have almost always been participating in these meetings, while Microsoft have been part of most of them.

> "We have had regular... To begin with, it was not a weekly meeting, but then it was just like we agreed from time to time. So when we had these meetings and touchdowns it turned out that ok you have to talk to this and that, and then we did it in the meantime, and then we met... we called in for a new meeting once maybe next month again. So it was a bit like that; agreed from time to time. Now we are in the process of iteration, and then... phase 2, so now we have regular weekly meetings. This is because now so much happens from week to week that we need to sink together, feel free to look a little at business models and want to share some information there and... (lost data 2-3 sec.) …meetings a week now. Plus work meetings in parallel." P2, T

The work meetings have been engineered from the different firms meeting and discussing/developing technical solutions. There have also been meetings to uncover the potential customer journey for the users of the ecosystem, and meetings evolving promotion of the project and the MVP.

4.4.4 Tools

Due to the Covid-19 pandemic, the different actors have not had the opportunity to travel and meet across geographical distances. Hemit and Infiniwell, both based in Trondheim have been in touch, while Telenor and Microsoft have not been able to meet physically. Because of this, digital tools such as email, powerpoints, Teams, and Zoom have been important in the work of coordinating the co-creation, and influence the process.

> *"Well, it's Zoom or Teams or whatever it may be. Also, there is email and screen sharing and such. It works well. There is no more magic than that."* P18, I

Based on the observations, it seems like all participating parties were comfortable with the restrictions and the way of working digitally.

> *"And it(meetings) has been working digitally. Digital only. Meet as you see now, and it has worked absolutely wonderful. We have been sitting on... because the health service has also been required to have a home office, so they have been sitting at home and we have been sitting at home, and... No, there has been no problem with working digitally. Rather on the contrary, it has only really made it easier to meet."* P2, T

Additionally in the project, MiroBoard has been used in workshops where ideas and more creative work have been the agenda. The MiroBoard works like a digital blackboard where people can put post-it notes and this way ideas can be put on the table, discussed and structured.
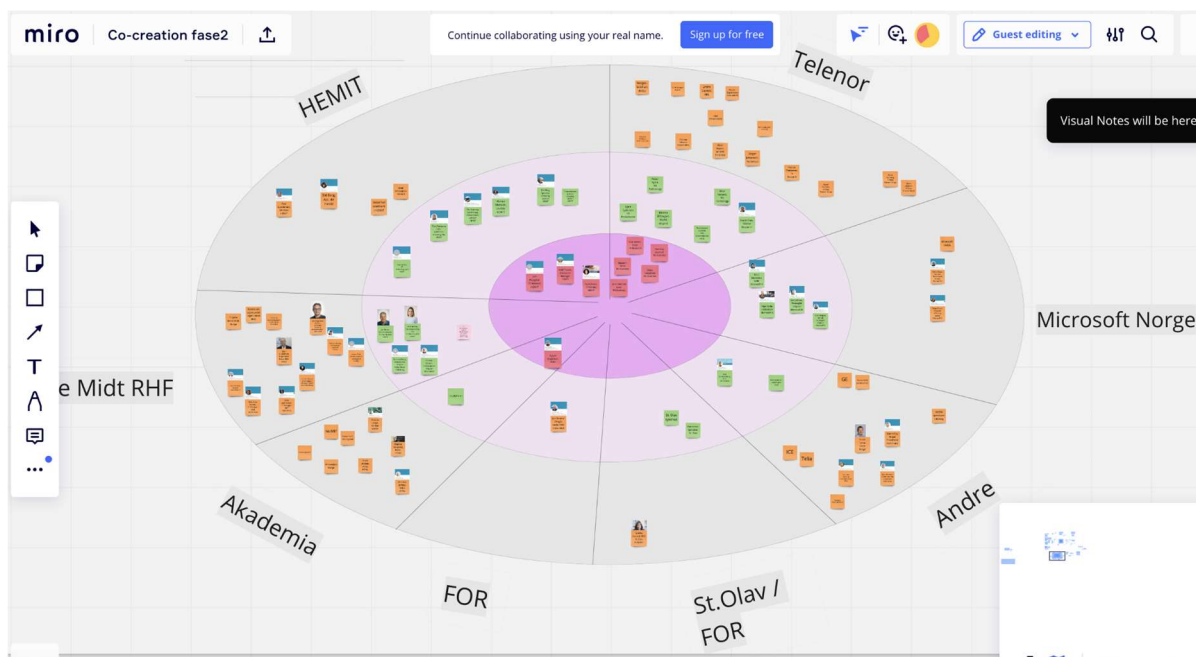
(Figure 7: Screenshot from MiroBoard)

4.5 Power

During the data analysis, there are found several sources of influence in the project and in the ecosystem. However, one of the findings is that the sources that enable influence in the

project, are distinct from the sources that enable influence in the ecosystem. Therefore it is appropriate to present the findings regarding sources of power in the project and in the ecosystem in separate sub-chapters.

4.5.1 In project

The introduction to the project has enabled the firms to influence the development of the ecosystem. During the analysis of data I have found five sources of power that have made the firms able to deliver value to the project and hence been an attractive partner for the other firms to develop the ecosystem together with. The identified sources of power in this context are *expertise*, *corporate network*, *reward*, *brand*, and *value proposition*.

4.5.1.1 Expertise

The most prominent resource that enables the participants to join the project is their expertise within specific areas which is important for the ecosystem to create value. The firm's expertise is the reason for Hemit to include them in the projects, and they are found highly complementary. Telenors expertise is data transportation, and security regarding data. This is competence that is developed through many years of commercial experience and research.

Microsoft's expertise revolves around protocols, integrations, operating systems, data storage, and computing. Microsoft's expertise regarding FHIR-protocol which is the protocol that is planned to be used by the OHP-platform. Microsoft's knowledge regarding integration towards the patient record system Epic is also found important in order to develop infrastructure that is compatible with the journal record system. In the project, Infiniwells expertise is based around the processing of data and how to test the software for

> *"We offer technical expertise when it comes to integrating data communication and networks and things like that, we also offer expertise in artificial intelligence, and we offer expertise in "mission critical systems". Systems that must always work. It's kind of what we have in our background. We do not have much health expertise, where we lean on others such as St. Olav and Hemit and others."* P18, I

> *"[...] The most important thing is that they know how to operate secure systems, [...]. And the telecommunications industry together with national infrastructure has specialized in this, so it is very rare that you have networks that go down to a state of crisis then. And Telenor is very good at that. They operate the mobile networks, they*

operate the fiber optic networks that connect it all together. And they have a good reputation for doing a very good job and a very secure job. So that is probably the greatest competence, I think, that they have this knowledge. And I must also say about Microsoft, that they understand how to run the data center and software solutions that we use. And both companies have very good track records on safety and all that. [...] " P18, I

These findings indicate that expertise is highly important in the project of developing the ecosystem.

4.5.1.2 Corporate network

The formal and informal relationships of other firms and persons have clearly been important in the project of developing the ecosystem. Corporate network is found important in two perspectives: (1) It is in fact the pre-project relations that enabled the firms to be involved in the project; and (2) having a network of firms and skilled people is found very attractive as a partner in an ecosystem, and such relationships have enabled the project to attract competence to fill in the gaps of competence. Hemits contribution is an example of the latter resource.

"They (Hemit) work with the clinicians. The solutions used then. So they simply sit at the interface between us and the clinicians." P18, I

[...] They (Hemit) know who faces challenges in monitoring heart patients, so they put us in touch with these superiors *name of cardiologist* from St. Olavs Hospital. They put us in touch with *name* who is head of emergency preparedness in Health Central Norway, responsible for the helicopters and ambulances, and someone named *name* who is responsible for pre-hospital care. So, they help connect us with those who are having problems and with the business architecture. [...]" P2, T

One of the outputs of this project is further extensions of the firm's corporate network. Elaborating on the benefits of that, and how it relates to duplicating the solutions to other markets, P18 finds this beneficial for all the commercial participants.

"I would probably think that once we make things work, it is always easier to include the actors you know rather than develop new relationships. So if we are going to run a new system somewhere in the world, we will first try to bring Microsoft with us. After all, that's what they gamble on, too, that once it works, it works." P18, I

During the interview the manager of Infiniwell also states the importance of a strong corporate network while working as a technological startup.

> *"You can get the technology almost anywhere, from anyone, in many ways. But the key must be to get in touch with the right people within the professional communities and be connected within a group, simply."* P18, I

4.5.1.3 Influence on reward

The power in the project relating to the concept of reward has been identified through Hemit's influence as a potential customer of the Outpatient Healthcare Platform. During the research it is clear that phase 2 is an investigation in technology and the opportunities a potential platform for health data can give Hemit. However, there is also an expectation of the firms involved that a potential success of this project will end in a sale to Hemit as a customer. Hence, the commercial firms ability to fulfill parts of their motives with this project lies in Hemits hands. This might be one of the explanations that Hemit, as an active potential customer, has gained large influence in the process of developing the Outpatient Healthcare Platform. There is also reason to believe that a potential contract of the ecosystem will have a decent size in terms of payment, because of Hemit´s substantial purchasing power.

4.5.1.4 Brand

During the analysis of data, the power of strong brands was found relevant in the context of enabling influence in the development of the ecosystem. Because the power of a brand relates to associations to the firms, the importance of brand relates to factors, such as; trustworthiness, corporate network, expertise, and legitimate power.

First, I find that the brands enable Telenor and Microsoft to be involved in the project because of their expected expertise and network.

> *"So, if we take 5G, there are several who can talk about 5G in isolation, there are several who can talk about the transport of data, there are more than... But Microsoft is one of the big ones, so to speak."* P11, H

The brand's ability to signal expertise of specific attributes that is important in developing stable and secure, might also be important to the project to attract important players in the

development. When asking P2 if he has felt the attractiveness Telenor is as a partner, he confirms this.

> *"Yes I have. I was in a housing project as well a couple of years ago. And everyone wanted to play with Telenor. [When] I was in dialogue meetings, I noticed that everyone wanted to talk to Telenor. As Telenor's representative, everyone wanted to get married, "to propose" to Telenor because they are so big, powerful, we have the trust that we have."* P2, T

In this project it is Infniwell, who have been involved as a complementor in the ecosystem, and through the interview with Infiniwell's manager I get confirmed this attractiveness that the big brands offer.

> *"[...] But it is also very important for us that we have come into a partnership and ecosystem with strong partners, so that we stand shoulder to shoulder with Telenor and Microsoft. It increases our credibility" [...]* P18, I

> *"So the fact that they(Telenor and Microsoft) both know it (expertise regarding secure transportation and operating data centers and making program solutions), and the fact that other people know they can, is really good."* P18, I

Second I find the brand as a source of trust, enabling Microsoft and Telenor to take leading roles in such projects. During the interview, P1 from Telenor highlighted how the brand enabled Telenor to take central positions in projects like this.

> *"So the combination then with the trust that Telenor has, the trust, we can sit at the table with whomever we want, and people trust us, we can talk about ourselves, and we can actually bring in ... get more competitors to talk together. "Okay, you two have the same challenge, but we know the facility that you can solve both problems for both of you." And maybe we can start connecting, because even if you are competitors, you can work together in certain areas to solve a common problem. So we have by the power of our propell and our position.. Telenor has a power / position that we can utilize."* P2, T

4.5.1.5 Value proposition

The firm's value propositions are highly related to their roles in the ecosystem, which is presented earlier. In the project, the firm's value propositions have been important in the work of building a proof-of-concept. In that context they have been components to validate the technology and testing the construction of the ecosystem. Telenors 5G network and softwares for fast and secure data transportation is an important component in the infrastructure. Similarly, Microsoft's Azure contributes processing capacity and data storage into the ecosystem. Based on these presented roles, both Telenors and Microsoft value propositions as a part of the infrastructure, while Infiniwells software use this infrastructure when recording data from the patient, analyze the data, and present it to the cardiologist. In the case of Infiniwell, their value proposition is the main reason they were involved in the project in the first place.

In terms of the planned ecosystem, the value propositions are the firm's input factors to the ecosystem, and are crucial for the participating actors in terms of being able to create and capture value from the ecosystem. Value proposition relates highly to the uniqueness of the product/service and its position in the ecosystem. While the ecosystem depends on the firm's input factors, the firm's value proposition also depends on the ecosystem. This is clearly the case of the suppliers of MTE that can leverage the amount of data and the opportunities of a simple user experience by standardization and gathering in one platform interface.

4.5.2 In the ecosystem

When turning the context from the project to the planned ecosystem, there are different sources of power that enable them to create and capture value. While these sources are all found in the literature review, they are also found indirectly during analysis of the primary data. The concepts that are found related to power in the ecosystem are *centrality*, *switching costs*, *modularity*, and *unique value proposition*. Even though they are to a large degree interrelated, they will here be presented separately.

4.5.2.1 Centrality

Taking the perspective of the planned ecosystem, centrality relates to the role the firms have and how they are planned to be technically integrated in the ecosystem. As presented in the chapter concerning "vision of the ecosystem", there are two alternatives in the blueprint

during the period of research. Centrality relates to ownership of the platform, and in the first scenario, Telenor is the central actor, while Hemit takes this position in the second scenario. This position involves purchasing the modules of the infrastructure, being responsible for operating the platform and integrating suppliers of MTE that are going to connect to the platform. In both alternatives Telenor and Microsoft are planned to have a central role in terms of delivering the building blocks of the infrastructure, however, a platform ownership will clearly increase centrality for Telenor. Infiniwell seems to be the least central role in the ecosystem. However, this will depend on the technical architecture and integration towards other softwares. If several other softwares used by the customer connects to Infiniwell, they will increase centrality in the ecosystem.

Another finding which is not presented above, is the role of the journal system Epic which Central Norway Regional Health Authority recently have signed an agreement with. The role of Epic is not clear, however based on the analyzed data, Epic will only be connected to the platform for presenting data, and not be central in terms of number of connections toward the MTE and software applications.

4.5.2.2 Switching costs

Standardization of technology is one of the main objectives when developing the platform for health data. The intention is to be able to integrate big amounts of software, reduce switching costs, and enable the customer to choose the supplier of MTE and medical software based on value offering rather than what is least costly to choose. This is of high importance to Hemit. When asked how important it is to build an architecture enabling switching of suppliers, P11 from Hemit answered:

> *"Well it's clear that it's very... it's important. Because you want... You also want to establish yourself with an independence towards... that is, if one provider of 5G, for example, can deliver better than the other, then you want to use the one that is best. And so on whether it's Microsoft or Google or.. , right? So you do not want to be so lost that you can not use the one that comes up on the side, that was better than the ones you had. So you want to... When someone gets better than the ones you already have, you will have the opportunity to change. And so it is from Hemit's point of view, and so it is from Telenor's point of view when they also see Microsoft, they see Google, and so on. [...] And you do not want to just be married in the long run either, but you want to have flexibility in relation to the supplier landscape. [...] P11, H*

Observations during a project meeting between Hemit and Telenor 26.01.2021 showed a potential issue regarding switching costs of cloud service host, which is planned to be Microsoft's Azure.:

> *"But that(opportunity to switch suppliers of storage) is not a big issue really, because then it is just to switch Azure-stack with other suppliers."* P9, Hemit
> *after a short discussion about how much work it will be to change a supplier as Microsoft Azure:
> *"Yes, that is true. so here the table catches, so it might rather be other things that are relevant regarding switching to other suppliers."* P9, Hemit

While decreased switching costs are an important factor addressed to make more alternatives for the customer in the ecosystem, switching cost is also related to modularity.

In the analysis of data, it is found that all participating parties encourage developing infrastructure based on standards enabling low switching cost of vendors in the ecosystem. The supplier's motivation for this attitude is however somewhat different from the customer's. Hemits perspective is to increase the availability of alternatives, enabling them to choose the best service at any time. From a supplier's perspective, standardization anables scalability of their service to other markets.

> *"[...] I will not say that something is easy, but the fact that, for example, Telenor uses 5G technology that is standardized, it helps a lot. Because then you can find a similar supplier that has the same technology, the same standards, in the United States. [...] so the fact that we can have a solution that is standards-based, both with Azure and Telenor 5G, is probably something that triggers that we can enter other markets, actually."* P18, I

However, it is clear that it also represents a threat for the suppliers of MTE and MTS.

> *"[...] So then our choice was that we just have to be open, with open interfaces. But then it will also make us a little vulnerable to others taking our place."* P18, I

> *"[...] from our point of view, we can use other suppliers than Microsoft. We have used both Google Cloud and Amazon Web Services to operate our system in other parts of the world. So it is not impossible that... All the players can actually be changed in that ecosystem here, because it is so standards-based."* P18, I

4.5.2.3 Modularity

Because of standardization of a highly fragmented environment of MTE-suppliers, this project will enable different applications and devices for data collection to work as components, or modules, in a larger ecosystem. This is found as both a threat in terms of competition, but also an opportunity for the suppliers for increased value for the customer.

Through integration of different softwares through APIs, data can be gathered, transported, processed and presented across systems purchased by the health authority. This might increase the quality and the ability to use several vendors of MTE and medical software.

> *"This is also about clinicians in the operating room or emergency department not having to deal with X number of systems and screens, but that they can sew the unit together. To put it this way: There is no doubt about where the health trusts want - in that direction. They want distance [surveillance], but they are important that when you do that you have to avoid many suppliers of proprietary solutions"* P11, H in status meeting 17.11.2020

4.5.2.4 Unique value proposition

In a standardized landscape where switching costs are lower, and suppliers of MTE will not have ownership of data, and be less tied into their customer, suppliers of MTE will have to provide value on par or better than comparable competitors. Infiniwell, eich is the only complement and supplier of MTE in the project, addresses the issue, and mentions the quality of the service as important.

> *"Yes. There is probably no good way to secure yourself. There is nothing that is given. When it comes to software, it is very soft and easy to change, so it is clear to us that we will always have competitors and others who will come in and try to take a similar place, or take our place. We just have to agree with that, and we have to take that into account when we develop our systems. [...]"* P18, I
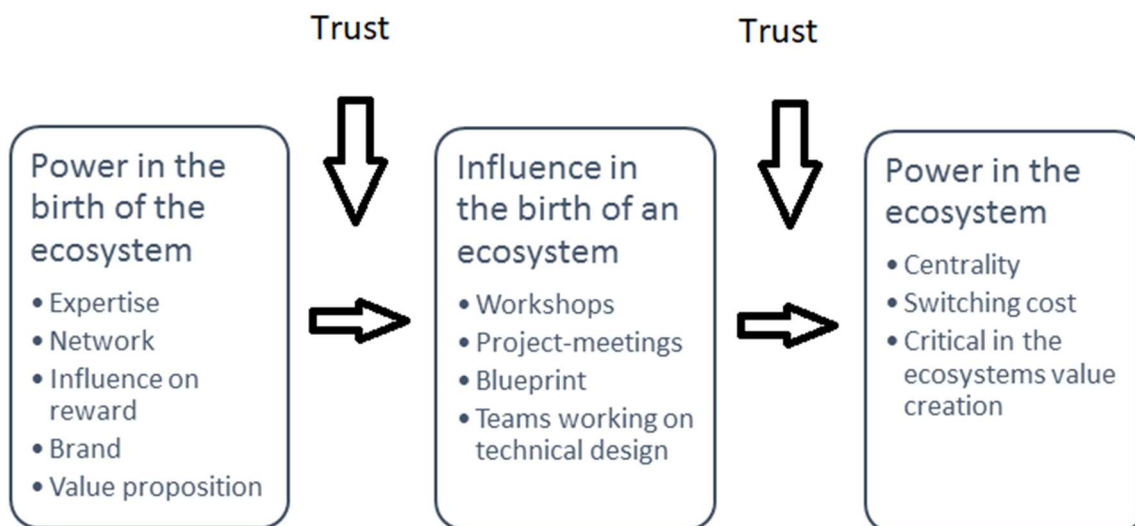
> *"When someone gets better than the ones you already have, you will have the opportunity to change. And so it is from Hemit's point of view, and so it is from Telenor's point of view when they also see Microsoft, they see Google, and so on."* P11, H

5. Discussion

In this chapter I will answer the research question presented in the introduction: *What sources of power enable influence from the participating parties in the establishment of an ecosystem, and how do they use this influence to position themselves in the ecosystem?*

In order to do that, I use the insights from the literature presented in chapter 2 when discussing the findings in chapter 4 regarding; participants and their roles, coordination of the project and power differences in the project. The discussion will elaborate on how these findings interrelate, and how the firms maneuver themselves through this landscape in order to position themselves in the final ecosystem.

Based on the findings in this research, I have developed a model presenting (1) sources of power in the birth of an ecosystem, (2) how this power can be used through influencing the process, and (3) how this influence can contribute to gain power in the ecosystem. While these three topics will be discussed separately in this chapter, I will first elaborate on the type of ecosystem and at what stage of the ecosystem life cycle the project is during the research period which are important contextual elements while discussing the findings. In the end I will elaborate on the importance of trust and how it relates to the model.

Trust   Trust

Power in the birth of the ecosystem	Influence in the birth of an ecosystem	Power in the ecosystem
• Expertise • Network • Influence on reward • Brand • Value proposition	• Workshops • Project-meetings • Blueprint • Teams working on technical design	• Centrality • Switching cost • Critical in the ecosystems value creation

(Figure 8: Conceptual model of power and influence in the birth of an ecosystem)

5.1 Birth of a platform ecosystem?

5.1.1 A platform ecosystem

According to presented theory, an ecosystem is characterized as an aligned non-contractual structure of multiple partners interacting to create a value proposition targeted to a specific customer (Adner, 2016; Jacobides et al., 2018). In the case presented in this paper the goal is to develop a common infrastructure for health data. The vision of the end product presents a situation where vendors of MTE can plug into an infrastructure and deliver their service in a standardized platform where vendors can stream, store and use data within boundaries where Hemit has full ownership and control over the data. This standardization enables Hemit to simply switch vendors, and also mix data from different vendors to exploit the access of big amounts of health data. The planned infrastructure is focused around a shared connectivity interface architecture for MTE, hence having the character of a platform ecosystem. "Platform" has also been used as a description internally in the project group. We can based on this conclude that the ecosystem described in the blueprint during the research period is a platform ecosystem.

5.1.2 The birth phase

Literature suggests that the birth of an ecosystem often begins with a discovery and testing of new technology (Dedehayir and Seppänen, 2015). In the case of the project of research in this study, there are two driving technological forces; (1) the outrolling of 5G infrastructure; and (2) the increase in usage of IOT or more specifically in this context; MTE. While the technology is present and available as of today, the main issue is how to standardize and make the technology work efficiently together while securing a high level of security.

The cooperative approach towards other participating parties in the ecosystem is especially beneficial in the birth-stage of an ecosystem (Moore, 1993). Throughout the initial phase of this project, there has clearly been a highly cooperative environment, with a positive and friendly attitude across participating firms. Through a co-creation process the team has met regularly, and made decisions together based on everyone's point of view. Cross-organizational teams working together on specific tasks have worked together, while reporting the progress in status-meetings.

In the initial stage, a leader secures rapid ongoing improvements, facilitates the process, and brings together the actors that develop the technological innovation (Moore, 1993). The findings of this paper confirm this. In this project, P2 from Telenor is referred to as "project leader" and has taken the role of coordinating meetings, sending out agenda reports, and developing a plan on how to reach the milestones set by the project group. While the seed of this project was an initiative from Hemit, Telenor through their investigation in phase 1 of the project, took initiative and led in the further exploration of how the technology can be applied in a commercial setting.

In the birth phase of an ecosystem, the development relies on a few individuals, and often involves scientists and engineers (Dedehayir and Seppänen, 2015). This is also found in this case-study. Because of the objective at this point in the project with designing the infrastructure, most participants are found to be engineers. The exceptions have been leaders of customer relations or innovation projects.

Dedehayir and Seppänen (2015) define the transition from the *invention* (sub-phase 1) to the *start-up phase* (sub-phase 2) as when the first operation of technology is taking place. At this stage there have been developed a MVP for promotion, but testing the platform in a real setting has yet not taken place. Based on presented literature and findings, we can therefore conclude that the OHP-project is in the invention phase.

5.2 Power in the birth phase of the ecosystem

While literature suggests that firms should opt for influence in the development of an ecosystem in order to be able to capture value (Dattée, Alexy and Autio, 2018), it is reasonable to ask; what enables a company to have such an influence in the birth phase of an ecosystem?

Taken from the presented theory, we can understand power as the level of influence enabled on others behavior to achieve organizational objectives (Yan and Gray, 1994). The findings of this paper show that Telenor as a leader, and Hemit as a customer have the biggest influence in the project. In order to find sources of power in the birth phase we should therefore ask ourselves; what enables Telenor and Hemit to have such an influence?

5.2.1 Sources of power in the birth phase

The findings of this paper identify several sources of power that enable a company to gain influence in the birth of an ecosystem. The sources are as; *expertise*, *network*, *pre-project relations*, *reward* and *brand*.

The most prominent reason for why the participating firms have been introduced to this project and enabled them to influence the ecosystem in the invention phase is their expertise. Telenors expertise of secure data transportation, and Microsoft's expertise of data storage and computing is the reason they are found relevant to this project, and introduced by Hemit. The source of power through expertise is found both in organizational literature, and through RBV in competitive strategy, and the findings of this study confirms the relevance also in the context of an early phase of ecosystems.

However, the analysis of data shows that expertise is not enough to gain influence. If Telenor and Microsoft did not have an existing relationship with the customer, it is rather doubtful that the actors would have been included in the investigation leading to this project. Hence, expertise does not alone lead to influence, but can be a source of power in combination with pre-project relationships. Both Telenor and Microsoft have had long partnerships with Hemit in terms of delivery and development of services. When Hemit then initiated the investigation that started this project, Telenor was asked to contribute. In the beginning of phase two, Hemit took the initiative to involve Microsoft in order to investigate how the platform could be built in Azure.

Highly related to pre-project relations is the importance of access to competence through personal and firm networks. Literature suggests that corporate relations accessing resources such as knowledge or key components might be a source of power (Powel, 1990). Similar arguments are found in the ecosystem literature, pointing at the importance of multilateral partnerships to access resources critical for the value creation (Adner, 2016). Our data finds the rich network especially important in the birth phase of the ecosystem. The most prominent example is how Infiniwell and Telenor state the importance of Hemits contribution with access to key personnel within the health industry. In the stage of developing the proof-of-concept this has been important to understand the problems to solve, how the ecosystem should be designed, testing the products in a real setting, and getting important feedback from users.

Infiniwells introduction of this project is directly related to their product offering distance surveillance of ECG data, representing the value proposition as the third identified source of power. Infiniwells software was important in developing a proof-of-concept testing the first version of the infrastructure built with Telenors 5G network and Microsoft's Azure. Based on this we find the firm's value propositions as a potential source of power during the development of proof-of-concept to validate the technology and commercial application.

From organizational theory, we can find the perceived influence on reward as a source of power (French & Raven, 1959). This can easily be related to a process where the potential customer is part of the product development such as in this case. Hemit has been clear that this is a R&D project at this stage, but there is no doubt that the intention of this project is to successfully build and commercialize the planned ecosystem with Hemit as a customer. Looking at revenue from sales as reward, we can understand the high level of influence Hemit has shown during the project. Their clear criteria of security, data ownership, and standardization to enable switching out suppliers of components have been met without questions, indicating a high level of their influence and power.

The last source that was identified analyzing the data was the power of brands. For Hemit, the brands of Telenor and Microsoft represented strength and trust. Strength, in the sense of size of the firms, financial resources, wide spread of knowledge, and global presence, and trust regarding ability to be central actors in the development and drive the project forward. The strength of the brands have been important for the firms to be involved in the project. For Telenor, it has also been an opportunity to take a central role in the development, and suggest to own and sell the platform as a service to Hemit. There is reason to argue that taking such a position demands credibility in the market, which a strong brand can provide.

5.2.2 To what extent can sources of power enable influence in the birth phase?

After identifying the different sources of power in the findings of this research, it is reasonable to reflect upon; to what extent can these sources of power enable influence? Or put differently; how strong is the power coming from these sources?

Regarding expertise, literature suggests that the strength is dependent on how much knowledge the other participants attributes to the expert and the relevance of the expertise

(French & Raven, 1959). During the analysis of the data we have not been able to find how strong influence the different persons or firms have had on specific parts of the project. However, there is reason to argue that this is highly related to what the firm's expertise is about, in terms of what types of decisions the firm can influence. As an example: Telenor is the expert of connectivity and secure data transportation, and it is reasonable that they have a high influence on how to design the architecture directly related to that. Similarly, Microsoft and Infiniwell are also expected to have higher influence within their circle of competence.

Pre-project relations are related to network approach and literature suggest that trust and reputation are important variables determining the level of strength that these relationships have (Bair, 2008). Based on the data analyzed we do find indications that it is also relevant in this case of study. Hemit mentions that both Telenor and Microsoft have established "good partnerships" and describe them as both large and stable suppliers. This indicates that their reputation is intact. We also find indications of a high level of trust developed between the project participants both in terms of ability to deliver value to the project, benevolence and integrity.

Literature argues that the level of reward power is dependent on the magnitude of the reward that is perceived (French & Raven, 1959). As mentioned we can in context of this case-study understand reward as the potential sale to Hemit as a customer, if they succeed with the project. In such a perspective we can see the size of the sale as the important element for the strength of Hemit´s power. However, as we also have elaborated on earlier, the objective of this project is to some extent also learning and development of solutions that can be replicated to other markets. Hence, the importance of this specific sale might not be that important for the commercial actors. The findings in this research support that view, and therefore decrease the risk of investment in this project because it can be duplicated and used in other markets.

The latter argument can be related to the presented literature from management theory saying that the level of power is dependent on the person or firms dependency on the negotiation and availability of alternatives (Bacharach & Lawler, 1988; Yan & Gray, 1994). Because the learning and built architecture easily can be duplicated to another project in another market, the success of this project does not rely entirely in Hemits hands. When Infiniwell and Telenor were asked specifically about the ability of replacing Hemit with another customer, both representative informants confirmed that this could be done quite easily from a technical standpoint, but might rather be a issue of finding people and organizations with the right

attitudes and ability to work together in a co-creation process. From a technical standpoint, the important thing is that someone with their network and expertise from the public health industry is participating in the ecosystem, and because there are several public firms able to take that role in the birth phase, the project is not dependent on Hemit. This relates also to the other participants and their roles: The project depends on Telenors, Microsofts and Infiniwells roles in the project in terms of their expertise and value proposition in their proof-of-concept. However, because this expertise is not unique, other companies could replace the firms in the birth phase and contribute with these resources. These findings confirm Adners (2016) arguments that relative uniqueness is important to an actor in the ecosystem, securing its position and role.

Adding together, we find that even though the different sources of power affects the firms influence at different levels, there are no firms that have a strong power in the birth phase of the ecosystem. This finding is related to the dependency theory (Bacharach & Lawler, 1988; Yan & Gray, 1994), and might be the reason for why a cooperative approach is strongly present in the early stage of the ecosystem development.

5.3 Influence in the birth of an ecosystem

While we now have discussed sources of power in the birth of an ecosystem, we can ask ourselves; how can a firm influence the birth phase to gain power in the established ecosystem? Dattée, Alexy and Autio (2018) suggests that in the effort to gain power in the ecosystem, firms should establish control over the creation process. They suggest three specific tactics for establishing dynamic control; *influence*, *monitoring*, and *update strategy*.

The analysing of data shows that in the early stage of an ecosystem the influence, monitoring and updating are related to the same mechanisms in the co-creation process. The participating firms have influenced the development of the ecosystem through workshops, status meetings, ecosystem blueprint, and smaller interorganizational teams working on technical design on infrastructure. We also find that monitoring of what is going on within and around the ecosystem is done with some of the same tools, such as workshops, status meetings and emails. To some extent, also strategy is shared between the firms during the co-creation such as firms perspective on the ecosystem through their own strategy, how they tend to position themselves in the ecosystem, and also discussing how they jointly can get internal decision

makers convinced to continue the project. This openness might be found necessary in order to stay together and protect the cooperative environment that the project is dependent on.

As a lead firm in this project, Telenor has taken initiative in the development of the ecosystem through schedule and arranging meetings. The leadership has not been a subject of conflict, and all participants have encouraged Telenor to take this position. This confirms the ecosystem literature addressing the importance of an ecosystem leader (Adner, 2016; Jacobides et al., 2018), and that the ecosystem benefits from having such a leader (Morre, 1993). The project leader, P1 from Telenor, has been the central person orchestrating the process and connecting people to accomplish important milestones. With their position as a leader, Telenor have accessed control points through initiative and steering the meetings, involving new participants, distributing information through emails and orchestrated the development of the proof-of-concept.

In general we find Telenor having a high degree of influence in the process of taking initiative of meetings, involving new participants, sending out emails with information, and orchestrating the development. One of the most significant initiatives taken by Telenor in terms of power in the ecosystem is that they have suggested taking ownership of the infrastructure, and securing a very central role in the ecosystem. The other commercial participants did not have any objections towards the suggestion, but Hemit needed to investigate the pros and cons and involve internal decision makers to figure out what was most attractive in a purchase situation if the ecosystem was to be realized. Another control point that Telenor has in this project is working on business models for the ecosystem and cooperation with Hemit and representatives from Central Norway Regional Health Authority in order to get a deep understanding of the user-perspective and how the interface should be developed.

The jointly dynamic control exercised, the leadership by Telenor, and the absence of open conflicts revealed a highly cooperative approach between the firms, confirming Dedehayir and Seppänens (2015) findings. It is however not clear whether the cooperative approach is the reason for the low level of conflict observed, or whether it simply is because of the few conflicts of interest that enable such an approach. From literature, we find that in order to transfer from a cooperative to a more competitive approach, the ecosystem needs to have (1) strong enough growth and profitability; and (2) its central components need to be stabilized (Morre, 1993). Because the uncertainty is high during the invention phase whether, and how,

the ecosystem will create profits for the participants I find the cooperative approach more easy to construct in an early phase. One finding related to the low conflict and cooperative environment, is the fact that the short term objectives of the firms do not conflict during the innovation phase. While Telenor is in for a potential new business, Microsoft states they are motivated by facilitating for increased demand of existing services, and Infiniwell sees this as an opportunity to develop their product, establish partnerships with strong actors, and as a marketing tool to gain increased awareness and legitimacy in the market. However, going forward it is expected that those objectives gradually change towards harvesting from these gains and the superior objective of capturing value becomes more important. If so, there is reason to expect an increased competitiveness among the firms.

In the study of the project I also find that the firm's influence depends on whether or not it is their area of expertise. The participants were working focused at specific parts of the ecosystem, such as technical integrations, engineering, and customer journeys based on how it involves their part in the blueprint of the ecosystem, and their expertise. The more general and holistic discussions were done through status meetings and workshops with all participating parties present. This construct of interactions enables to unify ideas and perspectives from different areas of expertise, which is considered very important in the explorative innovation phase of the ecosystem (Dattée, Alexy and Autio, 2018; Dedehayir and Seppänens, 2015). The explorative characteristics of the project development was handled through an agile leadership of P1 in Telenor. Reflecting on this, P1 mentions that because of high uncertainty, long term plans and goals have less value compared to a more strict and predictive project, confirming Dedehayir and Seppänens research (2015).

5.4 Power in an ecosystem

In the case of study we do not have an established ecosystem, and we can therefore not observe how power is identified and plays out in the ecosystem. However, based on the presented data we can see how the ecosystem is planned to be like, and based on these findings and relevant literature we can elaborate how power in an ecosystem is identified and might play out for the different participants.

As presented in the literature review, power enables influence, which enables to achieve organizational objectives (Yan and gray, 1994). To understand power and influence in an ecosystem it is therefore important to understand the objectives of the participating actors.

Telenor, Microsoft and Infiniwell are all commercial companies, and the obvious objective of their activities in general is to create value to their shareholders. Looking at the presented blueprint we find that Telenor have suggested positioning themselves as a platform owner, enabling them to gain centrality and power in an ecosystem according to Adner (2016). Also Microsoft seems to have a central position because the platform is built in Azure. Hence, both Telenor and Microsoft are delivering important components in the infrastructure of the planned ecosystem. Their centrality might be a source of power in the ecosystem dependent on the switching cost for the customer og substituting them out as building blocks in the infrastructure. This is also the case regarding suppliers of MTE, but here it seems more clear that the switching costs are low, and enable the customer to just "plug and play". Management theory suggests that power relations are dependent on the participants' availability of alternatives (Bacharach & Lawler, 1988; Yan & Gray, 1994). Drawing from this, I find the level of standardization and switching cost very important for the customer, enabling several available opportunities for suppliers in the future, and maintaining power in the ecosystem.

Based on the analyzed data, it seems like all participants agree on the importance of standardization and the necessity of customers' ability to switch out all components. This finding is interesting because at first sight it does not accord with the interest of the suppliers. One reason for this might be that such a standardization might increase the quality of the ecosystem and therefore make the "pie" bigger for the actors to capture their values. Another explanation might be that the potential customer has a lot of bargaining power in the process of development, and leverages this power through influence and transfer this power into the ecosystem.

Ecosystem literature argues that relative uniqueness is a source of power enabling to secure the complementors position in an ecosystem (Adner, 2016). If the ecosystem is successfully built as presented in the blueprint with high level of standardization and low switching costs, there is reason to expect a higher degree of competition where uniqueness of the value proposition from Hemits suppliers will be of high importance. If it is not unique, the quality of the product and price might be the determinant factors when picking suppliers.

In the literature we find that participating actors in the ecosystem needs to leverage their power to prevent being challenged or replaced by other actors, both inside and outside the ecosystem (Adner, 2016) The findings in this research suggest that if the suppliers do not succeed with gaining power based on centrality and high switching costs, unique value

proposition, or high high quality of their product, they simply face the risk of being replaced in the ecosystem. Such a situation might lead to a competitive environment where suppliers with similar products tend to go in a pure prize competition, reducing profitability. If the customer does not succeed with gaining power by securing low switching costs through standardization, available alternatives and dependency of the product or service, they will be put in a position where the supplier can demand a high price, capturing a big part of the value created.

5.5 The importance of trust

Literature regarding networks suggests that trust and reputation are important governance factors (Bair, 2008). Also in ecosystem theory is trust relevant to sustain the relationships that are fundamental for sustainable competitive advantages (Adner, 2016). Powell (1990) argues that trust is important in cooperative networks, and that cooperative networks are most useful in an uncertain environment, which is a very central characteristic of an ecosystem in an early phase (Moore, J. F., 1993; Dedehayir and Seppänen, 2015).

In this research I find that trust has an important role in the birth of an ecosystem. Without exception, mutual trust between participating parties was mentioned in all interviews as one of the key components for this project to succeed. One of the situations where trust was mentioned as an important factor was the general integrity of the participants in the project group. This is found as an important ingredient enabling a cooperative environment where the firms could contribute with ideas and suggestions from different areas of expertise. The open communication during meetings was a strong indication of the presence of mutual trust. Trust also enables efficiency in the developing process, and makes controlling mechanisms unnecessary. This was reflected in the agile and loose leadership by P1 from Telenor, which was more like a listening orchestrator rather than a dominant leader.

Another context where trust was observed as important was regarding the ability to deliver value to the project. Microsoft and Telenor were mentioned as highly trustworthy companies having a solid commercial track record and strength in terms of financial resources and size. Hence, the trustworthiness was rooted in their strong brand and experience through earlier partnerships. The findings in this research indicates that trust was an important factor of why Telenor was able to take a lead position in the project, and also in the ecosystem. Based on these findings we can argue that trust is important for a firm's ability to influence the process

of developing an ecosystem. If trust is not present, their inputs might be ignored while making decisions, or they could be excluded from the project and substituted with another firm with similar expertise.

Because the different firm's objectives are not conflicting at the early stage of the ecosystem, there is no need of suspecting unfavorable actions from other participants. This might however change going forward in the lifecycle when the environment is expected to become more competitive, and the firms might try to capture their part of the value creation. However, going forward, the ecosystem is expected to be less dependent on individuals and the ecosystem participants must rely on their ability to take a place in the ecosystem, enabling them to capture value (Dedehayir and Seppänen, 2015; Dattée, Alexy and Autio, 2018).

Taken from this discussion, we find that trust is especially important during the invention phase in the birth of an ecosystem. However, this is expected to change going forward. We suggest that trust enables influence in the project development, and enables power in the ecosystem. The level of trust can be determined by the trust in the firm's ability to deliver value to the ecosystem, and the integrity of the participating actors. Lack of trust might exclude a firm to be part of the development, or it might also moderate their influence in the final ecosystem.

6. Conclusion

The purpose of this study is to answer the following research question: *What sources of power enable influence from the participating parties in the establishment of an ecosystem, and how do they use this influence to position themselves in the ecosystem?* To answer this question, I have done an explorative single case study of a project led by Telenor, aiming at developing a shared infrastructure of health data. In order to use the case study to inform the research question I have divided the work of research into three steps; (1) identify the different participation parties in the ecosystem and their roles; (2) understand the power differences between them; and (3) understand how they use this power to influence the development of the ecosystem.

Ecosystem literature was used to identify roles and how roles relate to understanding power in ecosystems. Also literature regarding the lifecycle of the ecosystem was important in understanding the case as context to observe power relations. The existing literature regarding ecosystems related to strategic power was supplemented literature concerning power in competitive strategy (RBV and network approach) and organizational theory. Based on this research I identified potential sources of power, which was used in analyzing the data gathered from documents, observations and semi structured interviews.

Addressing the participants in the ecosystem and their roles, Telenor has a strong influence on the development of the ecosystem, and has taken the role as the lead firm. Hemit have the role as a potential customer and prove high influence in the project. The two other participants Microsoft Norway and Infiniwell are found as complementors, contributing with storage, compute power, AI and software for monitoring health data.

This thesis finds that in the birth of an ecosystem, a firm's power can come from *expertise*, *corporate network*, *influence on reward*, *brand* and their *value proposition*. I have also found that in the birth of an ecosystem the cooperative atmosphere is strongly present, confirming earlier research by Dedehayir and Seppänen (2015) and Moore (1993). The different actors can use their power in the birth phase to influence the development of the ecosystem, opting for power in the established ecosystem, and enable the firms to create and capture value.

This study finds the leader in the project opting for the leader position in the ecosystem through a high level of centrality and ownership of the platform. I also find that the customer

opts for standardization and modularity in order to increase the availability of alternatives in the ecosystem in the future. The complementors can use their influence in the development to increase centrality (MC) and become critical in the ecosystems value creation (Infiniwell). A complimentary can gain centrality through being a component of the infrastructure of the ecosystem that have high switching costs.

In the end of the discussion, the importance of trust in the birth phase of the ecosystem was elaborated on. Because the birth phase is exposed to high uncertainty, trust is found as highly important during this stage. Without trust from other participants, a firm might not be able to join influential activities, or take a central position in the final ecosystem.

This is a single case study, which implies that generalization cannot be done without further research. However, this research contributes with a conceptual model that can be tested through further research. It also gives deep insight into a project that potentially can be the birth of an ecosystem. Through this research I have contributed to fill gaps in existing literature regarding the birth of ecosystems through the lens of strategic power. This case study confirmed existing theories related to how ecosystems are born and how the dynamics and coordination is steered by a focal leader and how complementors are contributing to the process. This research also gives deep insight into a project that opt to develop an platform ecosystem, and contributes with novel theory built on existing literature.

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8. Appendix 1 – Declaration of consent

Vil du delta i forskningsprosjektet

Dynamikk mellom parter ved utvikling av økosystemer – en case studie

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å belyse hvordan digitale økosystemer oppstår. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Formålet med prosjektet er å kunne forstå dynamikken mellom forskjellige aktører i etablering av et digitalt økosystem.
Problemstillingen er: Hvordan deltagerne i det planlagte økosystemet interagerer, og hvordan de kollektivt og individuelt håndterer maktforskjellene i prosessen?
Dette er en masterstudie på Norges Handelshøyskole som er planlagt ferdig våren 2021

Hvem er ansvarlig for forskningsprosjektet?
Norges Handelshøyskole er ansvarlig for prosjektet.

Studiet er gjort i samarbeid med Telenor Norge

Hvorfor får du spørsmål om å delta?
Du er valgt ut til å delta fordi du har viktig informasjon som er med å belyse temaet i masteroppgaven.

Hva innebærer det for deg å delta?
Metoden som vil bli brukt er personlig intervju. Intervjuet vil vare i 90 minutter. Intervjuet vil bli tatt opp på video og deretter transkribert. Videoen vil bli slettet straks intervjuet er transkribert. Det er kun intervjuer som kommer til å se videoen, og alle data som kan knytte deg til intervjuet/oppgaven vil bli slettet med mindre noe annet er skriftlig avtalt med infomranten.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

Kun jeg(student Sigurd Singelstad), Bram Timmermans (veileder) og Lasse B. Lien (veileder) vil ha tilgang til personopplysninger. Personopplysninger lagres på en sikker Platform. Personopplysningene slettes umiddelbart etter oppgaven er godkjent sommeren 2021.

Anonymisert informasjon vil inngå i masteroppgaven, som senere kan bli publisert. Anonymisert informasjon kan også bli brukt til en eventuell artikkel knyttet til masteroppgaven.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Personopplysningene slettes når prosjektet avsluttes/oppgaven er levert, planlagt 30 juni 2021.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra NHH har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:
- Norges Handelshøyskole ved Sigurd Singelstad, singelstad@mail.com, eller Bram Timmermans bram.timmermans@nhh.no, 559 59 534
- Vårt personvernombud: Personvernombud ved NHH, personvernombudet@nsd.uib.no

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:
- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig
Sigurd Singelstad

Samtykkeerklæring
Jeg har mottatt og forstått informasjon om prosjektet *Dynamikk mellom parter ved utvikling av økosystemer* og har fått anledning til å stille spørsmål. Jeg samtykker til:

☐ å delta i intervju om prosjektet angående økosystemer

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

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(Signert av prosjektdeltaker, dato)

9. Appendix 2 – interview guide

This is the interview guide used in all four interviews as a tool do check that all topics of interest was covered. The conversations were often drifting, and this made the order of the questions, and follow up questions, different from interview to interview.

<u>Introduksjon:</u>

Angående datasikkerhet så lagres og behandles data iht loven og det er kun meg som får tilgang til video, og kun mine veiledere som får tilgang til transkribering som vil være anonymisert. Når oppgaven er levert og behandlet vil all data utenom selve oppgaven slettes. Oppgaven vil også være anonym, og jeg kommer til å informere deg på forhånd om det er noe konkret du har sagt jeg ønsker å enten sitere eller på annen måte bruke i oppgaven.

Spørsmål i forbindelse med dette?

Det jeg forsker på er etablering av økosystemer. Økosystemer er i denne oppgaven forstått som: "Ikke kontraktbasert samarbeid mellom strukturelt uavhengige, samtidig avhengige organisasjoner, som samarbeider for å levere et unikt produkt eller tjeneste til en gitt kunde/kundesegment". Ut ifra denne beskrivelsen er helsedata-plattformen et slikt økosystem, og det er da dette sluttproduktet jeg refererer til når jeg bruker ordet økosystem, og ikke prosessen med å utvikle det (som riktignok kan i flere tilfeller være et økosystem slik det defineres i litteraturen).

Noe av det jeg synes er veldig interessant med økosystemer er at et godt sluttprodukt fordrer gjensidig avhengighet av partene involvert. Samtidig så vil det som alltid i kommersielle sammenhenger oppstå interessekonflikter. Dette tilsynelatende dilemmaet er ett av utgangspunktene for min oppgave som jeg ønsker å grave litt i.

Studiet er explorativt noe som betyr at jeg kan skifte litt retning etterhvert som jeg får dypere innsikt, derfor er det bare fint om du fletter inn ting som du ser relevant selv om det kan være et lite sidespor av tema.

Om noe er uklart under intervjuet må du bare spørre. Har du noen spørsmål før vi begynner intervjuet?

(Person) og hens rolle i (bedrift)

- Spør informanten om å presentere seg selv kort:
  - Akademisk/jobb- bakgrunn
  - Rolle i (bedrift) i dag

(bedrift)´s perspektiv og hensikt

- Slik du ser det i dag: Hva er det dette prosjektet med infrastruktur for helsedata handler om?
  - Hva er det konkret?
  - Hvilket problem løser det?
- Hvordan ble (bedrift) involvert i dette prosjektet?
- Hvordan ble de andre bedriftene involvert?
  - Hvorfor ble akkurat bedrift X involvert?
  - Hvorfor ble akkurat bedrift Y involvert?
  - Hvorfor ble akkurat bedrift Z involvert?
- Hva er fordelene for (bedrift) å være aktivt med i et prosjekt som dette med helseplattformen slik du ser det?
- Har det vært noen spesielle utfordringer for deg og (bedrift) med akkurat dette prosjektet?
  - Har det blitt gjort beslutninger som du eller (bedrift) som bidragsyter har vært uenig i?
  - Har det vært uenighet om noen spesifikke beslutninger i prosjektet så langt?
- Hvordan opplever du å jobbe med…
  - bedrift X?
  - bedrift Y?
  - bedrift Z?

Roller i økosystemet

- Om vi fokuserer på sluttproduktet (helsedata plattformen): Hvilken jobb er det spesifikt (bedrift) leverer i denne tjenesten?
  - Hvilken rolle har bedrift X?
  - Hvilken rolle har bedrift Y?
  - Hvilken rolle har bedrift Z?

- Hvilken unik kompetanse/ressurser bidrar (bedrift) med i helseplattformen?
  - Hvilken kompetanse/ressurs bidrar bedrift X, bedrift Y, og bedrift Z med i økosystemet?

Koordinasjon av prosjektet

- Hvordan foregår samhandling med de andre bedriftene i dette prosjektet?
  - Hvem jobber (bedrift) sammen med (utenom statusmøter)?
  - Hvor ofte møtes de som jobber sammen?
  - Hvilke verktøy bruker dere for å samhandle effektivt? (eks whereby, Teams, osv.)
- Hvordan sikrer du fremgang mot målsetninger i samhandlingen med bedrift X, bedrift Y og bedrift Z?

Makt i økosystemet

- Om du kan se for deg helseplattformen som et nett av dataflyt mellom aktørene: Hvem ville vært mest sentral i dette nettverket? Altså vært mest innviklet?
  - Hvorfor er de så knyttet til andre leverandører?
- Er det noen ressurser som enten (bedrift) eller bedrift X, bedrift Y og bedrift Z har som dette prosjektet er helt avhengige av?
- Hvor viktig er det for (bedrift) at dette prosjektet lykkes?
  - Potensielt: Hvor viktig er det for (bedrift) å bli en del av denne helseplattformen? Evt levere denne helseplattformen?
- La oss se for oss at bedrift X avbryter sin deltagelse i prosjektet. Hvor lett er det å bytte ut bedrift X i dette økosystemet?
  - Samme spørsmål om bedrift Y
  - Samme spørsmål om bedrift Z
- Se for deg en situasjon hvor det skal gjøres en veldig viktig beslutning i prosjektet, men det virker som at bedrift X, bedrift Y og bedrift Z ikke ser den muligheten som dere ser (og den er fordelaktig for alle parter): Hvordan kan (selskap) sikre seg at den riktige beslutningen her blir tatt?

    → Hva gjør (selskap) kapable til å gjøre det (som trengs for å ta valget/stoppe avgjørelsen) ?

Generelt:

- Hvilke utfordringer ser du fremover for å realisere dette prosjektet?