Digital platforms challenges and opportunities:
Evidence from a traditional market sector

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Abstract

Digital platforms are becoming more and more established in the current digital age and with it come many new business ideas, models and more. This has lead to several disciplines and industries taking an interest in them and sought to build one themselves. However, little is known about how the context of a digital platform can affect its launch. Existing research today focuses on general strategies for launching a platform but we argue that context matters and that it changes the challenges and opportunities for the platform. This thesis aims to fill this gap for traditional industries that faces different kinds of challenges compared to more IT established areas. To achieve this, we took part of a case study and conducted a qualitative data collection process consisting of interviews with project members of The Omega project. We were able to identify a set of challenges and opportunities presented to the project: diversity, organizational, and culture to name a few. Based on our findings we could conclude that digital platforms for traditional industries comes with its own set of challenges and opportunities but that these can be used to find similarities to other industries to help tackle them. Therefore, we suggest further research to be done on how the context affects the challenges and opportunities in other industries.

Keywords: Digital platform, ecosystem, traditional industry, IT, innovation, challenges, opportunities

1 Introduction

Important: Due to the non-disclosure agreement of this case study we had to use a code name for the project and anonymize the names of the organizations involved in the case. In this study the project codename is: The Omega Project

Digital platforms have fostered interest in multiple different disciplines for its ability of creating new technology, business models and scientific phenomenon’s. Digitalization is a well-studied area in the Information Systems (IS) research area and is under constant development. More and more industries and companies are either well into their digitalization process or in their starting pits of it, while some perhaps more traditional markets linger. However, as the development of technology continues and new needs from users arise the more traditional companies are taking the plunge and investing in information technology. (Vinnova, 2018)

In recent years, an increasingly bigger audience consisting of both researchers and practitioners have started paying attention to the digital platform area, where the realization of new opportunities, value creation and new business models have been particularly interesting. Digital platforms such as Uber, AirBnB, eBay etc. have sparked an interest in traditional markets to pursue this type of digital platforms. However, such an undertaking is not necessarily easy or beneficial, as analyzing the obvious success cases of Apple’s App Store
and the Android equivalent can skew the perception, for an outsider, of digital platforms that they are “easy” and beneficial. What is lacking is a view of how firms in traditional industries can develop, implement and deploy digital platform ecosystem.

The research on platform ecosystem is mainly focused on digital companies like Apple, Uber and eBay as they have developed successful platform ecosystem like the App store. (Gawer, 2014; Stummer et al., 2017) But we know less about the challenges for a firm immersed in a traditional market seeks to launch a platform within collaborative environment with a direct competitor and other organizations. Our study is motivated by existing research in the platform ecosystem field. We can see that there is a gap in the literature for the launch phases of developing a platform and an ecosystem. We will address this gap by answering the following research question:

What kind of challenges and opportunities arises when a traditional market sector launches a digital ecosystem platform?

In order to answer this question, we conducted a study that focuses on the platform ecosystem launch phase and we set out to find different challenges and opportunities that could arise. The focal firm in our case study announced back in 2016 their intention of creating and developing technology that would make it possible for them to create their envisioned digital platform. The Omega project contains several actors, both from different research fields to direct competitors within the traditional industry. This means that the Omega project will be breaking boundaries between not only organizations but also between different disciplines, cultures and technology ones. The company responsible for this case has maintained their focus for innovation within logistical work processes and materialistic areas with a lack of incorporation of IT as one of their core processes. The Omega project will be a shift on that and bring in IT as a central part of their business model. With this comes an influx of new exciting opportunities and challenges to overcome and this thesis aims to identify, evaluate and map these to create a greater understanding of the implications of digital platforms.

2 Related research

In this section, we will cover the recent research material that has been published that is related to the research areas of Digital Platforms, Digitization, Diversity and the Medici Effect, Platform Ecosystems and how to launch a digital platform. As the research question is related to digital platforms, it is necessary for us to cover factors that have been previously been identified by other researcher in order to help us find out what can and will affect the outcome of the Omega project.

Our purpose for writing this thesis is to provide further insight in the development of digital platforms and specifically when it comes to clarifying which barriers that the platform needs to overcome in order for it to be successful. Later on in this chapter we raise literature that is relevant to our research question which presented us with a research gap; the majority, if not all, of the literature focuses on general advice and talks about platforms as if
the challenges that they face are the same in every context. Therefore, we raise areas such as governance of digital platforms, launch strategies and the medici effect. Some of these areas, such as the medici effect argument, are well established however we want to avoid putting them too central in this thesis so their sections will be relatively short but they are still relevant to our result and research question.

Table 1

<table>
<thead>
<tr>
<th>Expression</th>
<th>Area</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exogenous</td>
<td>Network Effects</td>
<td><em>Something that is external to the context (or platform in this case) and/or isn't affected by it.</em></td>
</tr>
<tr>
<td>Multi-sided platforms (MSPs)</td>
<td>Digital Platforms</td>
<td><em>Refers to platforms that have several different actors rather than just one with a buyer/seller relationship.</em></td>
</tr>
<tr>
<td>Economies of scope</td>
<td>The economic perspective</td>
<td><em>Refers to where the relationship between production and revenue is beneficial the more you produce. I.e. two competitors share a platform as it's beneficial for both.</em></td>
</tr>
<tr>
<td>User</td>
<td>Digital Platforms</td>
<td><em>Refers to the companies/people that exist on the platform, can refer to the governing body of the platform as they can be interpreted as a user.</em></td>
</tr>
<tr>
<td>Governing body</td>
<td>Digital Platforms</td>
<td><em>The creator/owner of the platform, the one who makes the rules. I.e. the company behind the AirBnB website.</em></td>
</tr>
<tr>
<td>Modularity</td>
<td>The engineering perspective</td>
<td><em>Being modular/having a high degree of modularity means that the artifact can be changed in parts/chunks without destroying/changing it entirely.</em></td>
</tr>
<tr>
<td>Complementor</td>
<td>The design and governance of digital platforms</td>
<td><em>A company/organization that sells a product or service that complements the products or services of another company.</em></td>
</tr>
</tbody>
</table>

2.1 Perspectives on digital platforms

In this study, we have adopted Parker et al. (2016) definition of digital platform, they describe a digital platform as a set of digital resources that includes various services and content that will enable value creating and interactions between external partners, producers and customers. There are two main academic research areas has taken particular interest in digital platforms; Economics and Engineering (Gawer, 2014; Gawer & Cusumano, 2014)

As raised by Gawer (2014), these two different perspectives have made it harder in articulating an exact definition of digital platforms as the two focus on different things while there is a need to look at how the two interact with each other. It is this interactivity between the technological and competitive aspects that determines the potential success of a platform.
2.1.1 The Economic perspective
The economy inclined researcher has a tendency of focusing on the new business competition and advantages that digital platforms bring to the table. (Gawer, 2014) also phrased platforms as a type of market, specifically as a two-sided market (Rochet & Tirole, 2003) that is also phrased as multi-sided markets or multi-sided platforms.

People with economics as their background view digital platforms as a facilitator between different actors of the network. These actors are more often than not a way of connecting different types of consumers with each other and enabling transactions that previously was not possible. There is also an emphasis on discovering the network effects. Network effects can be seen as an independent variable which is not affected by the network itself - Gawer explains this further by using the example of the Nintendo Wii platform; by subsidizing the third party developer (increasing their take of each sale) they incentivize more developers to develop for their platform, which leads to more consumers coming to the platform. This turns into a feedback-loop as more games being on the platform, attracts even more consumers.

To summarize, it can be said that economists view the valued created from platforms are generated by the transportation of information/value and that the platform itself is merely a way of enabling that transport between different groups of consumers/users.

Platforms are also viewed as things that are susceptible to the “winner-take-all” (Gawer, 2014) outcome, as explain previously the bigger the platform grows the more it attracts users and it becomes the dominant platform of the market. This can explain why platforms such as AirBnB and eBay are hard to compete with - even though their intellectual property is not unattainable (i.e. the websites and systems) but that obtaining the users is the real competitive advantage. Once a platform has established itself as the dominant one, it is exceedingly harder to push them off their throne.

The critiques of this perspective are that it boils down the relationship between consumers/users as merely a buy and sell relationship. It also views everyone involved in the network as equal actors with the same push and pull factors. This works when the relationship between actors is 1:1, i.e. as the case for dating sites, meaning that the needs of all the actors is fulfilled as the only need for the site as a platform is to connect these people with each other. However, the case is not always that simple when it comes to technological platforms. It is also critiqued for its assumption that the network effects and feedback loops are independent and exogenous as described by Gawer (2014).

2.1.2 The Engineering perspective
The Engineering perspective, more specifically the engineering design perspective, even though it might sound contradictory to the economic perspective focuses on the concept known as “economies of scope” (Panzar and Willig, 1975, 1981; Teece, 1980, 1982). Economies of scope exists when the relationship between producers is beneficial to each other, i.e. the cost of producing an item is higher when producing it alone compared to collaboratively with someone else. Gawer (2014) proposes that this same form of thinking when it comes to production can be applied to situations when companies are innovating, basically that innovating is more efficient when doing it collaboratively - empirical research
suggests that the concept can happen in multiple different organizational and industrial contexts.

These different types of platforms and contexts differ themselves from the economical perspective as they do not always present a relationship between the actors of the platform as a buyer or seller, but rather multiple different ones. As Gawer (2014) mentions, these platforms can be see as “meta-organizations” with a high degree of modularity. There is an argument here that this is beneficial to innovation as being modular helps when trying to tackle complex problems.

Gawer (2014) summarizes the engineering perspective as “the engineering view interprets platforms as purposefully designed technological architectures (including interfaces) that facilitate innovation” (Gawer, 2014, p1243), this summary helps us point out the flaws in the engineering perspective. By believing that innovations within the platform relies on modularity and its parts you also assume that the platform structure is stable and not subject to change - while it has been observed that platforms can and do change over time. (Baldwin & Woodard, 2009) The engineering perspective fails to capture the bigger picture as it also does not consider the possibility of actors within the same platform being competitors. Which can result in tension between the complementors and the governing owner of the platform.

2.2 Design and governance of a digital platform

This section describes how to design and decide the governance over a platform ecosystem and all the aspects that is important when developing a platform ecosystem with other companies and organizations. As in this case we find it relevant to focus on the important aspects of the design and governance when creating and launching a new platform ecosystem.

Platform is a concept that has many different definitions and can be hard to define, but we have adopted Gawer and Cusumano (2014) types of industry platforms because it describes industry platforms and ecosystem innovation that we can relate to our case study. There are two different types of platforms according to Gawer & Cusumano 2014; the internal and external platform: Internal platform is described as:

“New product development and incremental innovation around reusable components or technologies. We refer to these as internal platforms in that a firm, either working by itself or with suppliers, can build a family of related products or sets of new features by deploying these components” (Gawer & Cusumano p.418, 2014)

External platform is described as “products, services, or technologies developed by one or more firms, and which serve as foundations upon which a larger number of firms can build further complementary innovations and potentially generate network effects.” (Gawer & Cusumano p.420, 2014)

Ecosystems can be defined as foundational products, services, or technologies upon which additional complementary products, services or technologies can be developed (cf. Parker et al., 2016).
Industries have started to realize over the past decade that value co-creation offers complementors and organization to increase their value by sharing. We have seen large software companies like IBM, SAP and Oracle create a large ecosystem platform together and shares it together with complementors (Tiwana et al. 2010).

In this case, we have studied a traditional industry attempt to create a platform ecosystem surrounding the new concept of the Omega project. In order to create a functioning and prosperous platform ecosystem that different organizations wants to be a part of they need to make sure that it is successful by ensuring that there are clear guidelines for governance and design.

According to Gawer (2009) and Tiwana (2014) platforms need to attract and coordinate two or more different groups or sides, and in most cases this includes complementors and customers. For example, the platform needs to attract two or more sides, like the customer and the developer, and in this case the manufacturer, end-user and the developer(s).

Governance of the platform ecosystem is one of the key aspects when it comes to designing a successful platform ecosystem for all stakeholders, the key is to use the right design and find a suitable governance concept (Smedlund & Faghankhani, 2015). Tiwana, Konsynski and Venkatraman, (2013) explains that there are three questions that needs to be raised when designing a platform ecosystem that we have connected back to our research with the Omega project and to the governance and ownership of the platform ecosystem:

- **Who is governed?**
- **What is governed?**
- **How is it governed?**

These are crucial questions that need to be answered for the owners of the platform because of competitions between different cross-platforms and competitions between organizations within a platform (Mantena & Saha, 2012). Governance is related to both the technological and the market-oriented aspects for it covers the API and the technical aspects, and this is market related because it sets the prices for the services and products (Tiwana, 2014). "A central governance challenge is that a platform owner must retain sufficient control to ensure the integrity of the platform while relinquishing enough control to encourage innovation by the platforms’ module developers" (Tiwana, Konsynski, & Bush, p.679, 2010).

In the literature, we have identified different aspects that focusing on the platform ecosystems design and governance. For the first part, we need to define roles within the platform ecosystem and this is an important factor that affects the design and can change dependent on how many number of organization/companies or sides it connects to the ecosystem (Gnyawali et al., 2010). The distribution of power in the ecosystem can either be centralized or decentralized and it depends on how many partners and the relationships they all have to the stakeholder of the platform ecosystem (Bullinger, Rass & Moeslein, 2012). For example a platform ecosystem needs a balanced ownership and shared power between partners and sides, in this case the manufactures, developers and customers (Yoo et al.,
The partners need to establish strong relationships within the ecosystem in order to increase value and popularity in the view of the public. We describe some aspects that we found interesting and relevant on the different challenges/questions that need to be solved when designing and deciding the governance over a platform ecosystem:

- **Pricing and revenue**
  The pricing and revenue aspects of a platform ecosystem and the governance aspects have to be discussed and planned out for everyone affected within the ecosystem. Everyone involved needs to understand how the network works and how the distribution, revenue streams and payments for the different stakeholders work. According to Suarez and Cusumano (2009) these questions is very important to resolve in the early stages of a platform ecosystem because everyone will get a clear picture on how the revenue will be shared and discussions about revenue sharing in a later stage in the process and conflicts will be avoided.

- **Boundary resources**
  Boundary resources are according to Eaton (2015) tools, regulations and other resources that are there to govern the creation of value in platform ecosystems. Complementors motivation to invest in co-creation value may decrease if there are unclear regulations, products or services in play within the ecosystem. Boundary resources is mostly provided in data and analyzed from a technological perspective in order to understand what everyone is contributing to the platform and also shows everyone’s motivation (Gawer, 2014). In order to build a successful platform ecosystem there is a need to shift focus in development and supply resources for third parties so that they can develop further and for their own organization (El Sawy et al., 2010; Selander et al., 2010).

- **Openness**
  Openness is another perspective that is important to take in consideration because it allows the platform to opening up the ecosystem and partially giving stakeholders control. According to Boudreau (2010) openness is when there is easing of the restrictions on use, development and commercialization of a certain technology. The degree of openness within a platform ecosystem can be adjusted after time and is adaptable, for example with iOS and Android where Google and Apple gives developers access to the platform in the sense of applications development but they are in control of the overall platform ecosystem (Boudreau, 2010).

- **Control**
  Control this is one general concept that refers to how the ecosystem is controlled and governed. According to Wiesche, Schermann and Krcmar (2011) Control is referred to a direct attention, motivation, encouragement towards the members of the organization and the ecosystem in order to reach the goals and objectives. Control can be translated in to a concept of platform ecosystem ownership and governance as a process with formal and informal control mechanisms (Tiwana, 2014). In an article written by Gomez and Sanchez they explain formal and informal control mechanism in a explicit and understandable way:
“While companies have traditionally used formal mechanisms of coordination and control such as centralization, standardization, planning, formalized behavioral and output controls, many companies are increasingly resorting to informal mechanisms of control such as participation in committees and teams as well as decision-making, and more broadly, control that emanates from an organizational culture of shared norms and values and the socialization of its employees to these values.” (Gomez & Sanchez, p.1848, 2005)

We can see that control has become a more informal mechanism in organizations that depends on participations from teams in the decision-making processes rather than formal mechanism that has become old and centralize in protocols and planning (Tiwana, 2014).

- **Technical Design**
  Technical design and architecture of the ecosystem platform is constructed of interfaces and the compatibilities in the system, the software design and who can govern and control the system. This is within the IS, software and engineering perspective of creating a platform ecosystem but is still a very important aspect to discuss and solve in order to launch a successful platform (Tiwana et al., 2010).

- **Competitive strategy**
  Competitive strategy is important to design in order to construct the compatibilities and interfaces of the system and who can govern and control the system. In platform ecosystems the strategy is important to gain control and a clear view of how it should be governed and if and how new actors can come in to play in the ecosystem. According to Mantena and Saha (2012) competitive strategy is competition, collaboration or a combination of both; they suggest that Co-opetition is most suitable strategy in order to create a strong platform ecosystem. Co-opetition is a mix of competition and collaboration for organizations/corporations that was first explained by Brandenburger and Nalebuff (1996) in the book *Co-opetition*.

- **Trust**
  Trust is one of the most important parts of the launch phase for a successful platform ecosystem according to Hurni and Huber (2014) when building a ecosystem/platform with competitors, complementors and other organizations the relationships between all actors must be strong and the trust levels needs to be high in order to be innovative and be able to share knowledge and useful data. So it is very important to create trust and maintain it to successfully launch and maintain a shared digital platform ecosystem.

  All of these different aspects when designing and deciding governance is important in order to make a successful digital platform ecosystem together with other companies.

**2.3 Launching a Digital Platform**

Although a relatively undocumented field within digital platforms, some research has been made regarding the different factors and metrics (such as the number of users, different
types of user, usage etc.) affecting the performance of a platform and specifically how to launch a platform.

A common problem with digital platform is a dilemma often referred to as the “chicken and egg”-dilemma. (Stummer et al, 2017) This dilemma revolves around that the platform revolves around users that need other users. So what comes first? If there is no one using the platform, the incentivization to use the platform becomes significantly lower (or lacking completely). Researchers talk about reaching the critical amount of users. Once reached the network effects, as discussed earlier, kicks in and the platform becomes almost self-sustaining in terms of attracting new users and maintaining new ones. One common example used here is the digital housing platform AirBnB that were growing at a slower pace until they hit their critical point back in 2011 and started growing exponentially more. Another example would be that a seller would only start using the platform if there is users on it and users will only be there if sellers are there. In fact this dilemma is so prevalent that there are several fields that study it, among them are typically academics from information systems and economics.

Stummer et al. (2017) identified six different strategies for launching a digital platform; Single target group, platform staging, subsidizing, platform envelopment, exclusivity agreements and side switching.

- **Single target group** means that the governing body (i.e. the creator of the platform) focuses on a smaller market with less users, this boils down to having to attract and convince fewer users in order to reach your critical point. Once you’ve network effects, you open up the platform to a bigger audience and can transition easier.

- **Platform staging** is specifically catering to one part of the platform (i.e. buyers) to allow that side to grow. This means that the governing body of the platform will have to be both the platform organizer and a user as they will have to act as a supplier. Once critical point for one side has been reached, you open up the platform to other suppliers and transition away from being one.

- **Subsidizing** is almost self-explanatory in what it is, but the effects of doing it is more nuanced. Subsidizing is the act of incentivizing a certain actor, either through monetary gains such as discounts or getting a premium product. However, this means that the subsidized side has to generate enough users from the non-subsidized side. A common tactic is to subsidize at the launch of a platform to reach the critical point and then stop, so it’s not necessarily a long-term solution.

- **Platform envelopment** is when instead of competing with other platforms, you aim to grow in parallel with each other and mutually gain from sharing users. This means that you have to make it easy for the users to move between the platforms and compatibility between the platforms is necessary. An example would be gaming platforms, users can easily travel between consoles as at their core they’re fairly similar and even share some of the games.
• *Exclusivity agreements* is similar to the one of subsidizing, but instead of lowering the cost of use the platform owner pays the supplier to only provide for the platform itself. Here we can refer back to the gaming platforms, as the number and quality of “exclusives” is a common way for Sony Playstation and Microsoft XBOX to compete with each other and attract users.

• *Side switching* is the concept of buyers and sellers being one the same. Here the governing body makes it easy for users to act on multiple sides of the platform, meaning that one who sells is also likely to buy. These are common in niche platforms such as Etsy, where people who sell small goods are also more likely to buy said goods from others.

Some of these strategies are not necessarily applicable to the *Omega project* platform as a concept, but they are important to keep in mind as the framing of the platform will be crucial to determine which strategy they choose to go with. It is also important to remember that platforms are not limited to just one of these strategies, in fact it is common that multiple different strategies are used. There is a gap in research as to how these strategies affect each other and finding harmony between them all requires finesse and the platform owner has to tread lightly when choosing. Stummer et al (2017) also stresses the fact that there is a lack of empirical evidence as to how effective these particular strategies are and calls for more research as to why many platforms fail in an early stage.

These strategies are also specific to Multi-sided platforms (MSPs) and what kind of platform the *Omega project* will be is yet to be determined as it is still very early in its development. Something which is also lacking in these strategies, if they (or some of them) are also applicable to an ordinary platform so if the *Omega project* platform develops into a single sided with a pure seller and buyer relationship only these, or some of these, strategies become inapplicable and research needs to be done with this in mind.

### 2.4 Diversification, The Medici Effect

Several researchers have claimed that having a diverse group of people and/or fields helps when trying to drive innovation forward (Johansson, 2006; Hargadon & Sutton, 1997) and it has also proven to be beneficial when trying to lower time to market (the time it takes for a product to reach market after it has been thought of), shared R&D costs and new competence availability (Chesbrough et al., 2008). There is an argument which goes under what’s called the *Medici Effect* (Johansson, 2006) which says that it’s not one specific field that innovates, but rather the combination of several different competencies and backgrounds that drives true innovation forward. There are however several perspectives on diversity and how it can drive innovation forward. Holmström, Sandberg, Napier & Levén (2015) raises in their article the need for balance between diversification and its counterpart. They say that the point of diversification is to leverage the benefits associated with it, such as “*creative and dynamic perspectives*”, but that there’s a need for balance as it can also cause what they call disconnectedness due to a lack of shared knowledge. This disconnect makes it harder for
project members to collaborate and communicate as shown by trust reduction, increased tension and in knowledge transferment. (Linarsson and Werr, 2004; Newell and Swan, 2000; Carlile, 2004)

3 Research methodology

In this chapter, we describe our choices in the selection of research approach, data collection, sampling and method.

3.1 Research approach

The aim of our study was to investigate the barriers and challenges associated with the launch of a digital platform ecosystem in collaboration with different traditional industry companies and organizations. We decided that a qualitative approach would fit the best when looking at these aspects because it would give us an opportunity to find unique data. When it comes to conducting interviews, observations and other conversations there is a need to capture the whole context in its natural setting (Denzin & Lincoln, 2000). This is in line with our aim because we wanted to explore and gain deeper understanding of how key players perceived this project. In order to research specific events and how the people involved perceive these events a case study is used. A case study is used as a research strategy to study real life contexts and events that are not clearly revealed. We used a case study approach because of the specific case of the Omega project and the implications of the launch phase of a digital platform ecosystem.

3.2 Case description

The case that we worked with is a collaboration project between several industry actors in the quest of solving traceability and the digitalization for a traditional market. The project is run by a traditional industry player and we call it the Omega project. The focal firm in our case study announced back in 2016 their intention of creating and developing technology that would make it possible for them to create their envisioned digital platform. The Omega project contains several actors, both from different research fields to direct competitors within the traditional industry. This means that the Omega project would be breaking boundaries between not only organizations but also between different disciplines, cultures and technological ones. The company responsible for this case has maintained their focus for innovation within logistical work processes and materialistic areas with a lack of incorporation of IT as one of their core processes. The Omega project will be a shift on that and bring in IT as a central part of their business model

3.3 Data analysis

Our data analysis was conducted with a thematic analysis approach to a qualitative content analysis as it produces a more in depth analysis for our research questions. Thematic analysis allows us to dig deeper in our data and helps us analyze it fluently as the data collection and analysis is done continuously with each other (Braun & Clarke, 2006). As the gap in the research that we are trying to fill is relatively sparse in prior research, thematic analysis also
helps us by being an approach that aids you in generating new theories and focuses on putting our own data to full use by utilizing it as much as possible.

Any interviews that were made in Swedish, due to convenience and ease, were translated to English. The interviews were then transcribed and analyzed by creating “open codes” and color-coded which was used to generate key categories (see the result section) (Charmaz, 2001).

As the data collection and analysis process was done simultaneously, we were able to adjust the interview guide in order to collect more data on the categories that were emerging from the prior interviews.

3.4 Method Triangulation

In this thesis, we have worked towards increased validity and reliability through a more multidimensional perspective by conducting a method triangulation. The ultimate goal for us as researchers is to write a strong thesis that combines multiple perspectives and data sources and create a more comprehensive view and without biases. According to Denzin (1970) a method triangulation increases the validity, reliability and decreases our biases because it involves multiple perspectives and it becomes harder to influence the research with our own bias.

We conducted a method triangulation where we used two different qualitative data collection methods as semi-structured interviews, observations and field notes. Method triangulation is when two or more qualitative methods are used to combine and analyze the data. According to Benyon (2013) a method triangulation can be useful in order to get useful data from both interviews and observations and then fill in the gaps if one method did not give us enough useful data. We used the data collected from our field notes and observation as a basis for research and questions for the semi-structured interviews. This was useful for our research because in the interviews we got an opportunity to understand people’s feelings and their thoughts, which observations cannot do. An observation and field notes can be used to better understand themes and makes us better understand what kind of questions we wanted to answer in the semi-structured interviews later on. The limitations is that this takes a lot of time and effort but it was worth it to increase our validity and reliability.

3.5 Qualitative content analysis

Qualitative content analysis is used as a tool to analyze great quantities of qualitative data, it was popular within news services to look at different attitudes for and against events in society but have evolved and is being used in every field that deals with qualitative data (Graneheim & Lundman, 2004). In this study we chose to conduct a qualitative content analysis because we gathered data such as interviews, observations and field notes, which is qualitative. By conducting a qualitative content analysis with inspiration from thematic analysis we got a deeper understanding about the data we have collected and underlying themes and contexts. According to Graneheim and Lundman (2004) qualitative content analysis is beneficial for us to get differences and similarities in the data we got from both the interviews and the field notes. By dividing the data up in different categories and themes we could go through the data faster and see what’s important and what is not in our research.
The limitations of qualitative content analysis is that it can be time consuming, difficult to interpret and complex, these limitations is something that we had in mind but we know that the advantages outweigh the limitations. We used our field notes and observations as a foundation to get more detailed data and meaningful relationships and connections in our result.

The first decision we made was to decide on what approach is best suited our study, by selecting qualitative content analysis we also decided that the inductive approach would suit our study best. An inductive approach is when you let the data talk to you after you have analyzed and categorized the data. Here we can see clear patterns and recurring themes that are important to the research that we may have missed if we did not use the inductive approach. In a qualitative content analysis an interpretation of the content requires that the researchers do not decide in forehand the themes and categories in the data (Graneheim, Lundman, 2004). So in this study we conducted a inductive approach because this approach allowed us to get new perspectives and themes that may have been overlooked otherwise.

The qualitative data analysis was made in three phases; the acquaintance phase, analyze phase and the processing phase. According to Dahlberg (1997). The Acquaintance phase is when we dig deeper down in the transcripts and text that we collected; this is where we got our first understanding of the data. Then we did another more deep analysis and got more creative interpretations when the transcripts and data was split up to smaller pieces in this analysis phase. When we got to the processing phase we compiled the transcripts and data as a whole in the result section of this thesis.

We used Graneheim and Lundman (2008) as inspiration when we conducted our qualitative content analysis. We partially transcribed our interviews because parts of the interviews contained personal information and irrelevant information that only would have taken up valuable time and would be unnecessary to our research. The parts that we transcribed we read through a couple of times to get the whole picture of the interview and get a deeper understanding on parts that may have been overlooked in the beginning. By going through the transcripts together we got the text overall content and an opportunity to reflect and discuss.

We started by going through the meaning units that we collected from the transcripts from our interviews created the first open codes. Meaning units are words, sentences and paragraphs from the text that carries significant meaning and has relevant content (Graneheim & Lundman, 2008). We condensed down our meaning units and made them more abstract because it makes it more easy to work with and easier to give them a relevant code. We put the meaning units, condensed meaning units and the codes in a table to make it more understandable, we had a discussion where we looked at the selected meaning units, codes and condensed meaning units in order to ensure ourselves that the codes fit the meaning units context and that it matches the full transcripts full context. By going through these steps a couple of times we made a few fixtures and modifications to achieve consensus. We did this with all our semi-structured interviews and the transcripts, we compared and discussed the meaning units that we found in all the interviews and made subcategories through the codes to take it to a more logical level of understanding, we then took the subcategories and connected them to five categories that we present in our results section.
Bellow is an example where we can see how we took a meaning unit and condensed it down to one category step by step. #2 indicates that it is the second respondents meaning unit that we used.

Table 2

<table>
<thead>
<tr>
<th>Meaning unit</th>
<th>Condensed meaning unit close to the text</th>
<th>Condensed meaning unit Interpretation of the underlying meaning / code</th>
<th>Sub-theme/ Sub-Category</th>
<th>Theme/ Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2 “There is to many people with the same or similar background and knowledge involved” […]</td>
<td>Similar background knowledge generate similar ideas</td>
<td>Resembling thoughts</td>
<td>Similarity</td>
<td>Diversity</td>
</tr>
</tbody>
</table>

According to Graneheim and Lundman (2004) this is the most effective and easy way to interpret and go through qualitative data. The quality and reliability of the research increases because we can show transparency step by step how we have worked and interpreted the data.

According to Graneheim and Lundman (2004) and Elo et al., (2014) the selection of an appropriate method for data collection is essential for ensuring credibility for the content analysis. In order to increase the trustworthiness of the qualitative content analysis with an inductive approach to the data should be open and semi-structured for the interviews. The data should be as unstructured as possible in order to gain more useful information or themes that we as researchers did not expect from the beginning (Eto et al., 2014). We chose to display all the steps of our analysis to increase the trustworthiness and credibility of the study and because we want to be transparent for our readers.

3.6 Research Ethics

Any recordings made were done with the approval of the respondents beforehand and were informed that the recordings would not be published nor would we publish any personal information that could identify any of the respondents. The respondents were told in advance the topic of the interview and our intentions, however the question guide was not sent beforehand as they could not possibly include all potential follow up questions. Respondents were not asked to share any sensitive information, they were simply asked for their personal opinion on digital platforms and the project but to protect our respondents we will not be releasing any names. They were also free to decline specific questions or choose not to participate at all.

3.5.1 Classified data/data covered by NDA

As the research context of this thesis was an active project that was in development, parts of the material gathered is covered by a non-disclosure agreement (NDA) and thus any pictures and/or intellectual property will have to be approved by the owner and/or modified so that they no longer contain any information covered by the NDA. This also means that this thesis has been anonymized per our respondents wishes.
4 Data Collection and sampling technique

This section of the thesis is dedicated to our methodology for our data collection.

We used two different methods for collecting data; observations (i.e. field notes) and through interviews. Both qualitative.

We began by deciding that we would use a form of thematic analysis and qualitative content analysis because it would be a good fit to our analysis phase because we used qualitative data and used semi-structured interviews. The strengths of thematic analysis is that it is applicable to a multitude of different data sources. Thematic analysis is also very flexible in how you can apply it as we described in the qualitative content analysis chapter. We was not sure of what kind of data we would get in our data collection, we needed a analysis that could handle a multitude of different qualitative data and help us in our theory construction. Thematic analysis allows for this as theories can be continuously generated and modified depending on new data. This fits us as we won’t be able to conduct all the interviews and observation at the same time but rather over a period of time. Doing the data analysis and collection in parallel allows us to make several iterations of our analysis which makes sure that we are critical towards the data and lessen the risk of us influencing the analysis with any preconceived ideas. According to Bryant & Charmaz (2007; Charmaz, 2014) a qualitative content analysis produces large amount of data that can be difficult to manage. It also has the limitation that we need to be skillful and that there are no standard rules or guidelines to follow. In our research, we knew about these limitations but the advantages outweigh the limitations of thematic analysis.

We used open-ended questions in our semi structured-interviews because it gives us more in depth data and answers to questions that can be hard to predict (Denscombe, 2000). It was a natural choice to use a qualitative content analysis in order to go thought the empiric data in order to get the full picture of the research. We made the assessment of going through every interview and observations/field notes rapport to gain more insight and make sure we did not miss anything important. We also decided to use these methods in order to gain trustability, credibility, trustworthiness by conducting qualitative content analysis with an inductive approach, we went through these step by step in order to show our transparency as we describe in (chapter 4.3)

We decided to use a method triangulation to get a deeper understanding of the subject and increase the validity of the study by going through two different qualitative methods, interviews and observations/field notes. According to Ahrne and Svensson (2011) and Marshall and Rossman (2006). Method triangulation is used to increase the validity and the quality of data because we can see how different people in the study answers and thinks about the aspects of the project. We used the field notes and observations as the basis for our research and for the questions for our interviews.

We participated in three workshops that were organized by project members, held in one member headquarters. All the workshops were for a full day and were considered to have topics of a explorative nature. Each participating member of the workshop held a presentation where they updated each other on their work progress. Participants were free to ask question either during or after the presentation. Each workshop was concluded by a sales pitch by a third-party reseller where they presented different solutions that had available
which might be useful for the Omega project. As participants we were not active, we listened and took notes of what was said and any discussion that took place.

The project was divided into seven different work packages (WP) were each WP is meant to work with different parts of the project. The workshops we attended were considered part of WP3, which had a focus on exploring different marking technologies and other potential technological solutions. However, there was also some discussion of connecting these to the value propositions raised by WP2, which focused on developing the Omega project concept, and how to sufficiently capture them.

We were able to keep some of the material presented to us during the workshops, such as the presentation slides, which were very helpful in formulating and validating our own notes. The material however classified and protected under an NDA (see Ethics section), which means that some of it must be modified to ensure anonymity.

The reason for choosing a qualitative study for this study is that the aim for this thesis is explorative and to generate theories. As raised by Bryman (2012) qualitative research methods are preferred for theory generation while quantitative is more suitable for testing a theory.

In the early stage of the project we relied on observations for our initial data collection due to time constraints and other obligations. This proved to be very useful as it gave us a head start for our interviews and for us to find suitable candidates that would give us as rich data as possible.

4.1 Semi-structured Interviews

The interviews were conducted as semi-structured due to us having a interview guide consisting of around 15 questions, each open ended. Having it semi-structured allows us to ask follow up questions, gain clarity and get even richer data (Doody & Noonan, 2013). We conducted one pilot interview to see which questions worked and which ones did not, or rather, did not result in rich data. After the pilot interview, we adjusted the questions that were not satisfactory and some of the question which perhaps were harder for some respondents (depending on their background) to answer. After each interview we went through the questions and adjusted them if necessary because we interviewed people in different organizations and positions. In total six interviews were conducted and three workshops.

The selection process for respondents were chosen based on five factors; availability, willingness, competence and involvement. They needed to be available for us to interview and since we cannot force someone to participate they also had to be willing. Competence meant that they needed to have a certain knowledge of the project in order to be capable of answering some of the questions and be familiar with the area. Involvement meant that they needed to be involved in the project in one way or another in order for them to provide any insight, however that does not mean that they have to be a contributing member to it.

The interviews were conducted in a relatively (to the overall project length) small time window, so all of the data is gathered without some major event and/or milestone affecting it. The interviews lasted roughly around 30 minutes per respondent and were conducted over a six-week window through software such as Skype Meetings. After the interview was done,
we transcribed the interview with names of the respondent coded as ‘R’. The interviews were conducted in either English or Swedish, depending on the respondent’s native language.

4.2 Observations & Field Notes
As we were given the opportunity to participate in three of the projects workshops, we chose to make it part of our data collection through the commonly used techniques known as field notes and observations. Which is also called practice-oriented research, which studies more the actual behavior and work practices rather then what the respondents themselves claim they do. (Pickering, 1992) We partially followed the methodology that Schultze used in his paper ‘A Confessional Account of an Ethnography about Knowledge Work’ (2000) where we recorded both what was said, i.e. the information presented by whoever was holding the presentation, and the different opinions of the participants. We also tried to capture the “feeling” of the participants; if they were positively or negatively opinionated about the subject. This was recorded by writing down in notebooks and in cases where there weren’t time to write it down, such as conversations and meetings during lunch breaks, we took what Schultze (2000) refers to as ‘headnotes’. These headnotes were mental reminders of what the topic and the gist of the conversation and since both of us were present at both of the workshops we could go through these at the end of the day to compare and ensure that we had noticed the same things. All of this to ensure that the data had as high degree of integrity as possible.

Having both interviews and observations/field notes means that we get a look at both the intended context, i.e. what they say, think and claim about the Omega project and digital platforms but also the unintended context, what they do, show and express about it.

5 Results
This section is dedicated our findings from the data collection - No analysis of the findings or conclusions will be presented here, only the actual result of our qualitative content analysis. We have divided each data collection into two parts with a final subsection where we summarize the two. The results presented are samples of particular interest to our research question and purpose.

5.1 Interviews
Some interviews were conducted in English and others in Swedish depending on the native language of the respondent. All of them have been translated to English with us, to the best of our abilities, not altering the meaning of what the respondent said.
Table 3

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Role</th>
<th>Company</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>IT Consultant</td>
<td>C</td>
<td>≈ 30 min.</td>
</tr>
<tr>
<td>R2</td>
<td>Coordinator</td>
<td>D</td>
<td>≈ 30 min.</td>
</tr>
<tr>
<td>R3</td>
<td>R&amp;D</td>
<td>A</td>
<td>≈ 30 min.</td>
</tr>
<tr>
<td>R4</td>
<td>Business Developer</td>
<td>B</td>
<td>≈ 40 min.</td>
</tr>
<tr>
<td>R5</td>
<td>Strategic Researcher</td>
<td>B</td>
<td>≈ 40 min.</td>
</tr>
<tr>
<td>R6</td>
<td>Business Developer</td>
<td>A</td>
<td>≈ 30 min.</td>
</tr>
</tbody>
</table>

There were five main categories that we found in our qualitative content analysis that was interesting for our research; we are going to display some of our findings in these different categories with quotes from the qualitative content analysis document. We’ve included quotes to help exemplify our findings. We choose not to include the respondent code to the quotes because we feel that it’s possible to trace it back to the person we interviewed. This is for everyone's best interest involved in the case.

5.1.1 Barriers

The barriers category refers to what the respondent said would either be a challenge or something that would be problematic and obstacles that could hinder the progress of the digital platform. Here we identified three sub-categories to these barriers; Organizational, Technical and Business Model barriers. The organizational category contains data that is considered a barrier raised by the organizational such as the organizational culture within the different companies involved.

“it will take some time to change that culture, the traditional culture. However, it will change [...] We all have a mobile phone, [...], they will digitize the ways of working.”

Technical refers to any technological barrier such as which tracking systems and technical compatibilities (for example) and other engineering problems.

“If we can currently produce the, OR goals for [far goals thicker] those thicker can not [Eh][...] cannot stand particular material treatment, so that is one technical challenge we need to somehow solve the incoming year. “

Business Model is rather self-explanatory, contains any data connected to the potential business models of the platform but is also very clearly expressed by the respondents.

“I think [...] that this is an evolution. What we do in [****] is a good purpose and I think it will create more awareness about this in our industry. But it is a small
step on the road to the greater goal that we are talking about, sustainability for the entire supply chain.”

5.1.2 Collaboration
Collaboration is the category we refer to as the aspects of collaboration and partnership, it is linked to the organizational barrier and how organizations are working together in this platform ecosystem.

“It has raised a lot of questions that right now is a part of how we move forward. It has risen a lot of question due to us being inexperienced [in this area]. Who owns the data, who should have access, what data is it about, who’s going to make money in the end. It comes all the time and it’s that kind of things we need to learn of. The kind of stuff you don’t think about as a technician. “

5.1.3 Governance
In the governance category, we refer to the aspects of ownership, boundary resources, openness. How to design and govern a platform ecosystem (chapter 3.2). Data was extremely central in this category.

“We have an operation that works in the mining industry where they build equipment for mining and mines and here I know that on of the ideas is to be able, with help from information from several different clients who are competitors still be able to help their customers to become more effective and that’s a fine balance there of course. [...] The customers might not have enough equipment with information to draw conclusions but by retrieving information from several customers [they can draw these conclusions] and that can become a win-win. So this is a delicate question I think in the future, how one works with this and to make sure you don’t get greedy in one way or another. It is what this is, open. Open the opportunities. Win-win.”

Another respondent stated that the questions are relevant but that they are inexperienced in this field so the questions are hard to answer.

“Yes, a lot. A lot. It has raised a lot of questions that right now is a part of how we move forward. It has risen a lot of question due to us being inexperienced [in this area]. who owns the data, who should have access, what data is it about, who’s going to make money in the end.”

5.1.4 Diversity
In the diversity category, we collected aspects of how similar thoughts and education can be a barrier in the collaborative network and the innovative climate in the platform ecosystem and the launch phase.

“A pitfall is when “ah we have already done this, it can't be done. It will never work” Even if they have senior positions and tries to solve a problem that is not solved. It can be a pitfall and a obstacle but i hope that we can solve this during our workshops and show more openness and don't give a shit about everyone’s
background or anything and just “what are we supposed to do now?” get more people involved and mixed knowledge.”

5.1.5 Value chain
The value chain category refers to material that involved the potential value propositions of the platform. Both for the organizations themselves (i.e. what kind of value can the company derive from being involved in such a project) and what kind of value they can see for their customers and/or other.

“I believe it’s never going to be finished [done developing] we’re continuously working on together with our customers on knowledge transfer, how to best use our material but also understanding how our customers uses it and our customers customer, end users to make more optimized solutions in steel.”

5.2 Observations & Field Notes
All of the observations and field notes were collected during the three workshops. We gained material that the different organizations involved in the project have made and their knowledge surrounding the project. These files contain presentation materials and a project description document. We used this material in order to gain a deeper understanding of the project and how we could construct a research that would be beneficial to our research and to the Omega project. The material was used to structure our questions for our semi-structured interviews later in the process. All material that we gathered in the workshop is still confidential and under a non-disclosure agreement with the organizations involved.

- **Workshop 1 (WS1) 6/10-2017;** This workshop was an online workshop, this was in the launch phase of the project and we went through the different organizations and companies that were involved in the project and their thoughts and different processes that would be involved in the different work packages. Our findings during (workshop 1) gave us a unique opportunity to gain knowledge of the organization and their different structures and how this initiative would benefit their organization. We attained a baseline description of their systems and where this Omega project would apply for the organizations.

- **Workshop 2 (WS2) 21/9-2017;** This workshop was dedicated towards an initial exploration of the marking and reading technologies available out there today for the manufacturing development process. The workshop also contained aspects of value proposition, voice of customers, proposition canvas. There were discussions about how to create values for different companies and organizations. Big data and a focus on customer benefits and how the data exchange with the customers would be set up and how the information flow may look like. Cultural fit, the organizations involved in this initiative are traditional and old, an innovation could be difficult to sell in this traditional market was a concern in this workshop. Platform ecosystem was a central point in this workshop and how the initiator to the initiative said that the ecosystem must be intelligent, that it should
be a whole service not a product. There was also talk about the revenue stream and gathered value for the manufacturer of the product but nothing concrete. This gave us the opportunity to explore the barriers when developing a platform ecosystem and the issues surrounding collaboration and governance.

- **Workshop 3 (WS3) 17/11-2017:** This workshop was dedicated towards connecting the different identified marking technologies to potential solutions and how these could relate to the previously identified value propositions. The workshop also had a focus on how this new innovation can create new business models and how different organization can utilize it. There were also discussions about data encryption and not giving the customer all the data because it may not be the real value, the value would be if a machine can solve it. This is where we got confirmation on the different barriers that can occur and needs to be solved in order to continue in a platform ecosystem.

By attending these three different workshops we got an understanding of the areas of concern and a basis for our research. We used this basis in order to create our research questions and to model our thesis.

### 5.3 Result summary

As the result from the different data collection methods are fairly different from each other we will make a more thorough comparison and evaluation of all of the data in the analysis chapter of this thesis. However, to summarize the interviews and the workshop we can say that we found similar data of the different methodologies. The fact that there were barriers that needed to be dealt with emerged in the workshop and was later reiterated in the interviews. During the workshops it became very clear that there was an unbalance in “power”. That one party in particular had the power of authority and was also leading the meetings through often being the center of attention in discussions.

The data found that can be connected to the launch of digital platforms was both in the form of being absent, i.e. something that the respondents hadn’t taken into consideration and pronounced by respondents as something critical. The project owners had taken the launch and potential value of the concept into consideration by planning to conduct three pilot studies in the near future where they will get some form of minimum viable product (MVP) to help determine potential value and usefulness of the Omega project concept.

- **Governance**
  Data that emerged in both the interviews and in the observations were how they were planning on capturing value - through customer cases and discussing with their clients about the potential of the Omega project and if it would interest them. There was also the fact that they (as in all of the parties involved) were still very unclear in what the actual final product would look like and questions about the data ownership/other boundary resources. All parties raised the need to evaluate and
communicate the potential value of the platform, however how they were supposed to reach that potential remained unclear.

- **Diversity**
  Something particularly interesting was raised by R2 and later confirmed by reviewing our data from the observations and that was the fact that they were concerned with their lack of diversity (paraphrased). Several, if not all, of the parties both interviewed and that were present at the workshops had a technical background, most in material engineering or manufacturing. What was actually concerning about this was that they would dismiss something as impossible without fully exploring it.

- **Value chain**
  A lot of the data found and what was raised by all of the respondents were related to what the potential value of a digital platform was throughout the entire chain. Some of the respondents were more focused on what value this will be for the companies involved in the project, i.e. the owners, in terms of them being able to charge a premium price for a higher quality product and gaining value through monetary means. Others were more focused on the potential value for the customer, both for their direct customers but also for their customers’ customers. So they were looking at how this could bring potential value to the everyday consumer and if there was any value potential for society. There was also some discussion raised by a few of the respondents of how it could potentially be valuable for the environment and through that be valuable for the entire chain as environmental thinking becomes more and more central in our products to ensure a sustainable future.

- **Collaboration**
  The theme of collaboration was raised when the respondents discussed the project and how they were developing this together with other companies. There was a realization that since this wasn’t a part of their core competencies and that they would have to bring in outside help.

  Something particularly interesting was that this could also be linked to when they were discussing the business model of the platform. Respondents realized that developing and collaborating together with other partners both had its ups and downs. Positive in such a way that it strengthened their competencies by bringing in organization with a different set of skills, different point of views and having support from the industry. Negatives were that you had to be more careful in what information and data exactly you share, since the project involves potential competitors (whether they were competitors were viewed differently by the respondents) and sharing too much could mean that you lose a competitive edge.

  There was also the issue of governing the data in the end, if they were to solve their problem and develop a platform, who would own it? Respondents also raised the notion of open innovation, however how exactly this influenced the platform remained unclear and perhaps were a source of inspiration for the development of the
platform and ecosystem. The workshops showed that the parties involved were open to outside help, but perhaps reluctant in sharing sensitive data as some of the information they shared was classified as confidential.

- Barriers
  The barriers that emerged were partially taken by looking at the other emerging themes. A technical challenge was certainly raised as a focal point in the workshops we attended which is deemed a barrier as the technical parts of the platforms needs to be solved for it to ever become a reality.

  The second barrier was an organizational one; respondents expressed a need not only for the technology to develop, but also organizations within the industry. There’s a need for a cultural shift to happen in this particular industry as it’s viewed as a more traditional one which comes with certain preconceived ideas of how they work with IT.

  A third one was related to the business model of a digital platform; as our research context introduced a development process that involved competitors developing the platform and ecosystem together a new barrier became clear. How do you solve ownership, who gets the data (and what data), who will gain value of this platform etc. questions that needs to be answered in order for all parties involved to continue being dedicated towards the success of the platform.

6 Discussion

In this chapter we will discuss our result chapter and linking it together with our related research chapter in order to answer our research question: *What kind of challenges and opportunities arises when a traditional market sector launches a digital ecosystem platform?* The term digital platform has been well studied and examined as (Stummer et al, 2017) showcase with his six strategies to launch a digital platform, but when it comes to a traditional market that tries to launch a platform there is little to prior research done. We found several challenges and opportunities that are associated to the launch phase of a digital ecosystem platform. We have divided this chapter into challenges and opportunities to better illustrate our thoughts.

6.1 Challenges

Our first challenge has to do with *Incentivization*. The ownership of data and what you do with data is a hot topic today, just recently Facebook and Cambridge Analytica was under pressure for their ‘*mishandling*’ of personal data (Ingram, 2018). Data ownership and other boundary resources are also very central to the development of digital platforms (Gawer, 2014), especially when developing them together with others outside of the company and perhaps particularly crucial when doing so with competitors. For example, how do you incentivize other companies to help you if there is no value to them in doing so? If they are allowed to take part of the data there is a clear benefit, but if the owner would want to keep it
all to themselves they would have to find some other way of incentivizing other companies help.

The second challenge is the chicken and egg problem. The case did not present us with a clear understanding of how they were planning to attracting their initial users. Concerns however were raised that the margins within this particular industry were already very slim and optimized so arguing for users to pay extra for access could be hard to argue. Achieving network effects, one of the biggest arguments for adapting a digital platform, will be much harder if there’s already a resistance to it (i.e. an increase in price). This is yet to be fully explored however, as client cases where they explore this are yet to be fully completed (Stummer et al., 2017). This can also be related to the earlier point of incentivization (Gawer, 2014), how do you make your users a part of the platform? Adapting a form of subvention might be one solution. This is a challenge in the launch phase of a digital platform, in our data we could not see a clear picture of how they attracted new user and their main focus was creating this platform and then let the existing users come up with new values and solutions. This falls back to boundary resources (Gawer, 2014) and that their goal is for the users to come up with solutions rather than solving it themselves. The challenge can be that the solutions and values do not reach the full potential of the innovation when you let other organizations, customers, complementors and competitors come up with their own values and solutions for this particular innovation.

We were also able to find a Diversity challenge. There are opinions expressed from multiple respondents about the potential issue of a lack of diversity. I.e. that there’s a lack of diversity in the development group which leads to them undermining potential solutions and having a general reluctance towards trying new things that they deemed to be impossible. Connecting this back to our related research, specifically the diversity section, shows us that this may be very central when launching an digital platform. While having multiple different fields and background involved in a project spanning over several different disciplines, which Johansson (2006) calls the medici effect, can lead to innovation, it can also stifle it if it becomes too diverse. Having a very technical and/or engineering project group can skew the platform to be too focused and narrow on the engineering problems, which can lead to the platform missing its intended users. However, research shows (Sandberg et al., 2015) that having a too diverse group causes it to be too wide and unspecified. Based on this we can reiterate the argument raised by Sandberg et al. (2015) about there needing to be a balance between the two sides in innovation networks, but also in the context of launching a digital platform.

This diversity argument rests on the fact that diversity is both a driver of innovation but also a challenge. Diversity is good as long as it doesn’t cause more problems than it solves, but finding this balance is necessarily as clear in reality. Different members of the project may feel that this balance is reached at different points and we argue that it is up to the project owners to make the call, a call which is very hard to make as there’s a lack of tools to help measure this. Our data showed us that this lack of trust, which can be a consequence of diversity, was already happening in a group that wasn’t particularly diverse so there’s also a point in creating and enforcing trust within project groups.
A lack of diversity from the start can be detrimental for the platform as well. When launching a digital platform the intent is often to attract multiple different kinds of users so by not including a diverse crowd means you get a too homogenous group, which misses the needs of others and becomes too unanimous in their decision-making.

The third challenge affect the Openness and Adaptability aspect of the platform development.

What can be said, so far in this case, is that having an open development process (i.e. admitting that this is not something you (the company) can solve yourself and that you need outside help) is beneficial in reducing the potential threat of diversity - but since they are still the ones that have the final say the threat still remains. However, when you open up to collaboration with other partners, especially with other companies who can be seen as competitors, there’s an element of trust and a need for the project to be beneficial for all actors involved, which can be described as openness and the need to be transparent and open in the collaboration in order to make it successful; this on the other hand is linked with competitive strategy, trust and adaptability (Boudreau, 2010). As Mantena and Saha (2012) describes with competitive strategy and Hurni and Huber (2014) with trust, when it comes to collaboration, the organizations involved in the Omega project are going to have to adapt towards the change process when launching a digital platform. The players that are involved in the project are going to need certain levels of trust and a clear strategy to successfully developing and launching a platform.

In our research context, participants raised the need for a platform to be considered of a evolutionary nature, meaning that the platform is never really considered done in development but rather needs to continuously adapt and reshape depending on its market and users.

The last challenge we identified was related to the Business Model of digital platforms. Something that has been reiterated in the previous points but deserves to be mentioned specifically is how digital platforms not only come with new technical challenges but also challenges related to the business models of the owners which can be just as critical to solve as without a clear profit for everyone involved in the project their willingness to contribute will certainly falter. This is also related to the control aspects described by Tiwana (2014) that the decision-making processes are steering towards a more informal mechanism and this can be difficult for a traditional organization that has its formal decision processes and bureaucracy to change. In order to create a successful ecosystem platform there is a need to set up clear guidelines and rules but move towards a more informal decision-making process that does not slow down the decision-making processes

6.2 Opportunities

Our first findings of opportunities were within the Diversity and Openness aspects. An opportunity that was raised was the fact that the company in charge of the case realized that doing something innovative outside of their core business processes would require them to work together with other companies. This realization comes with the notion that they need to open up new knowledge flow channels; this influx of knowledge can be capitalized on if done
properly. Our findings reveal that the adaptability and levels of openness is very important aspects in the launch phase of a digital platform in order to create clear guidelines and governance rules in the early stages and affects the whole time to market-process (Boudreau, 2010; Mantena and Saha, 2012).

Our second set of opportunities is within *Business Model* and Governance. Our data raised a concern with low profit margins in their production and a worry that the customers were unwilling to pay a premium price for this new platform and products associated with it. However, the respondents also solved their own problem by talking about it: within platforms it is not necessary to charge a premium price for a premium product if both parties can benefit of the use of said product. In this case, a digital platform ecosystem would mean that it allows the consumer to get a better product and the data created from the use of a digital product would be used to create better margins and other value creation with boundary resources (El Sawy et al., 2010; Selander et al., 2010). This means though that we return to the problems of companies protecting their data, even though data is a reproducible asset (in other words just because you give it away does not mean you lose it) companies are still very reluctant on sharing it as it could mean that they lose an competitive edge. If they were to loosen their grip on their data, perhaps through one of the launch strategies raised by Stummer et al. (2017), there are opportunities for new possible business models which benefits everyone in the ecosystem. As we can see in the results of or study several of the respondents have talked about the governance aspects and how the platform ecosystem should be governed which is a crucial aspect when launching a digital platform ecosystem (Smedlund & Faghankhani, 2015). According to Yoo et al., (2012) and Gomez and Sanchez (2005) there must be a design and clear management to dictate the balance between the generativity and control in the platform. Which in this case means that there must be a clear design and control in order for everyone involved to create new values for the product.

To summarize we can easily say that any industry looking to take on a digital platform has both a set of challenges and opportunities in front of them. Certain aspects are certainly both, depending on how the governor deals with them. We feel that both capitalizing on opportunities and preparing for challenges holds equal weight, but not all aspects are equally important. Our case showed us that data in digital platform was very central and we believe that data is going to become even more central not only in the development of digital platforms but for all businesses. So, making sure that any questions regarding data are answered, such as who will own the data and who will benefit from it, will help with dealing with some of these opportunities and challenges. Our analysis can also be considered an example to Holmström (2018) as it showcases the complexity of how digital innovation both affects and is affected by socio material aspects.

### 7 Conclusion & Limitations

Previous research of digital platforms and ecosystems are very extensive and cover a multitude of different challenges and opportunities. Our findings however say that there is a gap in the literature regarding the context of these platforms, different platforms have different problems. Platforms is also a very broad term in the context of where it exists
becomes very central, we aim to fill the gap for traditional industries that can be considered old (or companies that face similar challenges as them) however, our study is not final and more research has to be done in order for it to become conclusive. Our study only covers our research context, but can be used to find similarities with other similar contexts. Other limitations were the fact that we were not able to attend all their meetings nor be part of the entire project from start to finish due to time constraints.

Traditional industries that are looking to take on the challenge of creating a digital platform have several things to take into consideration. In this digital age, new opportunities arise constantly but the same challenges still remain. Our findings showed us that not only is there a technical barrier that needs to be solved but also business model and organizational. Data is becoming more and more central in platforms, who exactly owns it? How can the platform ecosystem as a whole gain value from it? These types of question are things that need to be answered by organization in order for the platform to succeed - otherwise the platform will surely die out, if it'll even spring to life in the first place. A theme that is constantly re-occurring in our study is the balance between Governing, Boundary resources (i.e. data) and Openness. The findings also tells us that even though the challenges for platforms are unique depending on its context, similarities can be valuable for other contexts in order to create generalized strategies for organizations looking to adapt an digital platform and the creation of an ecosystem.

7.1 Future research
To end this, we would like to encourage future researchers to further consider the different barriers other similar industries faces when developing a digital platform. Speculatively, this could lead to a maturity model that helps companies measure to see their potential challenges and plan for their future creation or transition over to digital platforms.
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