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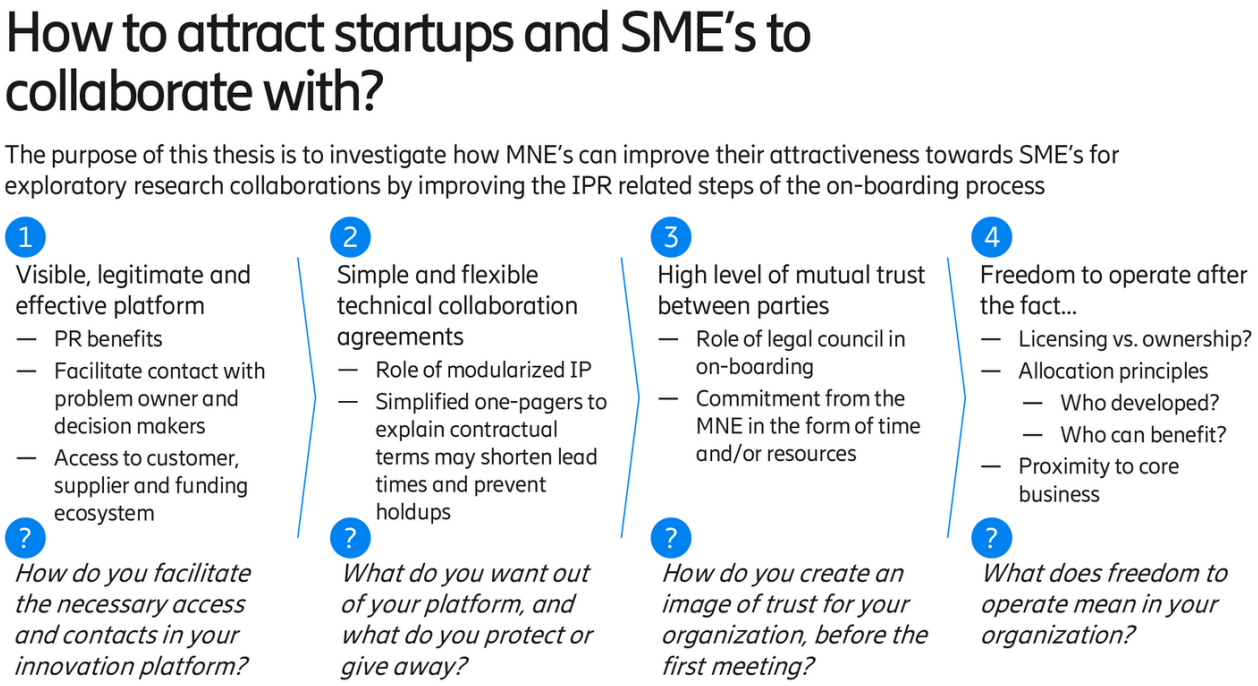

Understanding and bridging hold-ups and deal-breakers in exploratory asymmetrical collaboration

An investigation of how freedom to operate impacts the platform set-up and IPR appropriation strategies

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Abstract

Open innovation involving asymmetric partners has been an increasing trend over the last decade. In recent years there has been a significant push towards platform-based collaboration. Large corporations open up their organizations towards influences from startups by utilizing shared spaces, organizational access and creating a single point of contact. It has been identified that these collaboration platforms, however well intended, run in to both organizational and matching issues. One significant hurdle has proven to be how the host corporation can ensure their partners that they will enable the partners idea, and not create additional hinders. Our interviewees refer to this as the freedom to operate issue.
This thesis is based on a case study where data was gathered in a purposive sampling manner with semi-structured interviews of seven startup representatives, four experts from academia, one venture capitalist and nine employees from an intellectual property intensive corporation with several collaboration platforms. Each startup had been in contact with the intellectual property intensive corporation. To verify interview data, internal documentation and public information was reviewed. The gathered interview data was analyzed based on an open-coding methodology. Only data that was verified by two independent sources is presented.
We identify that the startups want the partner corporation to approach the question of freedom to operate through open, negotiable and simplified contracts accompanied by clear objectives regarding business and technology trajectories so that the risks of misappropriation and dependencies can be evaluated. A hosting corporation that wants to be attractive and approachable must consider how they can create a multi-tracked platform approach which can handle potential spin-ins, exploratory developments and connect proven concepts to internal problem owners. It is further identified how the host corporation may avoid hurdles by improving their internal and external information gathering and communication. This thesis also examines how structures and objectives at the large firm may enable or hinder collaboration, pointing out how and why the host corporation may struggle in satisfying the needs of the startups.

Keywords: Appropriability, Innovation Ecosystem, Intellectual Property Management, Asymmetrical Collaboration, Open Innovation.

Sammanfattning

Öppen innovation mellan ojämlika partners har varit en tilltagande trend under de senaste decenniet. Under de senaste åren har det skett en tydlig förskjutning mot plattformsbaserat samarbete där stora organisationer, för att vara mottagliga för influenser från och samarbeten med startups, öppnar upp sina processer och lokaler samt tillsätter kontaktpersoner som handhar startups. Trots detta har det iakttagits att dessa plattformar stöter på både matchnings- och interna organisatoriska problem. Ett betydande hinder har visat sig vara hur värdföretaget kan försäkra sina partners om att värdföretaget kommer möjliggöra partnerns idé och inte orsak ytterligare komplexitet. De intervjuade refererar till detta som handlingsfrihetsproblemet.

Denna uppsats är baserad på en fallstudie där data samlades in genom målinriktad provtagning under delvis strukturerade intervjuer av 7 startups, 5 ämnesområdesexperter från akademin och riskkapital samt 9 intervjuer av anställda på ett stort svenskt företag. Samtliga 7 startups hade före intervjuerna varit i kontakt med det stora immaterialintensiva företaget. För att verifiera intervjudata analyserades intern- och publik dokumentation. Intervjudata analyserades baserat på öppen kodnings metodologi. Bara data som kunde verifieras av två oberoende källor ingår i underlaget till tesen.

Vi identifierar att startups vill att partnerorganisationen ska närma sig handlingsfrihetsproblematiken genom öppna, förhandlingsbara och förenklade kontrakt som stöds av tydliga målsättningar angående framtida utveckling av teknisk- och affärsmässig riktning från det stora bolaget. Detta så att det mindre bolaget kan utvärdera risk för oavsiktlig förskingring av approprieringsmöjligheter och beroendeställning. Ett värdföretag som vill anses attraktivt och lättillgängligt ska överväga hur de kan skapa en mångspårig plattform som kan hantera såväl potentiella spinins, explorativa samarbeten som koppla ihop mogna produkter med interna problemägare som kan ha nytta av tekniken. Vidare identifieras att värdorganisationen kan undvika hinder genom att förbättra sina processer för intern och extern informationsinsamling och kommunikation. Denna uppsats utvärderar även hur organisationsstrukturer och målsättningar på det stora bolaget kan skapa möjlighet för eller hindra samarbeten genom att peka ut hur och varför värdorganisationen inte tillfredsställer startupernas behov och resursbegränsningar.

Keywords: Appropriability, Innovation Ecosystem, Intellectual Property Management, Asymmetrical Collaboration, Open Innovation.

Acknowledgements

The completion of this thesis would not have been possible without the support from all the employees at the case company who reserved time to guide us through their processes and make us understand how they worked with startups. We would like to aim a special thanks to Anna and Lars-Erik for their support in directing us to internal and external interview subjects.

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David Sveide
Gothenburg, June 2019

Benjamin Strömberg
Gothenburg, June 2019

Abbreviations and Nomenclature

API	Application Programming Interface
CSR	Corporate Social Responsibility
CEO	Chief Executive Officer
CTO	Chief Technology Officer
GDPR	General Data Protection Regulation
IP	Intellectual Property
IPR	Intellectual Property Rights
LF	Large firm, the company at which and in collaboration with this thesis was conducted
MNE	Multi-National Enterprise, used when referring to a generic large enterprise that is not LF
MVP	Minimum Viable Product
NDA	Non Disclosure Agreement
OI	Open Innovation
PoC	Proof of Concept
SME	Small or Medium Enterprise
TCA	Technical Collaboration Agreement
TRL	Technical Readiness Level
VC	Venture Capital
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Contents

1
Introduction

This chapter presents the background to why the topic is relevant identifying gaps in existing literature, along with the scope and aim of this report.

1.1 Background

Academic background and gap identification.

Open innovation (OI) is, as defined by Chesbrough (2010), "the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively." OI has, despite some controversy regarding it's newness (Trott & Hartmann, 2009) and sought meaning (Lichtenthaler, 2011) appeared as one of the strategies used by large and small corporations alike (Chesbrough, 2010; Blomqvist, Hurmelinna, & Seppänen, 2005; Bonzom & Netessine, 2016) to improve their products and services. Extensive literature exists on the importance of formal and informal Intellectual Property Right (IPR) agreement in open innovation (Hagedoorn & Zobel, 2015) as well as Intellectual Property (IP) strategy as enabler or hinder for open innovation (Alexy, Criscuolo, & Salter, 2009; Granstrand & Holgersson, 2014). Especially Blomqvist et al. (2005) stresses the importance of having both trust and contracts in place and that these are complimentary modes of governance and not substitutes.

The motives of entrepreneurs and startups to undertake asymmetrical collaborations has been explored in the automotive industry by Simon, Harms, and Schiele (2019). Their multiple case study points out how large enterprises can become more attractive collaboration partners and find that relational aspects, complimentary assets and risks affects startups' willingness to partner with Multi National Enterprises (MNE). These three fields are further broken down into propositions such as commitment of corporations, market access and misappropriation. However, from the practitioner's point of view there is still a shortage of hands-on literature on the topic of practical implementation of the collaboration platform. Therefore, we expand and contrast the knowledge especially regarding *Freedom to Operate*, contractual ambiguities and how to create circumstances under which collaborations actually can take place and flourish. We also, study the issue in the telecommunications industry to understand whether previous findings by e.g. Simon et al. (2019) are industry specific. Further, this thesis particularly investigates collaborations where the outcome is uncertain and therefore appropriation regimes must allocate

the innovations and IP smoothly without knowing exactly what will be invented or by which party.

To investigate the hypothesized issues faced by the respective partners in hindering success in asymmetrical collaborations e.g. Freedom To Operate (FTO), IP allocation & appropriation a Swedish MNE, here on after referred to as Large Firm (LF), with a track record of several external collaboration was approached to provide a setting to be evaluated. This research setting is explored in detail below.

Introduction to research setting

Large Firm (LF) is a market leader within the telecommunications industry. For LF to continue to be a market leader they have identified that innovation is crucial for long-term success. LF has a strong focus on innovation and wants to develop and strengthen their innovative capabilities even further. To get the most out of innovative ideas, a collaborative approach with partnerships between companies is frequently used to ensure all needed competences are present.

One of the initiatives to foster internal capabilities through external collaboration is done at the incubation organization "LF Incubation Platform", under which the LF Exploratory Platform operates. The Exploratory Platform organization focuses on technical exploration activities which stem from ideas by LF employees, academia, startups or in certain locations from collaborations with current or potential customers. From LF's perspective the goal of the Exploratory Platform is to be a place where mainly connected devices/IoT applications can be developed and learning's can be drawn from how these new use cases challenges LF's products and services. Learning's range from how the application could affect technology Y to building and improving analytic platforms to pure PR that have no or little impact to what LF focuses its R&D resources towards. To attract start-ups and collaboration partners coaches and technical experts are provided who guide and assist the partner through the process of developing a Minimal Viable Product (MVP) to validation of Proof of Concept (PoC) and if the solution is viable to assist in developing a suitable business case to pitch the solution in a "dragons den" format. Here, a decision is taken if the project should be taken further as a new business unit at LF (spin-in) or if the parties have reached their objectives and are better off going separate ways.

The focus area at the LF Exploratory Platform in Gothenburg is technical exploration with strong IoT inclination, hence projects and partnerships concerning end-user applications which push the limits of what can be done on the network are pursued. Thereby the LF Exploratory Platform acts as a platform for learning and developing features the network will be expected to have in the future.

Each project at the Exploratory Platform has identified a use-case and a potential customer that would benefit from the project. However, since the goal of the collaborations is to push the limits of what can be done and doing so with minimal resources the parties can never be exactly sure what the outcome of the project will look like. Due to the uncertainty of if the chosen approach with resource constrained startups is actually feasible the projects may change in scope and exact objective

several times before completion. This uncertainty puts certain demands on the collaboration platform and agreements which include but are not limited to: being open, flexible, ensuring commitment and attract start-ups from various industries and technology areas.

These partnerships may involve small and medium-sized enterprises (SME), including startups. LF needs to know how to benefit from these collaborations, including those of uncertain nature with smaller firms. The collaborations with smaller firms are particularly uncertain since they suffer from lack of both financial and human capital that can be 100% dedicated to the project. It may also build on nothing more than a vaguely defined idea that might turn out to require resources that the SME cannot make available. It is also difficult to assess the size and likelihood of potential gain to LF's business model to take part in a certain project since the SME's idea may be either very far or potentially very close the LF's business model. This makes it difficult to from the beginning be absolute certain how the idea will have to be redefined because of technical or financial hinders and even if the project is successful, how do LF make sure that they can deliver a product line that enables the SME to deploy theirs? Due to the initial outcome uncertainty it is often difficult to use the fixed development processes which are often present in larger firms and to establish contractual agreements for the collaboration without impeding on the potential innovational efforts. However, to maximize value for both firms LF requires frameworks which attract partner SME's and ensures know-how transfer between LF and the partner firm while avoiding IPR conflicts and unintentional IPR leakage.

This thesis will focus on the collaboration between LF Exploratory Platform and SME/startup partners.

1.2 Problem Statement

Large corporations want to ensure long term profitability, a part of this is capturing the opportunities of collaborating with small firms and startup. To collaborate with external partners effective processes for attracting, screening and staging ideas are required. collaborating with external partners so that as many projects as possible may be evaluated. The current literature on these topics is extensive however, from a practitioner's perspective it is difficult to form a coherent perspective on how to combine these into hands-on tools and ways of working. It has been hypothesized that the process of signing the Technical Collaboration Agreements (TCA)[1] is inconvenient for startups. Thus, a hold up is incurred at a time when the collaborative effort has gained momentum and then risks being lost just when resources and commitment have been made available within both organizations. Large companies must know what creates these hold ups and how they can be avoided. If this is not properly understood and improved the open innovation effort may be-

[1] A technical collaboration agreement is an agreement between the signing parties of what the objective of the collaboration entails, how this is proposed to be accomplished and often also who can do what with the outcome and necessary background components.

come too cumbersome for partners to work with making the MNE and SME alike lose out on important insights and products that might have come out of these lost projects. Hence, the problem this thesis will investigate is: *Which hinders exist and what creates hold ups during asymmetrical collaborations? Is it possible to overcome these hinders? Does the preferred collaboration set up implicate changes to other organizational processes?*

1.3 Purpose/Aim

The purpose of this thesis is to investigate which hinders exist in asymmetrical exploratory research collaborations and to offer insight in how to overcome these hinders.

1.4 Research Questions

This thesis will focus its effort on answering the research question: What creates hinders in or for technical, exploratory & asymmetrical collaborations, and how can these hinders be overcome?

1.5 Outcomes

This thesis explores how the views on and hinders to IP allocation and usage differ between SMEs and MNEs in asymmetrical collaborations. It then identifies how and if these differences can be bridged. In a larger sense this thesis also studies and points out additional features that the large firms must provide to be attractive for collaboration with SMEs and startups. This thesis is written to increase the rate and number of successful collaboration and knowledge sharing initiatives between large and small companies in Sweden and does so by investigating inter- and intra-organizational misunderstandings and hurdles.

2

Theoretical Framework

In this chapter the relevant literature and theory is introduced.

Before exploring the topic of this thesis further a few clarifications should be made. Firstly, open innovation is not the same as open source. Open source reefers to something that is free to use without paying any royalties to the creating party. Open innovation on the other hand, refers to inter-organizational collaborative development, which may still involve significant payments of royalties between the parties (Kowalski, 2009). Secondly, the difference between IP and IPR. IP refers to the knowledge e.g. the innovation in itself, while IPR refers to the method of protection or right of enforcement which in the case of a hardware innovation might be a patent. (Kowalski, 2009).

2.1 Asymmetrical Collaborations

Asymmetrical co-operations have been explored in literature for some time. If executed correctly, both the larger and smaller party of such a collaboration can benefit. The large firm can use partnerships to discover unexplored niche markets (Chesbrough, 2010) and the startup or SME can access the complementary assets, such as the MNE's customer - supplier network (Bonzom & Netessine, 2016). For both small firms and large corporations, it has been shown that technological collaboration holds great potential to reduce the time to market (Bonzom & Netessine, 2016; Chesbrough, 2010). To set the stage, the existing body of literature studying motives, hinders and enablers for asymmetrical partnerships will be presented. To understand the composition of the technical collaboration agreements it is important to understand the motives and hinders of collaborating as perceived by each party. Then, as this thesis studies the topic of asymmetrical collaborations in a particularly IP intensive setting a brief overview of IP allocation and appropriation theory will also be reviewed.

2.1.1 Motives for Collaboration

MNE perspective: There exists several motives for MNEs to enter asymmetrical collaborations. An important opportunity that MNEs attempt to capitalize on is

using the startup as creator(s) of niche products that can connect to a larger technological platform created by the MNE. When the MNE has created a technical platform, some or even most of the addressable use-cases may individually be too small for the MNE to pursue themselves. They can then invite SMEs and startups to explore these niche markets based on the platform developed by the MNE. Thereby, a greater demand for the MNE's platform is created since any end-user that wants the startup's use-case also need access to the MNE's platform (Chesbrough, 2010).

The next two motives are future sensing and testing. The MNE may invite more agile and focused SMEs to explore the edge of the current market or to push the limits of the current technology. Hence providing insight regarding technology and/or market gaps within the MNE's product line that needs to be addressed for the MNE to remain competitive in the future (Bonzom & Netessine, 2016). The MNE may invite SMEs to test their solutions within their platform in order to quickly detect and remove bugs or use-case limitations to their platform before releasing the platform to a larger community.

To collaborate with startups in fields at the cutting edge of technology or innovative business models is not only a method to reduce risk and identify product line gaps, it is also a tool to brand the MNE as an innovative corporation that is open and that attracts the brightest minds of the industry (Bonzom & Netessine, 2016).

SME/startup perspective: Startups often lack in resources during early stages when they are finding their market fit and setting up their business. A way to bridge this resource gap is to engage in collaboration with MNEs (Stuart, Hoang, & Hybels, 1999). A common reason to seek partnerships with other firms is to gain technical know-how (Das & Teng, 2002). In the case of startups looking for collaborations, access to deep and specific technical knowledge is valued (Ahuja, 2000). Such knowledge could be supplementary technical expertise to help further develop the startup's innovation (Andersson & Xiao, 2016). Or complementary technical know-how, for example assistance in connecting to a technology platform to gain a head start in developing products on top of it (Chesbrough, 2010). Sought after know-how in collaborations is not limited to technical knowledge: startups may also lack in complementary resources such as organizational and management know-how (Andersson & Xiao, 2016). Simon et al. (2019) recently published a paper which expands on previous theory. Simon et al. (2019) find that the maturity of the startup, being early stage or possessing a market ready product affects how they wish to engage in asymmetrical partnerships. They show that technical resources and such organizational support is more important for immature startups.

Furthermore, startups do commonly not have connections within the industries they are trying to address, which hinders the commercialization of their innovation (Fombrun, 1990; Singh, 1986). Another motive for startups to seek collaboration with MNEs is to gain to access to these industries (Chen & Chen, 2002; Veugelers, 1998). Linked to this notion is the concept of branding and reputation. Collaborating with established players can enhance a startup's legitimacy. One way of the MNE providing legitimacy is giving the startup the possibility after a successful collaboration to use the MNE's logotype on the startup's prototype or web page. This can lend the startup credibility and provides the SME with a light version of

a quality certificate as compared to their competitors (Bonzom & Netessine, 2016). Reputation and industry access act as motives for both mature and immature startups (Simon et al., 2019).

This creates a need for the SME to widen its network while being very restrictive on how it deploys it limited resources. Here the incubation/collaboration platform may be a cost-efficient tool that the startup is willing to use to increase its reach within the industry and doing so by getting involved in projects that the MNE have with partners in its own or other industries relevant to the SME's technology (Bonzom & Netessine, 2016).

2.1.2 Hinders of Collaboration

MNEs in highly competitive industries may be wary that they will reveal too much of its IP, weakening their market position (Alexy et al., 2009; Veugelers, 1998; Arora, Athreye, & Huang, 2016) .

This fear of unwarranted IP leakage and spillover risks leading to excessively strict IP sharing and collaboration guidelines. When working in highly competitive industries a common first response to counter the competition is to patent everything and keep non-patentable IP as trade secrets (Alexy et al., 2009). Since leading firms are more vulnerable to leakage (Arora et al., 2016) these firms especially run the risk of creating crippling IP policies. This outlook can quickly develop to a paradigm where IP is treated as an end in itself where IPR builds fences around knowledge through the hoarding of patents and excessive secrecy (Alexy et al., 2009). According to the same author there exists cases where the corporation lawyers dictate with whom, when and how collaboration with external parties are to take place. This approach is damaging for both collaborative efforts and the long-term sustainability of the MNE since the secrecy hinders the MNE from venting technological challenges and possibilities with external parties who might hold valuable insight into commercialization or technological workarounds (Alexy et al., 2009).

If the MNE's policy is to patent all novelties and aggressively defend its IP through lawsuits SMEs and startups may be discouraged to engage in collaborations (Alexy et al., 2009). The startups are deterred as they believe there is a risk of misappropriation from the MNE, i.e. stealing the technology or idea and commercializing it themselves (Chesbrough, 2010; Prashantham & Birkinshaw, 2008). (Alvarez & Barney, 2001) Due to the this the start-ups show a latent fear that predatory MNEs will eat the lion share of the value of the co-developed feature.

But if managed correctly the patenting and selective secrecy protection strategy does not have to act as a hinder, and could in fact work as an enabler for collaborative innovation (Alexy et al., 2009), this is further discussed in section 2.1.3

However, Chesbrough (2010) highlights that startups often have limited absorptive capacity and that their resources are overly strained to capitalize on IP which is not directly linked to or within the technology trajectory of the startup. Access to resources is stated as a motive for startups to seek asymmetrical partnerships.

However, this lack resources held by startups can prove to be a hinder. It can lead to the startup not having the means to pursue projects that do not fall exactly within the core business scope or have immediate pay-back (Chesbrough, 2010). From the perspective of the MNE this acts as a hinder since it could prove difficult to widen the scope of an initiated project. From a startup perspective the lack of resources is a hinder to collaboration since they may not have the resources to identify and build potentially useful sideground knowledge.

2.1.3 Collaboration Enablers

Clear and shared goals with strategic alignment for all parties is a prerequisite and enabler for collaboration (Blomqvist, 2002). Meaning that it should be clear what will be achieved and that the output is useful for both parties, while considering potential technology and business trajectory overlaps. This notion has great impact on how swift the on-boarding will be and forces the partners to agree upon exit strategies so that both parties will benefit from the collaboration (Blomqvist, 2002). When looking for swift collaboration and screening Blomqvist suggests parties ask themselves the following questions. What are my objectives and resources going in to this collaboration? How can the objectives and resources of the other party be leveraged without damaging either party's freedom to operate? For effective screening this means that especially the larger party needs to communicate clearly what they wish to develop so that they can attract partners that want to use that technology.

In later published research Blomqvist et al. (2005) point out that **contracts and trust** are not substitutes to each other but rather they are complementary assets that can reinforce each other. Particularly Blomqvist et al. (2005) stress that since contracts, especially in open-ended innovation, can never be perfect or cover all eventualities. Even the most well intended and detailed contract may result in constant renegotiation as objectives or R&D results changes the prerequisites of the collaboration. The complex contract then risks being an overcoat endangering the vitality of the R&D collaboration. For this reason Blomqvist et al. (2005, p.500) say that *"Because of the incompleteness of contracts trust is also needed during R&D collaboration (...) a carefully designed and flexible contract prevents disagreements in asymmetric R&D and therefore successful asymmetric R&D collaboration(Blomqvist et al., 2005, 500).*

Continuing on the topic of IP, besides the contracting, effective utilization of IP can be a collaboration enabler. For it to facilitate innovation, in technological platform based ecosystems, IP should be made available to others.This could be either through licensing or co-operation. Companies can open their IP portfolio to third parties to grow and enhance the company's ecosystem. This growth occurs when open technology can be used as a foundation for the third parties to create more products and services. Only the most valuable inventions are patented by the original corporation. (Alexy et al., 2009).

Swift and continuous access to key persons: The large size and sometimes complex organizational structure of an MNE may make it difficult for external parties with potentially interesting collaboration ideas to identify the correct persons or even community within the MNE to reach out to when trying to pitch an idea for collaboration (Prashantham & Birkinshaw, 2008). All collaborations start with some form of initial contact, and how that contact pans out has been proven to be important for the future collaboration effort. To make this initial contact happen and fruitful both parties must clearly communicate that they are open for collaboration and who to contact (Prashantham & Birkinshaw, 2008). When the joint development has begun, to keep momentum in the collaboration it is of importance that both parties can provide the necessary manpower and expertise when required (Simon et al., 2019).

Critical persons are not only those who hold knowledge within specific fields but also those who are able to break and cross internal and external corporate boundaries and silos. In academic literature these people are referred to as boundary spanners, in this text they are interchangeably referred to as boundary spanners, champions and coaches. These people are of critical importance in the formation of collaborations and for conflict resolution, should they arise. Such ”champions” have the capability to recruit personnel of critical importance to the joint development, such as people who have the mandate to break deadlocks (Blomqvist, 2002). Further, the boundary spanner is also important since their oftentimes high social skills can create the initial trust needed to make both parties open up and start discussing the collaboration in greater detail. Besides critical persons, the that consistency of personnel involved in the project from the MNE side acts as an enabler for effective communication and maintaining momentum within collaborations (Prashantham & Birkinshaw, 2008).

Commitment: The final enabler for collaboration found to be frequently brought up in previous research is commitment (Slowinski, Farris, & Jones, 1993; Simon et al., 2019; Blomqvist, 2002). Startups look for commitment when initiating an asymmetrical collaboration because their focus is generally narrower than the MNE's and want a guarantee that their area is prioritized (Simon et al., 2019). If the parties do not commit sufficiently in to the partnership, motivation for them to take into account the other party's goals comes short (Gundlach, Achrol, & Mentzer, 1995). Blomqvist (2002) ties commitment with trust stating that trust increases commitment and vice versa.

2.2 Value Appropriation & IP Allocation

In this section the theoretical framework of value appropriation and IP allocation, along with some key concepts for managing potentially contradicting needs of the large and small firm will be introduced. Value appropriation is the art of retaining value from a given innovation whereas allocation of IP in a collaborative setting is the art of defining who shall own and/or have access to a given innovation that is relevant for the collaborative effort.

2.2.1 Back-/Side-/Fore- & Postground

This text uses the following definitions of the different modes of knowledge as proposed by Granstrand and Holgersson (2014)
" **Background** knowledge is knowledge that is relevant to a collaborative venture or open innovation project that is supplied by the partners at the start of the project.
Foreground knowledge is all the knowledge produced within the collaborative venture or open innovation project during the project's tenure.
Sideground knowledge is knowledge that is relevant to a collaborative venture or open innovation project but produced outside the project by any of the partners during the project's tenure.
Postground knowledge is knowledge that is relevant to a collaborative venture or open innovation project that is produced by any of the partners after the project ends."

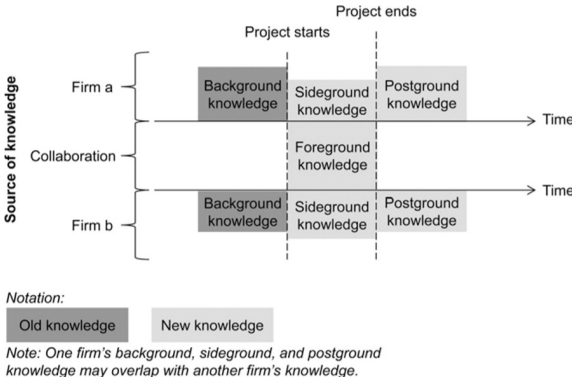

Figure 2.1: Graphical representation of the different modes of knowledge (Granstrand & Holgersson, 2014)

Collaborative technological exploration is the joint effort to create new products or learnings (foreground) which would not be feasible for either party to try to achieve by themselves (Chesbrough, Vanhaverbeke, & West, 2006).

Each party brings its own background information and knowledge which together with the background and know-how from the other parties are then transformed into a (at least temporarily) joint foreground upon which each party may or may not develop its own postground depending on what is agreed upon in the TCA governing the IPR allocation (Granstrand & Holgersson, 2014).

Parties who have engaged in collaboration, especially MNEs, generally have some experience in dealing with allocation and appropriation of Back- and Foreground as defined in the column to the left.

However, as indicated by

Granstrand and Holgersson (2014) the consequences of not considering how side- and/or postground should be treated can lead to unnecessary disagreements and unwarranted complications for either party if not discussed and carefully thought out as part of negotiating the TCA.

Important points of discussions might for example be, given that certain background gives the receiver of such background the possibility to in parallel or after the collaboration develop complementary assets that blocks the background provider from advancing their technology. Should the receiver then be forced to give a free or royalty based licence to the new technology to the background provider?

An important topic for discussion may for example be the following. Given that certain background that was shared by either party enables the receiver of that information to in parallel or after the collaboration develop complementary assets that block the background provider from advancing their technology. Should the receiving party then be forced to give a free or royalty based licence to the new technology to the background provider?

Although adding a layer of complexity in the setup of the project the Sideground and Postground discussions will significantly reduce ambiguity in what is allowed and might also clarify each party's freedom to operate after the collaboration is closed (Granstrand & Holgersson, 2014).

2.2.2 Value Appropriation Strategy

Value appropriation is the art of retaining value from a given innovation (Teece, 1986). The chosen strategy to retain value must be based on an understanding of whether the protection for the innovation is strong or weak (Teece, 1986; Al-Aali & Teece, 2013). Strong IP protection is such which is difficult or expensive to invent around, whereas weak protection is easy to invent around or where infringement is difficult to detect. Especially when the protection is weak the deciding factor for profiting from innovation is the ability to access and deploy complementary resources such as customer access, cost of production, time to market, complementary technology etc. (Teece, 1986). For these reasons Al-Aali and Teece (2013) accentuate that the IP appropriation strategy and regime must be closely knit together with the general firm strategy, capabilities and resources based on understandings of what can be protected in reality.

There are different methods of protecting a invention. The ones that include rights that can be upheld in court (statutory protection) are Patents, Trademarks, Trade secrets, Design Rights and Copyrights. But other means (complementary protection) such as cost of production or time to market are also available but do not enjoy statutory protection. The different methods of protection show different effectiveness in different industries but Levin et al. (1987) showed that of the statutory rights patenting is the most effective measure for new products whereas trade secrets where the most effective measure for process improvements. However both patents and trade secrets are both inferior means of appropriation when compared to lead-time advantage or complementary customer service packages (Levin et al., 1987; Veugelers, 1998). However, practitioners do not find certain appropriation strategies to be mutually exclusive, rather they wish to combine different means of protection to enhance the total protection (Holgersson, 2013). For example, practitioners try to patent a product which they produce with processes under strict secrecy and during the time it takes for competitors to close the lead-time advantage gap the practitioners try to develop complementary assets in the form of service packages or other complementary assets that tie the customer to them (Holgersson, 2013). But as pointed out by Teece (1986) the deciding factor for long term success is the firm's ability to develop complementary assets. Due to the research context this thesis will put emphasis on patents, trade secrets and complementary protection, but

also trademarks have been put forward as a method of accomplishing satisfactory protection under on-going collaboration (Manzini & Lazzarotti, 2016).

SMEs in general, especially startups do not trust that patents are a good measure for deterring imitation of their inventions (Holgersson, 2013) since they do not believe they will have resources to handle lawsuits against infringing companies (especially MNEs) in court (Holgersson, 2013). Further, small companies frequently state that patents are too expensive to be a suitable mean of protection of their IP (Kitching & Blackburn, 1998). Another reason startups are having trouble appropriating the returns of their invention is that if they publish a patent their competitors can lawfully invent around it (Harabi, 1995). Since the startup has not had the time to acquire the range of complementary resources to protect their claim to the revenues they have an inferior position compared to their established counter parts (Harabi, 1995; Teece, 1986). Hence, the start-ups are more likely to turn to trade secrecy as their means of protection.

Trade secret is defined as *"Trade secret/undisclosed information is protected information that is not generally known among, or readily accessible to, persons that normally deal with the kind of information in question, has commercial value because it is secret, and has been subject to reasonable steps to keep it secret by the person lawfully in control of the information"* (WIPO, n.d.; Manzini & Lazzarotti, 2016; WTO, n.d.). It is possible to issue licences and share trade secrets while keeping the secret classified and protected as a trade secret if the licence is accompanied by a Non-Disclosure Agreement (NDA) (WIPO, n.d.). Even so previous literature has identified trade secrets as a hinder for OI (Manzini & Lazzarotti, 2016) whereas others identify that trade secrets are almost as important measure of protection as patents when engaging in OI (Hagedoorn & Zobel, 2015).

Since startups rely on trade secrets as IP protection, and collaborative innovation by nature relies on the sharing of information another hurdle is created (Bogers, 2011; Enkel, Gassmann, & Chesbrough, 2009). It becomes difficult for the startups that to protect their trade secrets, need to share just enough information to make the collaboration happen, but at the same time as little information as possible to keep the trade secret a secret (Bogers, 2011). Even if trade secrets are protected by the signing of an NDA there is still the practical issue for practitioners that what people know, they might unintentionally share to others. Whom in turn may share it with someone else. After some time it risks becoming common knowledge in the field, hence having lost its trade secret protection. To correctly manage this dilemma may have significant impact on company performance (Olander, Hurmelinna-Laukkanen, & Mähönen, 2009; Mazzarol & Reboud, 2008).

In their paper "IP Models to Orchestrate Innovation Ecosystems" Leten, Vanhaverbeke, Roijakkers, Clerix, and Van Helleputte (2013) examine characteristics of successful IP and value appropriation models that can incentivize co-creation of new foreground IP in an ecosystem environment. One core principle is that the orchestrating partner acts as a non-competing entity with respect to the other partners in the ecosystem. Another core principle is that there exists a division between general and specific foreground. General foreground is foreground that deals with a general concept while specific foreground is such knowledge that is crucial for a

given firms competitive edge. General foreground is shared between all ecosystem partners, while specific foreground is proprietary to the developing party.

2.2.3 IP Allocation Mechanisms

IP allocation refers to the ownership of IP and can be seen as a part of the practical implementation of the appropriation strategy. Slowinski and Zerby (2008) suggests that there are two main concepts. Either one allocates the invention to the firm whose employees who did the development. Or to have joint ownership between the firms. Regardless of the allocation principles the issue should be approached from a right to use perspective (Mehlman et al., 2010), which then evolves into the allocation principles based on who has the greatest interest of hindering 3rd parties to access the IP (Mehlman et al., 2010). However, the driving factors behind which of these two ownership models (sole or joint ownership) is preferred can differ and relate to both invested time and money (Granstrand & Holgersson, 2014).

2.2.4 Modular IP in Open/User Driven Innovation

In essence, modularizing IP is the process of protecting/classifying each component/element in a system with distinct IP protection measures and about making sure that within one element there are no conflicting IP statuses (Henkel et al., 2013). For example, a software developer develops, say an algorithm that predicts when a machine in a factory will breakdown, to access this prediction an Application Programming Interface (API) is also developed. Instead of classifying the algorithm and API with the same status the programmer gives both elements distinct IP statuses and saves the code of the API and algorithm in two separate containers. This allows for protection of the underlying algorithm while enabling others to buy the right to use the calculated value through the API.

> This text uses the following definition IP modularity as proposed by Henkel, Baldwin, and Shih (2013)
> " We define an "IP-modular" system architecture as one in which the boundaries of parts with different IP status coincide with the technical boundaries of modules. In particular, if IP incompatibilities are present within the system, they exist only between, but not within modules."

Benefits of using modular IP: When working in ecosystems where different parties contribute to different parts of the product it may quickly become very difficult to identify who developed what, creating circumstances for conflict in IP allocation. By breaking down the parts of the product into somewhat interchangeable and distinct modules it becomes possible to quickly identify the owner of each module (Henkel et al., 2013). For the start-up this also means that if a collaboration would be broken up ahead of time they can still benefit since they are able to immediately deploy their modules in other projects (Prashantham & Birkinshaw, 2008).

Drawbacks of using modular IP: In order to achieve IP modularity some adjustments of the technology as compared to a traditional modular system might be necessary and could result in a product that is different from the best solution from a pure technological perspective (Henkel et al., 2013).

3

Research Methodology

In this section the research methodology of this master's thesis is presented.

3.1 Research Strategy

A qualitative approach was chosen since the thesis was mainly concerned with describing and studying processes involving social interactions and relationships. This choice is supported by Bryman and Bell (2011) who highlight that qualitative research is more inclined to provide descriptive detail while taking the context into account.

The thesis is based primarily on interview data with persons involved in past or ongoing startup collaboration projects at the LF Exploratory Platform and on internal LF documentation. Past collaborations comprise those that were not completed and/or terminated. In the primary data pool, both internal personnel at LF, external representatives from the collaborating firms were included. To supplement the primary data, persons working with different aspects of asymmetric collaborations from an academic perspective and industry perspective were included in the interview pool as well. For a complete list of interviewees and their background please refer to Appendix A. Due to the qualitative nature of the research the analysis, suggested improvements and feedback loops was provided iteratively with continuous input from the interview subjects. This approach was preferred due to its cross validation between theory and field findings.

3.2 Research Structure

Below follows a brief description of the research structure, which is also represented graphically in Appendix B. In the data collection phase, the research structure followed the two separate work streams: Interview and Literature. Findings in one path affected the efforts in the other as shown by the graphical representation in Appendix B. The final step of the data collection phase was to perform several deep and focused interviews with representatives at LF and LF's co-operation startup partners from which the different perspectives and opinions were gathered as described in the interviews section below.

Regarding the subsequent analysis of the interview material, an open coding methodology was employed. Open coding is suitable as it is grounded in the transcripts from the interviews, hindering the researchers from drawing conclusions not supported by the data. Thereby making it necessary to be able to adapt the coding based on the data and to capture all facets. The authors did the interview coding together with continuous communication regarding how to code and categorize. For each transcribed interview the coding was done as follows. Firstly, each sentence or paragraph that contained aspects of relevant information to the subject of this thesis was summarized in condensed form. Secondly, after all interviews had been reviewed with condensed forms, these condensed forms were then tagged with a word or phrase that grouped them into hinder level topics. Thirdly, these topic phrases were collected under three paradigms, Matching, Commitment and Freedom to Operate. It should be noted that the choosing of paradigms was influenced by the circumstances under which the interviewees spoke about the tagged words. That is to say which topics were discussed before and after the identified paradigm and how the interviewee emphasized certain phrases. It was also a requirement that the topic appeared in at least two separate interviews. The coding breakdown and conceptualization process is visualized in Appendix C.

When new topics stopped occurring during interviews and data appeared to saturate, the interview transcripts and notes were thoroughly analyzed and drafts for process improvements were devised based on the findings. Thereafter, short feedback sessions were held with the respective parties where opportunities were given to assess if the draft represents adequate answers to the questions and suggestions for process improvements. The analysis, improvement & feedback steps were an iterative process.

3.3 Interviews

The main data source of the thesis were interviews, held to provide data for the analysis of the current state of past and on-going collaborative efforts and feedback to proposed improvements. The interviews aimed to offer an understanding of how, why and when SME collaborations are undertaken and to develop a detailed description of how the process steps for on-boarding were perceived by each participant, pointing out areas of improvements by creating an understanding of the difference between the idealized and actual process from the different perspectives provided by the diverse set of stakeholders.

A semi-structured interview method was used as it provided a structured approach but simultaneously permits deviations compared to a strictly structured interview which should allow for a broader understanding of the topic and perceived experience (Bryman & Bell, 2011, p.249). Semi-structured interviews mean that a set of questions relating to the overall theme is prepared for each interview, however as mentioned, the dialogue was adaptable given the specific responses of the interviewee. Interviews were preferred over e.g. questionnaires since interviews allow the respondents to elaborate and nuance their discussions to a further extent (Bryman &

Bell, 2011, p.249). To capture a wide picture of the current and possible future processes different stakeholders were interviewed to capture their angle of requirements and experience. The focus was to compare the views held by LF's patent department, Exploratory Platform operations and business units along with the views held by current and past SME/start-up partners. The interview guides can be found in Appendix D.

4

Results

Three main concepts and issues which causes hold-ups and decrease the likelihood of success in exploratory technology development between asymmetric partners have been identified through the interview data. These three concepts are Matching, Commitment and Freedom to Operate. Although the hinders have a variety of causes, they differ both in source and severity depending on the maturity of the startup. This maturity is divided into two stages, mature and immature. The immature startup is defined as a firm which does not have a finished product and the entrepreneur does not have extensive experience from previous startup ventures. While the mature startup has shown PoC for some application of their technology and/or the entrepreneur has at least some previous startup background. Here we present the results/hurdles in the order they are likely to appear in the collaboration/on-boarding process.

4.1 Matching

For a meaningful collaboration to commence between the MNE and startup a concrete match must be identified, technology, business, Corporate Social Responsibility (CSR) or otherwise. Without it, projects risk fizzling out and no productive work is actually done. One of the startup interviewees stated this as follows: *"(...) One of the reasons nothing really happened was that it was vague what we could do and what we wanted. We couldn't find any concrete link to LF. What was our gain? What was their gain? It was a bit forced (startup 3)."* A lack of technology match acts as a direct hinder for collaboration; one of the interviewed startups turned down being a part of a collaborative arena due this issue: *They wanted us to join "Collaboration Arena" but we said no. They are putting engineers from MNE A,B,C & D there but the people they put in the arena are not focused on our technology area, the engineers there won't know what our product is about and they won't care about what we are doing. It will be a waste of time for us (startup 1)."*

4.1.1 Openness

To find such a match, a high level of openness is required from the MNE. Openness groups and refers to open communication, transparency and unbiased. A part of this

openness refers to having an open mindset to which ideas are taken under review and tried out. As there are startups of different maturity levels, to capture the benefits of all collaborations, openness is vital. What A lack of openness means is discussed by one startup Chief Technology Officer (CTO): *"Large Firm at The Exploratory Platform level must be open towards anything, everything cannot be about technology X and technology Y. Most of the time you have to be a bit open, you have to really soak in everything and then think about - what is relevant here? The moment you have this filter, right at the beginning, right? When you look at an opportunity, you have this bloody filter on. You are dead! You won't see anything outside your box (startup 4)."*

Openness for the MNE also means being open and clarifying what the MNE can offer and what they seek in a collaboration so that false expectations can be avoided, which would create hinders further on. *"LF can become better at communicating The Exploratory Platform, clarify what they seek and what they can offer so that nobody wastes time (...) A clear no is better than limbo (startup 6)."* Several interviewees exemplify by mentioning an interface where problem owners within the MNE can clearly communicate the problems they are facing and the aid they require. *"It would be a platform where firms can put their problems which they seek solutions to. They state what they are willing to do whether it be; buy, co-develop etc. It would be clear because it is the problem owner who has communicated it. Although all details are not there, it would still be deep enough to evaluate correctly. (startup 1)"*

4.2 Commitment

Given that a match is found, without commitment from the MNE or startup collaboration projects fail to gain traction: *"If they (LF) say: I will focus on my use cases and exploratory projects, just as I say but we do it with our left hand and when you try to do something with your left hand it's stuck (startup 4)."* Moreover a representative from LF discusses why one of the exploratory projects they did failed due to lack of commitment: *"We were engaging with a startup who had developed a predictive data traffic tool and I don't think we were organizationally ready to incorporate their idea and there was not enough commitment from any party to move forward (LF interviewee 5)".*

Commitment from the side of the MNE can be shown in a variety of ways: providing funding or a path to commercialization of the startup's product, access to the right people and speed in working on the project. All the mentioned factors are important on their own to show commitment, but they are also linked to commitment in the opposite way, i.e. commitment is necessary for them to not act as hinders. The interviewee at startup 1 exemplifies and expresses lack of commitment as the reason he and his company were not able to book meetings during an MNE (not LF) collaboration: *There was no buy-in in the organization ... when we told people we were with the corporate accelerator it gave nothing. It was actually a minus. People who knew about it did not see the point and nobody had time for meetings."* LF is aware of the importance in providing commitment but states that due to the

customer focus approach it is hard for people to find time to prioritize and provide assistance to exploratory platform projects: *"We are extremely customer focused, each department is working on a backlog based on customer demands but when some customer says we need X now, then X always becomes first order priority. So when we come and say, hey look at this interesting project that is beneficial for LF and probably also for our customers they say I see that, but I have an actual customer or backlog that my line manager finds more important (LF interviewee 5)."*

4.2.1 Funding and a Path to Commercialization

As mentioned, commitment can be shown in several ways. The Chief Executive Officer (CEO) of start-up 3 says that a reason that the collaboration never took off any further was the lack of funding allocated to the potential project. *There was just not enough money on the table to show that there was commitment and hence to motivate us to work more towards doing the test runs we had discussed."*

Due to the reality of startups often lacking funds, access to funding acts as another hinder for joint MNE - startup projects. If there is no funding, both resources and incentives will be lacking and vice versa: *"If there is one thing that most startups don't have, it is cash. Due to this we can't afford to showcase the details of our technology without payment or funding (...) financing is a critical part of collaborations. (startup 6)"*. This hinder is echoed by LF interviewee 6: *A big issue for The Exploratory Platform is lack of funding, and hence the ability to double down. I believe this is an industry wide problem."*

The possibility of the MNE being able to double down along with an increased probability of success is highlighted by one startup CTO: *"we are speaking about technology and we are also speaking about the probability of success that we are ensuring. If they did it themselves the probability of success is 10%, if we did it's 70%. We want to account for this. They can double down on the project if it seems fruitful (startup 4)."* If there is no opportunity to double down and no funding is provided it furthers the funding hinder for the success of the asymmetrical collaboration.

Although funding acts as a hinder in all asymmetrical collaborations, it may present itself in different ways depending on the startup maturity. An immature startup needs funding to cover their costs and to develop an MVP. While a mature startup who has a PoC for their technology or product wants the MNE to provide a path to commercialization. An interviewed startup CEO wants collaboration with LF to be a gateway in becoming a supplier to the MNE: *"I want to sell, if I can't say that LF is my customer being a part of their accelerator is BULLSHIT. It has to be concrete, it may work for the first 6 months when you start your company and want some attention and initial help (startup 1)."* The path to commercialization for the startup does not however have to be as a direct supplier to the MNE. It can also be through the customer - supplier network of the MNE. An interviewed startup CTO values this very highly: *We are collaborating with a large corporation, I mean people know others at the same level. If people in the C-suite there can recommend our services to other firms it is very valuable, and it would serve as a large incentive*

(startup 2)"

Funding could come in different forms. One startup suggests that the MNE can cover specific costs the startup may incur within the project scope of the collaboration: *Funding could for example be in the form of cash reserved for the startup fulfilling their part of the project or use of consulting services (startup 6)."* Another form of funding is government grants for innovation, such grants are often used for projects of exploratory nature as seed capital and cover a percentage of costs.

However, filling out the applications for these is considered difficult and confusing by the interviewed startups. Despite this, such government grant funding may still be useful. Specifically, it seems well suited for immature startups who are mostly interested in just seeing if their idea is in any way feasible. One startup founder expressed himself: *"Vinova (innovation government grant agency) demanded two parties so I contacted LF who I could bounce ideas off of and they helped me in the application (startup 5)".* The application forms for these grants can be complicated to fill out making them difficult to receive and deter startups from the funding source. Assistance from experienced MNE personnel can be helpful in applying, particularly for niche projects (expert 1).

While for mature the innovation government grants may not be as suitable. An MNE suggesting the use of this funding may not show a sufficient level of commitment towards the proposed collaboration. As expressed by an interviewed startup CEO: *"The only party they (the MNE) are committing towards is Vinova, they are not committing towards me. What happens in one year when we are done? I have then developed something for LF. I am not demanding a multi-million commitment but perhaps that given we that we reach certain goals that they commit to either take the project to next phase or negotiate the next step in 3 months (startup 1)."* The same startup CEO continues by explaining how the lack of attention from senior managers shows the shortage of commitment: *"(...) the seniority required to sign off on a Vinova project is much lower than for other exploratory projects, this in itself means it isn't that important for LF. (startup 1)"*

Another risk with the government innovation funding voiced by a startup is that one must bend the initial idea to fit the grant application description: *"Vinova [government grant agency in Sweden, authors reference] can help but there is a risk that you modify your idea until it is not recognizable just to get the grant money (startup 6)."* However the interviewees do not agree on this subject, expert 3 believes it is more of a question of understanding the terms and conditions of the funding and that once the money is received it can be used very freely. The same interview subject also says that given the correct expertise, having a dedicated person identifying the right grants and filling out the form may greatly increase the success rate of receiving the funding.

4.2.2 Speed and Corporate Bureaucracy

Given that funding is provided, although it facilitates speed, corporate bureaucracy may still slow down the project to such a degree that it becomes a considerable hurdle

in asymmetrical collaboration. An interviewed startup CEO and founder explained how he had been routed back-and forth between divisions and people in an MNE organization as an example of this (startup 4). The speed at which MNEs function was mentioned as a hinder by all interviewees: startups, LF representatives and experts alike. CEO of startup 7, who in general was satisfied with her collaboration with LF still expressed her frustration: *The slowness of large corporations such as LF is frustrating, I have learned to accept this, but I still ask myself if it has to be this way (startup 7).*

Speed becomes a hinder due to two startups realities. The first reason being time to market (TTM). Because of the race of being first to launch one's product, slowness may harm the commercial value or viability of the project outcome (startup 7). Secondly, relating to funding, a prolix project will keep the costs ticking for the startup furthering the issue.

An MNE committed to startup collaboration will, or should have established information gathering and communication paths that significantly reduces the risk for hold-ups because the right information or problem owner can not be identified within an acceptable time period. Hence, to have quick processes can indicate to the start-up that the MNE is committed to asymmetrical collaborations since the MNE has then taken time and resources to create processes that match the demands of the nimble startups (Start-up 1).

4.2.3 Access to the Right People

Four of the startup interviewees, of both maturity levels, directly discussed not accessing the right people at the MNE as a collaboration hinder. Even though it is important to startups of both levels of maturity, the type of requested personnel may differ. Finding the right personnel plays a major part showing commitment and is also directly linked to speed, it can significantly cut time off the on-boarding and off the actual project time. The notion of accessing the right people was even seen as a fundamental characteristic of an attractive collaboration partner: *"My technology coach was great, she handled a lot of the communication internally, showed me around and introduced me to LF staff who could help develop my technology platform (startup 7)."* Without organizational commitment, access to personnel is generally not possible: *"Access to key personnel is often seen as key, however The Exploratory Platform must to have a strong position internally at LF to allow for this (expert 2)."*

Another startup interviewee contrasts the situations his company faced in two different asymmetrical collaborations:*Deutsche Bahn did a very good thing. They had a startup coach. This person was very well connected within the company and she guided us to the right people. 300 000 employees and thousands of secretaries. Nobody spoke English. It takes time to maneuver through such an organization, especially considering the German hierarchy. However if you have somebody with respect. We had an executive assistant to the CIO. She could book meetings I never could and never knew to book so I could push my message and test my hypotheses much*

faster (...) We once did a thing with Maersk, it was one of the worst things, we couldn't book any meetings. (startup 1)."

4.3 Freedom to Operate

Even if the MNE and startup are able to find a technology match and provide the necessary commitment. There still exists a risk that the collaboration inadvertently ties the companies together or that information is leaked/shared that damages either company's possibility to act as a sovereign party in the future even after the collaboration is closed. This problem is referred to by the interviewees as "Freedom to Operate".

4.3.1 Underlying concerns that creates the FTO hurdle

Several startups mention that one of the main reasons for holdups is related to the importance of retaining their freedom to operate. The need to preserve freedom to operate has several causes, but largely stems from the startup's uncertainty in their unproven business model. *"The startups operate in a volatile environment, so it is important that the leaked and/or shared information doesn't enable the MNE to block the start-ups technology trajectory and doesn't hinder the start-up from pivoting (...) (Expert 1)"*. Since the business model is not proven to be viable, many investors, e.g. venture capitalists require startups to be able at any time to pivot into a more lucrative direction. To be able to pursue new customers based on the technology or know-how the startup has acquired: *"If you have a messy IP situation it is close to impossible to get access to venture capital (startup 7)"*. To summarize, the startups need to validate that a) their access to venture capital is not damaged b) the collaboration will not enable the MNE to block the startup's IP trajectory or business case and c) that the startup still has the freedom to pivot and pursue edge use cases after the collaboration. The interviews show that mature startups are more concerned about a & c while the immature companies in this study are more concerned about b & c.

From the MNE's perspective the freedom to operate is equally business critical, the MNE is however not particularly afraid that the start-up will compete with the MNE in the MNE's core market. Rather the MNE has concerns regarding administrative issues and market reach *"Due to the framing of Exploratory Platform projects, we are not particularly afraid of the start-up commercializing an idea that we wanted to commercialize, however sometimes when the information is sensitive or (...) we might reduce our communication so that the start-up doesn't share that information by mistake. (...) We also want to make sure that we can incorporate potential features that we develop into our global products, so we can leverage our market reach to spread development costs. (LF interviewee 1)"*

4.3.2 Know-how Transfer Without FTO Impact

Perhaps the main fear startups experience when they approach MNEs for collaboration is that they (the startup) will disclose information to the MNE that makes the MNE prone to approach the startup's business opportunity without the startup. *"The startups are afraid that the MNE will take the unprotected background and use it and build products based on it without paying the startup for doing so (expert 1)."*

The MNE is also concerned about the potential impact of know-how transfer to their FTO but regard it from the perspective of independent future development and the risk of the start-up unintentionally leaking the trade secrets (LF interviewee 1).

In the interviews it is identified by the context of how the interviewees bring up the aspects and nuances of their fear of losing control of their IP that it is closely related to their future ability to pivot and to control how the start-ups use their IP to approach their sought market space. In short, the interviews show that the risk of unwarranted leakage through explicit or undesired know-how sharing is evaluated by the respective parties based on primarily the following criteria:

- **Could** the receiver of leaked IP pursue my target/potential market?
- **Would** the receiver of leaked IP pursue my target/potential market?
- Could the leakage be acceptable given a financial or other commodity kickback?
- Would the leakage put me in an inferior position in regard to my competitors?
- Would the receiver of leaked IP be willing and able to block my technology trajectory based on the leaked IP?

Since it was a requirement that each aspect brought up in the results should be identified in at least two interviews the above list is not exhaustive but brings up the most frequently referred evaluation criteria.

Through the eyes of the software intensive startup 4 the moderating factor of trust is visible: *"If I create something that is very valuable to LF they have resources to double-down on it and maybe create the same thing themselves, so I have to show what I can do without showing how I do it ... I trust LF to respect me, so I talk to them. However, I would never go anywhere close to American companies, e.g. Microsoft because they would just straight out steal our idea and leave us to pick up the scraps"*. This trust is something that LF takes very seriously: *"We rely heavily on collaboration with industry partners and academia, to damage our reputation as a partner would have severe consequences to our ability to attract the brightest minds (LF interviewee 3)."*

How important the start-ups consider the issue of unwarranted leakage can depends on the mindset of the persons at the startup. Although, it is also affected by the maturity level. Immature startup seems to value the technical expertise and coaching at LF so high that they disregard the risk of potentially leaking information as long as they receive assistance in developing their product (startup 5). Others are significantly more careful, and those who are carefully are also those who highlight that LF and the startup might in the future pursue the same customer base. These

startups stress that the only mean of protection the start-up has for its know-how is secrecy. As they believe it cannot be protected via either contracting, copyright or patenting/design rights, noting that *"once we share our know-how /trade secrets there is no way to put the genie back in the bottle (start-up 6)".*

4.3.3 How the Contract Reflects the FTO and is Perceived

The concerns about retaining FTO have implications on how the TCA should allocate and allow for appropriation of IP.

For the startup to retain their FTO they need the contract to reflect the following: a) The start-up is still the sole owner of their background and that the MNE only may use the background for the application developed in the collaboration. Also that the MNE pays for using the background in the developed application (expert 1). b) After the collaboration the startup can use the results they developed and preferably the MNEs results also in other applications (startup 2), c) that the definition of IP includes know-how and trade secrets (startup 6).

For the MNE to retain their FTO they need the contract to reflect that a) they are able to sell their part of the developed application to a global market. b) if the MNE at a later time would develop a similar application as that the start-up developed in a part of the organization that has not had access to the documentation or outcomes in the collaboration the MNE must be able to deploy that application. c) they are able to act as if they were the sole owner of jointly owned IP (LF interviewee 1).

LF as well as several startups agree that ability to commercialize should be reflected in IP allocation, however they also agree that this model induces risk for disagreement. LF interviewee 1 and start-up 2 independently from each other stated that: since one would never develop something that one has no interest in it is reasonable to allocate IP to the one who developed it as the first priority. A notion that is reflected but framed differently also by the other interviewed start-ups. Startup 2 discusses the business logic of this reasoning and states that: *"Even if LF has the capacity to enter all kind of industries and technologies they will never become a e.g. remote surgery company. LF would probably be better off to enable that kind of industry to exist via APIs or whatever and let the start-up drive the project.*

The practical implications of this is that the collaboration partners decide up-front the work package development but after contract signing, which features of the foreground that would be especially important for respective party to own and that the respective party then exclusively develops these features. If there exists some know-how that either party wants to protect, this is done by allowing that party to develop the module/feature that contains that know-how. This also means that the scope of foreground often is very tight but allows for significant sideground contributions which is regarded as background. This also restrict the communication to such that is of importance for the parties to be able to connect their side/foreground to each other (i.e. the actual foreground is mostly interface properties) or that has low relevance for the business case of either party.

4.3.3.1 Exclusivity and IP Pricing

LF interviewee 1 highlights the large number of addressable markets and customers the firm has. LF then wants to be able to address as many of these as possible with a complete bundle offering to spread development cost across a large customer base. One LF employee refer to the following scenario: *"In general we don't agree to customer exclusivity, for example let's say the startup gets funding from customer Y, and that customer Y requires the startup not to sell to customer Y's competitors and that this also covers technology developed in collaboration with others. Then we would have to say that market is too small for LF to be able to cover our overhead costs, or customer Y would have to pay a user's fee that would cover some of the lost income in other markets (LF interviewee 3)."* However the same LF employee also says that everything is negotiable, and states that in certain cases geographical exclusivity could be accepted, but again given a higher user's fee.

Startup 1 has a somewhat similar view stating that: *"Look, we don't issue industry wide exclusivity to our customers (...) you have to understand that I would never do anything to harm my customers, so for a number of years I of course wouldn't sell my product to be used in the same application to the competitor of the original customer who paid for the TRL*[2] *testing. However, if the competitor asks me to use my technology for another application I have to be able to explore that possibility".* Just as LF interviewee 1, start-up 1 also adds that *"Of course everything is negotiable, it comes down to how much the other party is willing to pay for a certain exclusivity, but exclusivity requires that they somehow compensate us for loss of revenue."*

However the circumstances are crucial, and some start-ups emphasizes that the potential MNE partner must agree never to use/sell the trade secrets disclosed by the start-ups in products the MNE would want to sell to the start-up's competitors.

Further, LF wants the discussions regarding the exact pricing of IP licenses to be done after the collaboration. LF interviewee 1 explains *"We want to negotiate the cost of each license after the collaboration since it is only at that time you can actually know what is on the table, and how it can actually be used. If this information is not on the table we can't calculate the actual value to LF or our customers which is what we must base our pricing on. This should also be favorable to the start-up since if we negotiate a price up-front we might end up with a price that is substantially lower than the actual value the IP contributes with."*

4.3.3.2 Contractual Language and Process

When presented with the contract the start-up needs to evaluate if the above criteria are echoed in the contract. However, the start-ups have limited experience in reading and understanding the implications of contracts extending the period of contractual review. Some, especially the immature, also do not have the resources available to engage a professional lawyer to speak for them. *"If the contract had been simpler, or explanations readily available, the number of meetings to clarify its meaning had been*

[2]Technical Readiness Level (TRL)

reduced. This would have meant several weeks quicker on-boarding process (start-up 5)."

The MNE must also make sure to speak with the startup in a language the startup recognizes. Using the same way of working with startups as with other MNEs is not possible. *"There is a cultural mismatch where the MNE is used to always have an exact counterpart and infinite resources at both sides of the table. A start-up simply doesn't have that sort of resources to evaluate every aspect of all potential events (...) In one collaboration we sat down with lawyers from the MNE for 5 months to make sure the MNE didn't lose any IP. So after 5 months we sat our foot down and demanded to talk to the problem owner, after 8 hours of discussion we had everything important on a napkin agreement which was sent to the lawyers to put legal language around it. A couple of weeks later we began working together (startup 1)."*

MNE should try to simplify their legal contracts using everyday wordings to the extent possible and do not try to cover all eventualities, because that kind of review workload is overwhelming for most start-ups (startup 6). Rather, the startups want open and flexible contracting that is open for re-negotiation if the eventualities seems to appear in the horizon. They stress that contracts should reflect the negotiated collaboration and not the other way around where collaboration is squeezed into a standard/template contract (startup 1).

Complex contracts do not only impose problems to the start-up, it also causes problems for LF when the first point of contact at the MNE towards startups is not aware of what the contract implicates or does not know what is negotiable in the contract. They are then not able to provide the assistance the startup needs and are not able to allow for the flexibility the startups seek even when it could be possible given that the information was readily available. *"When the first point of contact doesn't know the answer to legal problems we need to seek assistance from the legal department via inter-personal channels, and that can take time and consumes resources unnecessarily (LF interviewee 2)."*

5

Discussion

Our results show that understanding and overcoming the hinders of a) Matching b) Commitment and c) Freedom to Operate are of certain importance for successful asymmetrical collaborations. These three, as well closely related and complementary subjects were raised by the interviewed startups, LF employees and experts contributing to the thesis. Below in section 5.1, the topics will be discussed in relation to existing theory, then the combination of our findings and introduced literature is developed into managerial implications in section 5.2. Finally the limitations and restrictions of the thesis are presented in section 5.3.

5.1 Theoretical Validity and Contributions

The findings in this thesis confirm previous theory to a large extent. Noticeably, the results of the interview data in this project align very well with those of Simon et al. (2019) who also find that the maturity level of the smaller party impacts how to approach asymmetrical collaborations. It is noteworthy how the findings of these research projects agree so well even though they were conducted independently. We believe that this furthers the validity of of both studies as they are conducted in separate industries; Simon et al. (2019) examine the topic within the automotive industry and our thesis in the telecommunication industry. However, as will be pointed out, this thesis also contributes to theory. It does so by addressing a few differences and expanding on the similarities, segmenting them further. Moreover, this thesis studies the topic of asymmetrical collaborations in an IP intensive setting at an exploratory technology platform. Because of this the notion of freedom to operate increases in importance for both parties in the asymmetrical partnership. It means being able to take one's learnings beyond the exploratory platform and for the startup to able to pivot. Moreover, as the case MNE acts in an IP intensive environment the startups' awareness of the risk for misappropriation increases. Our thesis provides actionable advice for MNEs and startups entering in asymmetrical collaboration within such an environment.

Matching

We, just as Blomqvist (2002), find that matching technology and business strategy is important for successful asymmetrical partnerships. Not finding a match will act as a hurdle. A match does not imply that the MNE and startup must have the same technology or business strategy. It refers to understanding the complements that may exist between the MNE's and startup's technologies and businesses. Hence, having a shared objective is different from having the same objective. A part of finding such a match is openness of both parties (Prashantham & Birkinshaw, 2008). Openness means clear communication, transparency and having an open mindset for new ideas, use-cases and technologies. We deepen this analysis by finding that the MNE should be open towards startups of both maturity levels for this not to act as a hinder and that they should be treated differently to gain maximum value from the collaboration.

Commitment

Insufficient commitment is another identified hinder for asymmetrical collaboration in our findings, also reflected in Simon et al. (2019). Commitment has in turn been found to contain three sub categories 1) Funding and Commercialization, 2) Speed and 3) Access to the right people.

As stated by Simon et al. (2019) and Bonzom and Netessine (2016) reputation and market access positively affect the willingness of startups to engage in collaboration with MNEs. These aspects are discussed by the interviewees in our research as well. We identify that a lack of funding or an unclear path to commercialization act as hinders to asymmetrical collaboration, both reputation and market access are viewed as paths to commercialization by our interview subjects. Simon et al. (2019) find that both early stage immature and market ready mature startups are positively swayed to enter collaboration with corporations given the presence of these factors. Our findings do not disagree with this but we highlight that not showing a future path to commercialization to mature startups with a PoC, via e.g. potential access to market or the MNE as a customer will act as a hinder. Further, the use of government grants as funding for an exploratory project does usually not show enough commitment for a mature startup. Nonetheless, for immature startups, a central component of showing commitment from the side of the MNE is providing some sort of funding to build a MVP and government grants can be used. Although an increased resource allocation for exploratory platforms and collaborations with startups by the MNE would likely result in greater perceived commitment from the MNE to startups. We speculate, due to the current limited financing (LF interviewee 6), based on our finding regarding overcoming the hinder of openness whether clear communication can lower the commitment hinder of government funding for mature startups.

Also, corporate speed, or the lack of it as well as not accessing the right people at the MNE are found to hinder collaboration. This finding resonates with Prashantham and Birkinshaw (2008) and as Simon et al. (2019); Blomqvist (2002) we also reveal

that the factors of speed and access to the right people are important and may act as hinders regardless of the maturity level of the startup. The right people will however differ depending on the maturity level, sought collaboration type and technical area. Like Simon et al. (2019) and Stuart et al. (1999) we find that providing access to technological resources is more important for immature startups. Hence, a lack of access to technical experts may be a greater hinder for immature startup. Regarding an asymmetrical collaboration involving a mature startup seeking the MNE as a customer, not getting in contact with the correct manager who is able to sign off can be a hinder.

Freedom to Operate

In coherence with existing literature, e.g. Manzini and Lazzarotti (2016); Blomqvist et al. (2005) we confirm that TCAs in asymmetric collaboration should be open, flexible, simplified and should not try to cover all eventualities. This is considerably important in the setting of this thesis since the studied collaborations are dynamic in nature. The uncertainty of the collaboration outcomes make it particularly difficult to cover all eventualities even when intended. Additionally, complex contracts hinder asymmetrical collaborations because the startup does not have the resources or experience to review contracts of the complexity that is common in MNE-MNE collaborations. Further we expand on the importance of processes within the MNE that supports the startups ability to interpret the information in the various contracts presented to them. That the contractual negotiations should commence from a business perspective since the startups might have limited experience of negotiating from a legal perspective. And lastly that for the MNE to facilitate these capabilities it must make necessary information on negotiability available to the startups point of contact.

We identify that trade secrets acts as a hinder for open innovation in asymmetric partnerships when the startup fears misappropriation i.e. that the greater party will use the trade secrets against the interest of the startup, which is in accordance with previous observations of literature review by Manzini and Lazzarotti (2016). However, we also see that trade secrets in general do not act as a hinder for collaboration as long as the parties are able to either agree that the receiver will not be using that info against the interest of the disclosing party. Or if the parties are able to find work-around solutions using for example modular IP development set-ups.

Just as Leten et al. (2013) we identify that it is important for the host corporation to be a non-competing party with respect to the other parties in the ecosystem or platform. Here we expand the knowledge somewhat and identify that if the host corporation manages to create and communicate clear objectives it is possible for the host to be regarded as a non-competing party even if they are also commercializing their part of the foreground, given that this product or service is not impeding on the current or future business case of the partners. Further, as proposed by Henkel et al. (2013) a modular IP system can act as a enabler of open innovation. Although our interviewees are not aware of the term IP modularity, by the way they perform their collaboration we can see that the IP modularity concept is a important pillar of

enabling co-creation where each party wants to own their contribution while enabling the other parties to make use of the innovation through licensing.

5.2 Managerial Implications

A corporation which is successful in communicating that it is open for collaboration with startups would be naive to believe that only startups that fit exactly into the frame of the imagined collaboration partner will apply for collaboration. The manager that recognizes that startups exists in ecosystems where potential start-ups refer each other to approachable MNE's will see that it is important to treat each application with an open mind, trying to find a solution so that each startup can refer to the MNE as a open and just partner. So recognizing that even if the startup does not fit the description of the communicated platform it may still bring valuable insights to the corporation. Hence, it is of importance that the first point of contact has the information at hand which is necessary to identify the internal work stream & problem owner the start-up potentially can connect to. The first point of contact must also be able to provide the necessary information to the start-up that enables them to evaluate if the sought level of engagement is suitable for them to retain their freedom to operate. Except from explaining how the collaboration is set up this also means being able to communicate implications of the contracts that the corporation presents to the start-up and be knowledgeable about the potential areas of negotiation within these contracts.

Further aspects startups evaluate is whether the MNE is able to show and deliver enough commitment. What sufficient commitment represents differs between startups based on idea maturity, urgency and desired engagement level. What the manager that works with enabling asymmetrical technical collaborations must consider is how the MNE can make sure that there are financial resources available for the startup to develop their idea. This thesis discusses the possibility of an arms length relationships by providing financial assistance via assistance in government grant applications, but other approaches such as direct investment or no financial assistance are also possible. Nevertheless, a manager must understand that startups will not be able to try their idea out if there are no money to cover expenses during the development period.

Another area the manager has to consider is how the platform will make sure that the promised level of access to technical experts or other expertise personnel will be provided. Especially, how can a customer focused organization be made aware of the potential gains of engaging in a specific collaboration project to such an extent that they are willing and able to prioritize the project over other pressing issues in the line organization? One approach is to provide this assistance on a voluntary basis with the motivation that this project provides the assisting individual with new knowledge and abilities and doing so in a project that the individual has a personal interest in to a further extent than they might have for their everyday work. Another approach might be to invite the MNE's customers to take part in the screening process giving them a say in picking the projects to double down

on. By doing so creating pressure both from the engineering and the established customer service networks to prioritize the collaboration projects. A third approach might be to provide a support structure of engineers that are dedicated to work exclusively with external collaboration projects.

Lastly, having enabled matchmaking, resources for project completion and decided how the promised access to expertise will be facilitated the manager has to create the circumstances that enables knowledge sharing without risking unwarranted leakage of information from either party. The risk of unwarranted leakage may be evaluated as follows:

- **Could** the receiver of leaked IP pursue my target or potential market?
- **Would** the receiver of leaked IP pursue my target or potential market?
- Could the leakage be acceptable given a financial or other commodity kickback?
- Would the leakage put me in an inferior position in regards to my competitors?
- Would the receiver of leaked IP be willing and able to block my technology trajectory based on the leaked IP?

The implications of these criteria to the contracts was that the startups a) are still the sole owner of their background and that the MNE only may use the background for the application developed in the collaboration. And that the MNE pays for using the background in the developed application. b) After the collaboration the startup can use the results they developed and results developed by the MNE that is necessary for the start-up's application to work also in other applications. c) That the definition of IPR includes know-how and trade secrets.

And that exclusivity of use in certain domains could be important to create the peace of mind necessary for know-how sharing to be enabled.

So, it is important for the manager to create awareness about the business and technology trajectory of the corporation and framing this so that it can be communicated to the external parties. The manager also has to identify what and specify how certain aspects of the appropriation and exclusivities may be negotiated so that the necessary flexibility exists but that the changes/amendments to template contracts do not implicate unbridgeable damage to administrative and market efforts at the corporation.

Recognizing that although the start-ups have somethings in common, especially lack of cash-flow to cover expenses, they cannot all be approached and handled the same way since their motives for collaboration differ. For the manager this implicates identifying the sort of collaboration the corporation wants to initiate while recognizing that the start-ups that don't fit this description might still bring valuable insights to the corporation. To account for this and to avoid creating confusion external collaborations with startups should still go through a the same single point of contact. This contact should in turn, facilitate matching to internal tracks appropriate for the intended collaboration. We propose the following set of tracks based on the findings in our thesis: 1) a direct contact to the problem owner within a line organization, 2) a truly exploratory platform and 3) a theme-based

ecosystem collaboration.

5.3 Delimitations and Limitations

This thesis was carried out in collaboration with LF during the spring of 2019 and is subject to several limitations and delimitations.

To begin with, the scope of the thesis project was limited to studying the asymmetrical collaborations that LF had engaged in in Sweden. Findings may not be applicable to other companies or asymmetrical collaborations in general. Analysis and suggested subsequent process improvements are restricted to those aligned with the current LF IPR strategy.

An important limitation of this study is that is based on a small sample size of startups who had all been in contact with a single exploratory platform. We tried to widen the data pool by including experts from various backgrounds who have all in someway worked with or researched asymmetrical collaborations and its characteristics. But the findings of the study may still be questionable as to their importance in a generic setting. The restricted sample size also highlights the risk of regional, industry & cultural bias. Moreover, our thesis examines elements at the company level and does not analyze the factor of individuals' opinions. Not accounting for this variable can skew the results by misrepresenting findings thought to depend on firm level characteristics in reality depending on the confounding variable of individuals' sentiment. As the thesis is qualitative in nature the proposed hinders cannot be quantified to which extent they impede collaborative efforts.

Finally, restrictions also existed regarding disclosure of certain confidential documentation and processes including but not limited to pre-existing process charts, technological data and IP ownership structure and IPR set-ups in specific collaboration projects. However, the high-level information needed to assess the findings and solutions have been made available.

6

Conclusions

The purpose of our thesis was to investigate which hinders exists in asymmetrical exploratory research collaborations and to offer insight in how to bridge these hinders. It has been discovered that the contractual signings were causing a particularly inconvenient hold up. So the underlying motives and issues surrounding the value appropriation and IP allocation needs were studied in detail from the perspective of both parties.

We find that large corporations seeking to collaborate with startups must adapt their process by considering the resource constraints of the startups. MNE representatives must be able to show how the business needs of the parties are reflected in the contracts. Firstly, this includes providing clarifications of NDA & TCA implications. Secondly, the single point of contact should be aware of which and how contractual clauses can be adapted to fit the needs of the startup without impairing the MNE's freedom to operate. It also means that certain appropriation clauses must be negotiable and that the implications of these variations must be available to the point of contact at the MNE.

Additionally, this study shows that the limited complementary assets held by startups and that their critical IP is mainly protected by trade secret classifications can act as a hinder to collaboration. This hinder is amplified if the MNE's business trajectory overlaps with that of the potential startup partners in the sought ecosystem. Hence, an MNE engaging in asymmetrical collaboration cannot do so on the premise of becoming a competitor to the potential collaboration partners. Rather, the MNE must define and communicate how it will benefit from the partnership while enabling the startups to do the same. This is most easily accomplished when the MNE and the startup are approaching different customers or different market segments.

Lastly, the thesis highlights that MNEs must account for the maturity differences and diversity that exists within the term "startup" and how these differences impact how startups want to collaborate. The MNE should not neglect that startups do not have cash flow to cover expenses during the collaboration period. It is proposed that an MNE which is serious about engaging in asymmetrical collaboration tries to facilitate several different collaboration work streams which all go through the same single point of contact that facilitates matching to internal work streams. A proposed set of tracks is: 1)a direct contact to the problem owner within a line organization, 2) a truly exploratory platform and 3) a theme-based ecosystem collaboration.

6.1 Future Research

The findings in this thesis largely correlate with those of previous research but the specific findings of this thesis would require further investigation on a larger sample size based on more than one collaboration platform and in a larger variety of industries to validate if the findings are general or specific to the research setting.

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A

Appendix: Description of Interviewees

Startup interviews

Startup	Maturity Level	Industry	Position of interviewee	Duration of Interview
Startup 1	High	Energy	CEO	1.5h
Startup 2	High	UI & UX Software	CTO	1,5 h
Startup 3	Low	Drone Software	CEO	1h
Startup 4	High	Data analytics software	CTO	1,25 h
Startup 5	Low	Drone software	CEO	45 min
Startup 6	High	Indoor agriculture	CEO & CTO	1h
Startup 7	Low	Educational software	CEO	45 min

Table A.1: The maturity level indicates the maturity level when the first contact was initiated between the Start-up and the Large Firm.

LF and Expert interviews

Person	Background/position of interviewee	Duration of interview
LF Interviewee 1	Patenting department at LF	1,5 h
LF Interviewee 2	Collaboration platform at LF, site A	2 h
LF Interviewee 3	Patenting Department at LF	1,5 h
LF Interviewee 4	Research Department at LF	15 min
LF Interviewee 5	Collaboration platform at LF, site A	45 min
LF Interviewee 6	CTO	10 min
LF Interviewee 7	Collaboration platform, national manager	30 min
LF Interviewee 8	Collaboration platform at LF, site B	45 min
LF Interviewee 9	Collaboration platform at LF, site C	1 h
Expert 1	Business coach at VC firm	1 h
Expert 2	Academia, asymmetric collaborations	1,5 h
Expert 3	Academia & serial entrepreneur	1 h
Expert 4	Academia, IP-allocation and appropriation theory	45 min
Expert 5	Business coach, regional business center	1 h

B

Appendix: Timeplan

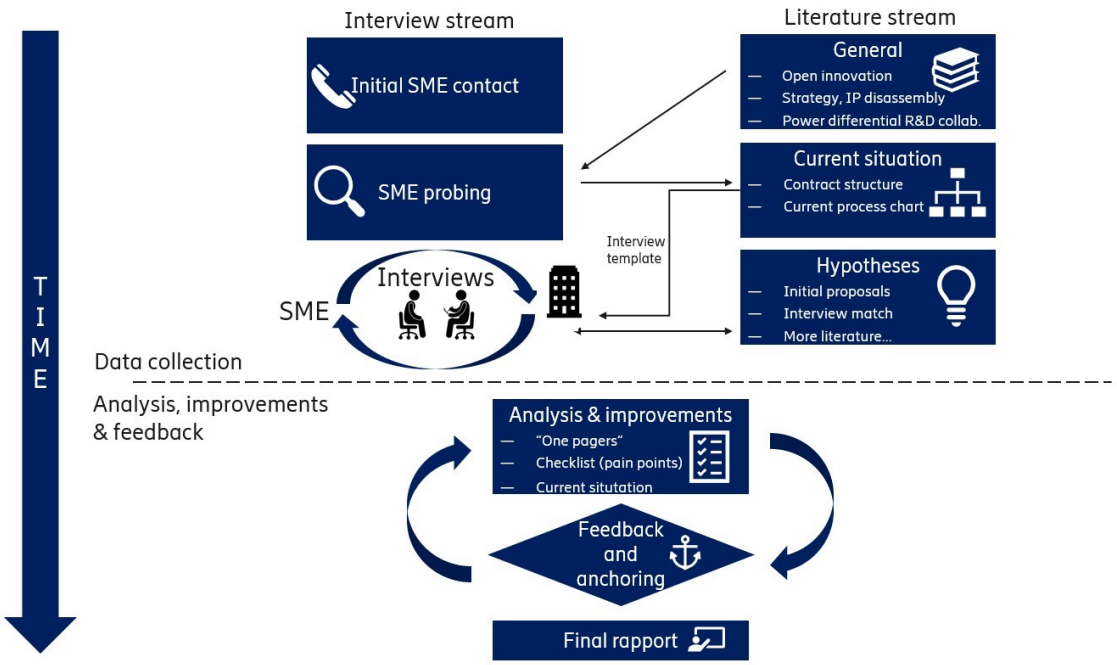
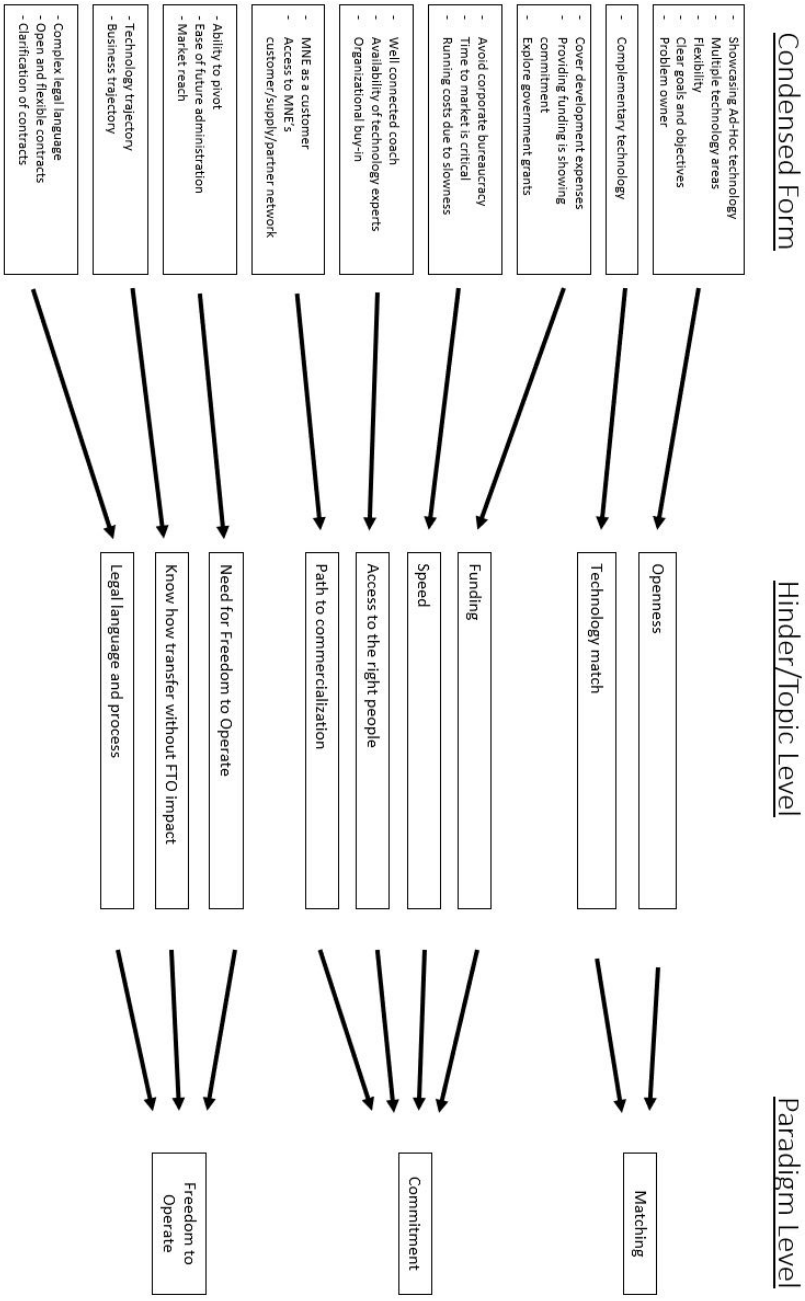


Figure B.1: Research Structure

C

Appendix: Coding breakdown



D

Appendix: Interview Guides

External guide

Background and general information

- About the startup, its technology and business model
- Previous history of startups, collaborations and professional experience
- Contact with LF

Collaborations and on-boarding

- Intended, past or current collaboration with LF
- What happened in the collaboration
- Expectations of the collaboration
- Goals of the collaboration
- On-boarding process to LF Exploratory Platform
- When and why hold ups occurred
- Hinders faced before and during collaboration

Intellectual property and contracts

- IP allocation in collaborations
- Concept of modularized IP
- Concept of freedom to operate
- Fear of misappropriation
- Fear of IP leakage during collaboration
- Contractual formulations

Internal LF guide

Background and general information

- Experience and role at LF
- Connection to the LF Exploratory Platform
- Goals and history of LF Exploratory Platform

Collaborations and on-boarding

- Current, past and planned collaborations with startups
- Description of on-boarding process
- Goals of specific collaborations at LF Exploratory Platform
- When and why hold ups occurred
- Hinders faced before and during collaborations
- Involvement of legal and patent department in collaborations and on-boarding process

Intellectual property and contracts

- IP strategy of LF
- IP allocation in collaborations
- Concept of modularized IP
- Concept of freedom to operate
- Fear of misappropriation
- Fear of IP leakage during collaboration
- Contractual formulations
- Purpose of contracts

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