Entrepreneurial Ecosystems

A qualitative study into the influence a private developer could exert in shaping an entrepreneurial ecosystem

Technische Universiteit Delft

AMVEST TUDelft

Entrepreneurial Ecosystems

by

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Preface

This thesis marks the culmination of my master at Delft University of Technology. It is written to acquire the title Master of Science in Construction management & Engineering. This research project has been conducted in cooperation with Amvest. I was engaged in writing this thesis from February to November 2022.

Since my childhood I have always been interested in structures, buildings, and places. When I was young, I was already fascinated about how the Romans planned their metropolises and constructed their aqueducts centuries ago. Nowadays, I still carry this interest close to me. Therefore, I eagerly look forward to contributing to the creation of the built environment for the future generations. Finally, after seven years of studying, that moment is near. As I am writing this, a challenging, educational, and good time as a student is coming to an end.

While I obtained a bachelor's degree in civil engineering in Groningen, I wanted to do the non-obvious for my master thesis. In the first place, I always been interested in Beta sciences with analysing and calculating factual information. Yet, I decided to take a step in the Alpha science direction to learn more about 'the other side' of the academic spectrum. While I was orienting on my final thesis, I decided fairly quickly that I wanted to conduct my final academic research at Amvest due to their vision: *'We come to stay'*. After reaching out to Amvest, they welcomed me with open arms. I have tried tying my interests about structures, buildings, and places with my thesis topic. At a sudden point, I wondered where my interest comes from. As a result, this raised the intriguing question to me: *'What makes a place special, and what gives a place the spark that leads to success?'* With this question in mind, my thesis topic about *'shaping an Entrepreneurial Ecosystem'* came about.

First of all, I would like to thank all my supervisors for guiding me through my thesis journey. Throughout the writing of this final report, I have received much assistance and support. I would first like to thank my supervisor at Amvest, Jasper van Groenestein, for all the time you made in guiding me and sharing my thoughts with. I noticed that you were perfectly able to imagine how it is like to stand in my shoes. Therefore, your guidance was extra helpful. I also would like to acknowledge my supervisor Tom Dolkens for his guidance and responsiveness. Your instructions about setting up and conducting academic research was very useful. Besides, your feedback made me think more critically about my work, which ultimately pushed it to a higher level. Thirdly, I would like to thank my supervisor, Tom Daamen. Your advice and background knowledge about area development provided extremely useful content-related feedback. In addition, during the long-winded start-up phase when I did not see the trees through the forest, you helped me getting back on track by the feedback you gave. I would also like to express my gratitude to Paul Chan for being my chair. I always enjoyed listening to your feedback and metaphors. You exquisitely knew how to convey a clear message, which made many things more comprehensible. Furthermore, I would like to thank all the interviewees. Their input was outstandingly valuable for the outcome of this study.

Special thanks to my girlfriend Jaleesa for all the moments you listened to the struggles and challenges I was facing and helping me out. Additionally, I would like to thank my friends and fellow students from Delft for their engagement and helpful suggestions. Last but not least, I would like to thank my family. My mother who always showed how proud she was of me, and my father for his feeling of gratefulness about me and what I have accomplished.

Koen van den Brink
Amsterdam, November 2022

Executive summary

Entrepreneurs are indispensable to our society. They translate innovative ideas into valuable products and services which in several cases also contribute to a more sustainable, convenient, and ethical world. Moreover, entrepreneurship is also one of the largest drivers of economic growth in a particular area. The entrepreneurship literature has shown that entrepreneurs are usually highly dependent on the environment in which they arise. Some areas show higher entrepreneurial activities than others, which is often due to the available resources and the interconnectedness between the involved actors in these areas. To comprehend the complex nature of these business environments, the term 'Entrepreneurial ecosystem' (EE) emerged, which systematically looks at the resources and interconnections between actors at a certain place. A successful EE is perceived as an area in which ventures cultivate and grow. Previous studies which explored how these EE emerge, particularly focussed on how public authorities could position themselves. On the contrary, this research aims to shed light on the role of a private developer in shaping an EE. Exploring the influence, they could exert in shaping an EE is valuable, since developers play a significant role in creating new areas.

The data of this study is collected by reviewing the literature about EEs and the influence of private developers. This literature review formed the academic foundation of this study. Afterwards, 16 in-depth expert interviews were conducted. These experts varied in entrepreneurs, private developers, real estate operators, university members, and public servants. During the study, the interviewees were part of ongoing and finished development projects which could be perceived as a prosperous EE. Subsequently, the data out of the interviews was thematically coded and analysed using Atlas.ti. Ultimately, a comparison and discussion between the literature review and the interviews is conducted.

The findings of this study indicate that developers exert their influence in different ways. First of all, they develop meeting places, to stimulate encounters. Secondly, they offer flexibility in terms of space to respond to the growth of the companies. And thirdly, they develop spaces that can be shared by multiple companies. Aside from these three physical design principles developers adopt in shaping the built environment, they also exert their influence in selecting certain end-users. The results demonstrate that putting a cluster of start- and scaleups, a small share of established companies, and a school or university closely together empowers the overall EE. Furthermore, one of the key takeaways from this study is that developing an ecosystem goes beyond developing real estate. Needless to say, facilitating the needs of entrepreneurs supports them to growt. These needs are not only accommodation-related but also cover soft aspects, such as organizing gatherings. Next, these needs also continuously change, due to the dynamic nature of start- and scaleups. This implies that a developer should be adaptable to quickly respond to these fast-changing needs. Over and above that, they could participate in the operations phase to make sure that they sell-off or transfer the developed buildings whenever not solely the real estate, but the actual EE is finished. Nevertheless, evidently this is not the core business of a developer. Therefore, they could team up and invest in a collaboration with another party who is more specialized in real estate operations and soft service provision. Overall, this study added a chunk of new information to the existing body of knowledge about EEs. It shed light on what role and responsibilities of a private developer, and what influence they exert, and could exert in shaping an EE.

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Acronyms

BE Business ecosystem.

BIC Brainport industries campus.

CEO Chief executive officer.

CRE Corporate real estate management.

CTO Chief technology officer.

EE Entrepreneurial ecosystem.

FTE Full Time Equivalent.

IE Innovation ecosystem.

MS Microsoft.

NZEBs Nearly zero energy buildings.

OEM Original equipment Manufacturer.

OPEX Operational expenditure.

PPP Public private partnership.

QCA Qualitative content analysis.

SME Small and medium-sized enterprises.

TU Technical University.

1

Introduction

1.1. Background

Innovation can be seen as the engine of economic growth (e.g., Cavallo et al., 2019; Mason and Brown, 2013). The discovery of new technologies leads to job creation, new market formations and often results in the production of better goods and the provision of better services. Innovation is about introducing new products, services, and ideas (Mitzkus, 2022). These new ideas are often introduced and brought into our world by entrepreneurs. Entrepreneurship involves translating new innovative ideas into business opportunities (Mitzkus, 2022). Therefore, regional growth in a particular area can usually to a large extent be attributed to entrepreneurship. Studies on entrepreneurship have for the most part focused on the behaviours and characteristics of ventures and individuals (Shane, 2003). Due to this focus, several authors suggested that there is a need to comprehend entrepreneurship more in an all-embracing environment (Autio and Thomas, 2014; Spilling, 1996). Moreover, in 'entrepreneurship theory' it has been widely acknowledged that entrepreneurial activities do not occur in isolated areas but are usually location-specific and place-based (Spigel and Harrison, 2018 and Ojaghi et al., 2019). The existing body of research on regional economic growth suggests that an appropriate context in which ventures arise and grow is significantly important (Nair et al., 2022). Correspondingly, the term *'Entrepreneurial ecosystem'* (EE) emerged, to view entrepreneurship in a systematic way by considering all factors within a certain context (Cavallo et al., 2019).

The term EE is used here to refer to the complex system which stimulates the creation of ventures and venture grow (Toutain et al., 2017). In literature, EEs are used to apprehend the interconnected and complex nature of business environments (Hirvonen-Kantola et al., 2016). Aside from the academic interest about EEs, this topic also gained interest among practitioners such as policymakers. Scholars and practitioners tried to understand EEs better to dedicatedly enhance the functioning of these systems and consequently support entrepreneurship (Meshram and Rawani, 2019). A better understanding on EEs is useful for two purposes. First of all, to foster the functioning of existing EEs. Secondly, to contribute to the development of areas becoming a new EE. This study concentrates on the second purpose.

Developing an EE goes beyond solely housing entrepreneurs. An ecosystem is composed out of a variety of interrelated elements varying in organizations, individuals, facilities, institutions and so on. Development practitioners across the globe attempt to shape an EE in their region to enhance local entrepreneurship (Van Winden et al., 2013). The designated locations for these programs are often at post-industrial sites. In cities across Europe, centrally located industrial neighbourhoods are frequently redeveloped into higher-yielding commercial areas (Brash, 2011). In the Netherlands, these locations have become ripe targets due to their strategic location closely to inner cities (Smit, 2004). The redevelopment of these areas often occurs in the form of a *top-down approach* (Weiler, 2019). Meaning, that policymakers have certain goals about the future of an area and use policy instruments to reach these goals (Weiler, 2019).

In Delft, the local authority endeavours making the city *'The Main capital for technology and innovation'* ("Ontwikkelplan Schieoevers Noord", 2019). An area development project within Delft called *'Kabeldistrict'* is an important development project in reaching that goal, since the municipality ambition is to create 10.000 extra jobs by 2040, in which 2.000 will be at the Kabeldistrict ("Ontwikkelplan Schieoevers Noord", 2019). This area is located at a post-industrial site adjacent to the waterway the Schieoevers North in Delft and will be redeveloped into a mixed-use area with 3.200 dwellings and 7 acres of non-residential functions (see figure 1.1) ("Kabeldistrict", 2022). The majority of the non-residential functions will be developed into business premises to accommodate start-ups, scale-ups, SMEs, and bigger production companies in the hi-tech industry. In general, the idea behind the development, according to the municipal development plan of the Schieoevers North, is: *'What is invented at the campus on the TU Delft as a science, will be applied, made, and traded at the Schieoevers North'*("Ontwikkelplan Schieoevers Noord", 2019).
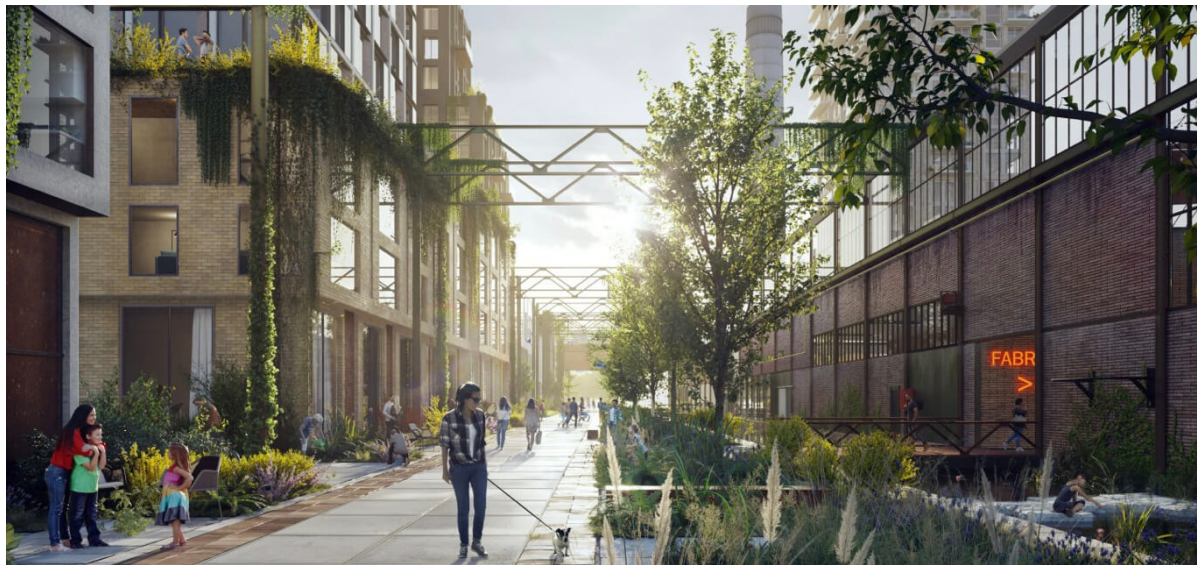
Figure 1.1: Render of Kabeldistrict Delft (©Mei architects and planners)

The involved private developers at the Kabeldistrict development are aiming for a prosperous outcome with low vacancy rates. The same goes for the municipality of Delft since they are aiming to create more new jobs by 2040. Both parties are seeking to create a place with filled business premises in which ventures cultivate. Yet, it remains to be determined if the development will generate the desired number of jobs. To advance the understanding of the emergence of an EE and how it could be influenced, this study investigates how private developers could influence the creation of an EE. In particular, the case of the Kabeldistrict development will be explored and its potential of becoming a successful EE. Before proceeding to discuss this case and the research aim, it is of the essence to address the problem statement and the corresponding research gap first.

1.2. The problem statement

Entrepreneurs play a vital role in our society. Entrepreneurship is not only significant for the activation of economic growth (Cavallo et al., 2019), but also indispensable for providing services/goods with better ethical and sustainable considerations (Pettinger, 2019). A supporting ecosystem for entrepreneurship is therefore a fundamental issue that needs proper understanding.

There is a growing body of literature about EEs in which ventures cultivate (Ojaghi et al., 2019). Researchers have pointed out that further research is needed to understand more about how EEs originate (e.g., Jacobides et al., 2018, Dattée et al., 2018 and Dedehayir et al., 2018). Understanding how EEs emerge could help involved actors to respond to this emergence and even influence its outcome. Studies over the past decades have provided important information about the characteristics of the physical

environment that supports and foster entrepreneurship. Interviews such as that conducted by Pancholi et al. (2018) have shown that permeability (i.e., free circulation of knowledge), integrated connection between the buildings, and a place that satisfies the needs of diverse users stimulates growth. Additionally, according to Esmaeilpoorarabi et al. (2018b) regional growth also depends upon the unique image of a place, the atmosphere at a place (e.g., public places where people meet), and the presence of essential and advanced amenities. Factors, which are not expressed in the form of the physical environment, referred to as nonphysical factors, found to be influencing a successful ecosystem for entrepreneurs have also been explored in several studies. For instance, the cutting-edge studies of Isenberg (2011a), Feld (2020) and K. C. Cohen (2006) have to a great extend contributed to spreading the view that the community in a particular area considerably affect entrepreneurship. In the same vein, Stam (2015) build on this by identifying the systemic conditions that positively influence the functioning of an ecosystem and supports the community, such as networks, leadership, talent, support services, etc. Moreover, Xie et al. (2021) conducted a quantitative study on a macro level about the causal relationship between certain factors (e.g., market potential based on the gross domestic product per capita) that fosters local entrepreneurship. Collectively, studies such as conducted by Pancholi et al. (2018), Xie et al. (2021) and Stam (2015) provided a handful ingredients that nurture an EE.

Aside from these ingredients, authors also focused on the involved actors in building EE. Researchers often addressed the relationship between academia, the government, and the industry, known as 'Triple Helix'. For instance, Hillemane (2020) investigated the gap in an EE in Bangalore and found that the involvement of research institutions and educations was lacking. With regard to the development process, various actors, such as public servants, politicians, landowners, real estate developers, investors, and many others, play a significant role (Adams and Tiesdell, 2012). Moreover, due to the rise of neo-liberalism in the field of area development in the Netherlands, development projects have become more dependent on private parties (Heurkens, 2009), which likewise makes them important actors in shaping an ecosystem. The existing literature on EE focuses particularly on public authorities (Panetti et al., 2021;van der Veer, 2017;Isenberg, 2011a). For instance, van der Veer (2017) investigated which interventions public authorities should take, during a development process, to stimulate innovation through the created environment. Besides, Isenberg (2011a) claims that the governmental involvement is especially relevant in the initial stages of an EE, there is a *'tipping point'* when EEs becomes more self-sustaining and need less government involvement. Withal, Isenberg (2011b) addressed five policy mistakes that hammers the shaping of an ecosystem. To name one of these mistakes, as Isenberg (2011b) writes: *'Unintended repulsion of providers of entrepreneurial finance'*. One of the reasons for this, is that acquiring governmental grants takes too long and is too little (Isenberg, 2011b). Moreover, in another recent study, Berk and Saxenian (2022) explored how public authorities could foster the ecosystem of cloud computing. Berk and Saxenian (2022) argued that when public authorities implement antitrust policies that makes mergers and acquisitions for established companies more restricted, will make collaborations and partnerships more attractive, ultimately leading to a more collaborative ecosystem. Overall, these studies highlight the role, and the strategies that public authorities could adopt in shaping and nurturing an ecosystem. However, up to now, far too little attention has been paid to role of private actors. Researchers have not treated the role of private developer in much detail and how they could influence the shaping of an EE. The cause of this might be that authors perceive their role negligible in an EE, since they often pass from site after the completion of the developed real estate (Rajakallio et al., 2018). This indicates a need to understand the shaping of an EE, via the glasses of the private developer. The next section discusses how this study aims to acquire these new insights.

1.3. Goal & Objectives

The aim of this thesis is to unravel the potential from a developers' point of view in an EE, by exploring the influence they employ in shaping it. The eventual objective is to explore what steps need to be undertaken to get to an EE. The following sub objectives are set up to reach this objective:

1. Addressing the influence private developers employ to facilitate entrepreneurship. This involves addressing the influence they exert, and could exert in shaping the built environment, but also in choosing the end-user after the completion of a development.

2. Bringing to light what their role and responsibilities could be in developing an EE. This objective is set up in view of the fact that the role of the private developer in shaping EEs is less clear in existing literature.

3. Discovering the envisioned collaborations of a private developer between public authorities and universities in building an EE. Namely, authors (such as Panetti et al., 2021) have stated the significance of the municipality, but also the university, which gave rise to this sub objective

4. And finally, identifying the developers' constraints and barriers in creating an EE. When considering the influence a developer could exert, one should also consider their constraints in exerting this influence.

1.4. Research questions & approach
Based on the main goal and the described objectives in the previous section, the subsequent research questions are formulated:

MQ. How can private developers tactically influence the shaping of an entrepreneurial ecosystem?

SQ1. What influence do developers employ to facilitate entrepreneurship?

  (a) What design principles do developers adopt when shaping the built environment of an EE?

  (b) How do developers select their end-users as part of an EE?

SQ2. What role do, and could developers exercise, and which responsibilities could they take in shaping an EE?

SQ3. What interactions of the developer between the municipality and university influences the shaping of an EE?

SQ4. What barriers and constraints do developers face while shaping an EE?

The main question can be characterized as a design question in view of the fact that the goal is to propose an intervention. According to de Jong (2011), the outcome of a design question is a reasoned solution. In addressing the research question, empirical qualitative research is conducted. The data for answering this question is gathered via **open in-depth interviews**. The research methodology is further elaborated in chapter 3 of this report. Besides, the research question include several terms which could be interpreted broadly. The following section discusses the focus of these terms, to make sure that the reader knows what it means and what the focal points of this study are.

1.5. Focus of study
This paragraph elaborates on the focus of the study. The main and sub questions can be distinguished in the following key concepts that need further specification:

- **Tactical influence**: There are different levels how an EE could be influenced. In particular: strategically, tactically, or operationally (see figure 2.3). Figure 2.3 is also known as the *'strategy pyramid'* (Miles et al., 1996). Smals (2020) pointed out that, within an organization, long-term decisions are made on a strategic level, whereas short-term decisions occur on an operational

level. Yet, due to the inter-organizational character of a development process, this pyramid could be brought to a broader level. The local authorities could be classified as the 'strategists' since they are focusing on strategic policies. For instance, the municipality of Delft want the city to become the 'hi-tech capital of innovation' and to create 10.000 new jobs by 2040 ("Ontwikkelplan Schieoevers Noord", 2019). On the other hand, the developer could be identified as the 'tactical player' since they are trying to translate the municipal strategies, next to their own organizational strategic goals, into a plan. More specifically, they are more focused on the HOW. A full discussion of all influential levels lies beyond the scope of this study. Therefore, the aim of this study is to explore solely the tactical influence developers exert.
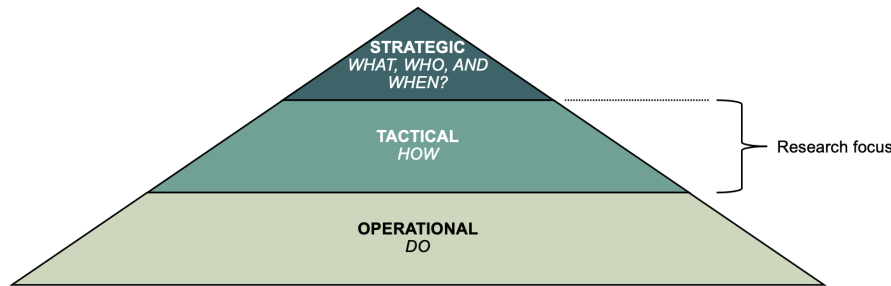
Figure 1.2: Research aim (own illustration)

- **Private developers and their influential capacity**: Developers operate in different markets. Whereas some developers are more active in commercial real estate, other are more focused on residential real estate. The reader should bear in mind that the study is based on developers who are active in developing business premises in areas or multi-tenant buildings with multiple non-residential users in the hi-tech industry. Another important point of attention are the resources of a developer to exert certain influence. Evidently, their influence is limited. This denotes that they could possibly do several things but are limited in doing these things due to the lack of their available resources. For example, their available budget could cause a constraint. Accordingly, SQ3 is incorporated, to explore for which aspects developers need other parties such as the municipality and the university. In addition, SQ4 is incorporated as well to explore their available resources that could cause any constraint or barrier.

- **Entrepreneurial ecosystem**: While a variety of definitions of the term 'ecosystem' have been suggested, this thesis uses the definition of 'entrepreneurial ecosystems'. EE namely focus on entrepreneurs i.e., venture creation and growth (Toutain et al., 2017), which is frankly most related to the municipal and developers' goals of the Kabeldistrict: 'creating new jobs & filled business premises'. For Hayes et al. (2022), an entrepreneur is *'An individual who creates a new business, bearing most of the risks and enjoying most of the rewards.'* These 'new businesses' can be referred to as start- and scaleups.

- **Type of entrepreneurial ecosystem**: EEs are described in a variety of shapes and sizes. In Oh et al. (2016) their review can be found that ecosystems could be either district-based, city-based, national, and so on. In this thesis a district-based approach is adopted, since the focus case in this thesis is the Kabeldistrict. Nevertheless, the city-based ecosystem is also considered. Iansiti and Levien (2004) namely pointed out that there is a connection between (sub-)ecosystems within ecosystems (e.g., district-based ecosystem in a city-based ecosystem) and Theodoraki and Messeghem (2017) even explored this interconnectedness. Additionally, in a recent systematic literature review by Poonjan and Tanner (2020), they concluded that the majority of studies about EEs focus mainly on internal factors and tend to neglect the surrounding regional context. Therefore, this thesis aims to explore the influence a developer could employ in shaping an EE, along with exploring the influence of developer in shaping an area within a bigger EE, that eventually fosters the overall functioning. Furthermore, there are also different types of entrepreneurial ecosystems (e.g., creative industries, tech industry, service industry, etc.). It is beyond the scope of this study to examine all these ecosystem industries. Therefore, the focus of this thesis will be

on the 'hi-tech sector', given the fact that this sector is the focus group for the Kabeldistrict.

- **Start- and scaleups**: The focus of this study is on entrepreneurs who run a start- or scaleup. An EE approach focuses on entrepreneurs who create and operate new businesses. Several authors attempted to classify startups. Whereas some authors tried to define it according to the annual turnover and the number of employees (e.g., Eurostat, 2008) others tried to define it with words. On contrary to established companies, startups have to invent their own their business model. In Ries (2011) his book *'The Lean start up'*, he points out that a startup is a company who aims to create a new service or product while facing utmost uncertainty. Additionally, Durban (2021) proposes that a startup is a firm focused on discovering new technologies or who are innovative. The latter definition of a startup is used in this research since it broadly describes characteristics without delimiting the respondents possibilities. The second research units are scaleups. There are different kind of startups. Apart from the sector and the service/products they provide, startups evolve through different phases. Figure 1.3 shows an overview of these stages. A seed startup is a startup at its initial stage. The term 'seed' is uses here to refer to 'seeding funding', i.e., *'to develop a concept'* as noted by Ferrati (2020). When a startup, starts with developing and testing their product they could be identified as an early-stage startup. While the company starts focusing on expansion it can be characterized as later stage startup. The 'exit'-type as shown in figure 1.3 can be either a company who is acquired by an established firm or is already gained access to the market via initial public offering (Ferrati, 2020). Scholars have debated what the exact difference between later stage startups and scaleups is. There seems to be some overlap in their definitions since both companies focus on expansion (Durban, 2021). Moreover, Eurostat (2008) defines a scale-up as a company composing of 10 or more employees and with a yearly profit of at least 20%. In this thesis, the terms 'later stage startup' and 'scaleup' are used interchangeably that stands for a company who focus on expanding its market and continuing the development of the products/services. Durban (2021) claims that a scaleup could be considered as a successful startup, who do not necessarily focus on bringing a product/service to the market, but rather on growing. Its plausible that scaleups look differently at EE compared to startups, because they are 'longer in the game' of operating a business. Usually, a startup becomes a scaleup at a certain stage. In this research, early-stage startups, and later stage startups (i.e., scaleups) are the research units.
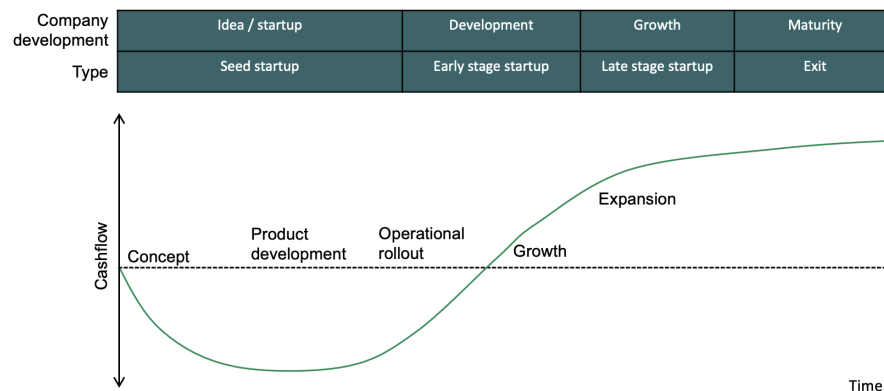
Figure 1.3: Startup evolvement (adopted and adjusted from Franklin et al. (2020) page 8)

Having described what, the focus of this study is, the next section moves on to describe the case.

1.6. Case description

The previous paragraphs identified the problem statement, and the research aims. It is now necessary to present the applicable case of this thesis, the Kabeldistrict in Delft. This is done by identifying the present assets/resources in the area as suggested by Meyers (2015).
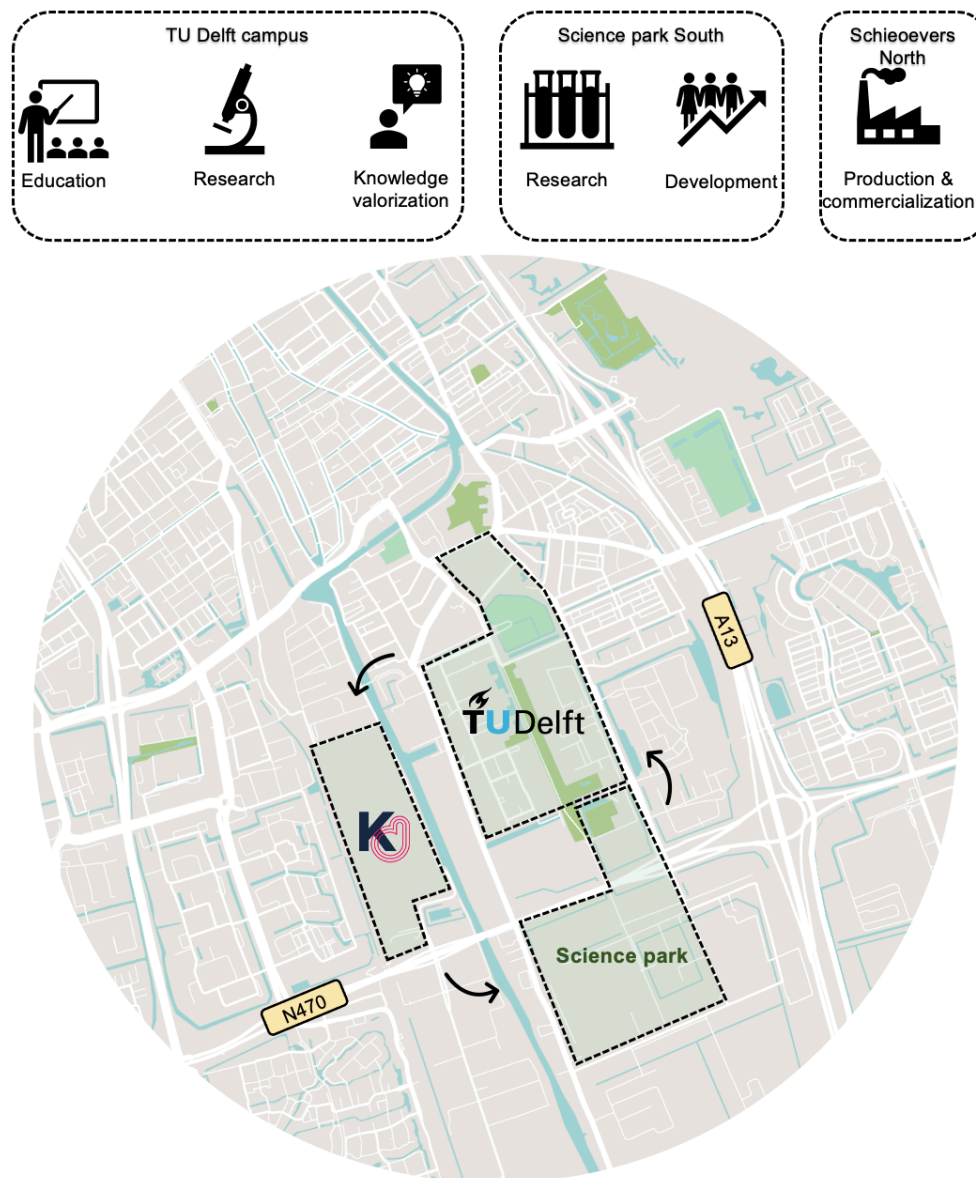
Figure 1.4: The ecosystem of Delft (own illustration)

Figure 1.4 identifies a general overview of the present assets in Delft. These assets are expressed in three main areas: the TU Delft campus, Science park South and the Kabeldistrict. In each of these areas the emphasis is on different aspects. The TU Delft campus combines education, research, and knowledge valorisation (i.e., utilising scientific knowledge in actual practices) ("Ontwikkelplan Schieoevers Noord", 2019). This area composes of academic institutions. Which consist largely of the technical university of Delft, including the different technical faculties varying in architecture, civil engineering, electrical engineering, industrial design, aerospace engineering, physics, mechanical engineering and technology, policy, and management. Nevertheless, also the applied university of science the 'Haagse Hogeschool' is part of this category, where they teach, among other things, mechanical engineering, mechatronics, and electrical engineering. Furthermore, the intermediate vocational Education ROC Mondriaal, where economics are being taught, such as business administration and office management is also complementary to this category, aside from the fact that this school is outside the indicated area in figure 1.4. All these mentioned schools and universities represent the educational and academic resources in Delft.

In the other area, science park south, the emphasis is on research and development ("Ontwikkelplan Schieoevers Noord", 2019). This area composes, among other parties, research institutions (e.g., TNO), startup incubators (e.g., YES!Delft) and startup accelerators (e.g., NEXTDelft). A place where testing and piloting takes place is YES!Delft. This place is an incubator only for startups. After these startups become scaleups, they could possibly go to NEXT Delft, which is indented for technology and application. This could be when ventures become more focused on accelerating and broadening the customers base. The focus at Science park south is on developing and prototyping new products/services. Moreover, there are also other parties who fall under this category but are not established at science park south area. Such as Green village, an open-air laboratory for new innovative ideas, methods, and techniques; RoboHouse, a place with start- and scaleups who are active in robotics; and Qutech, a research institute for quantum technique.

Furthermore, at Schieoevers North, the Kabeldistrict, the focus is on translating ideas and knowledge to production and commercialization ("Ontwikkelplan Schieoevers Noord", 2019). It is at a central location in Delft and has a geographical connection between the industry and different forms of technical education ("Ontwikkelplan Schieoevers Noord", 2019). This area is marked where growing companies, coming from science park south or the TU Delft campus, can establish. This place will be intended for startups, scaleups and established companies. The academic institutions play an important role in this area for the new generation technicians, such as programmers, installers and maintenance technicians ("Ontwikkelplan Schieoevers Noord", 2019). The area is also in proximity of a datacentre, various supply chain companies and established companies who are specialized in developing and producing hi-tech technological products (e.g., Demcon, Festo) ("Ontwikkelplan Schieoevers Noord", 2019). The municipality endeavour that the Schieoevers North strengthens the overall ecosystem of Delft by offering new business premises, which are currently scarce in Delft, and bringing industry and knowledge together ("Ontwikkelplan Schieoevers Noord", 2019).

In sum, the described case is intended to give a place to hi-tech manufacturing companies, varying in startups and established companies. Whereas the idea is that the other two surrounding areas, the TU Delft campus and Science park south, become complementary to the overall ecosystem in Delft. The next section describes the outline of this thesis.

1.7. Thesis outline

This thesis is composed of five themed chapters, shown in figure 1.5 (see next page). Prior to the empirical research of this thesis, a theoretical framework is designed. This framework forms an extension on the problem statement (section 1.2). The theoretical framework zooms in on the following two central concepts *'tactical influence of private developers'* and *'Entrepreneurial ecosystems'*, to maintain a detailed perspective which is taken to address the knowledge gap (Lempriere, 2019). It starts with reviewing the literature about the tactical influence of a private developer, in which the environment, the private developer and the development process stand central. Thereafter, the literature about phenomenon EE is reviewed. The third section covers the link between the theory and the research aim. The theoretical framework have provided foreknowledge for the empirical part of this thesis. The third chapter deals with the research methodology and the data analysis for the empirical part. Chapter Four includes the results of analysis and the findings of the research. Chapter five is concerned with the discussion. This chapter describes the interpretation of the results by comparing it with the academic input, and the research limitations. The chapter thereafter entails the conclusion, implications, and the recommendations of this thesis.
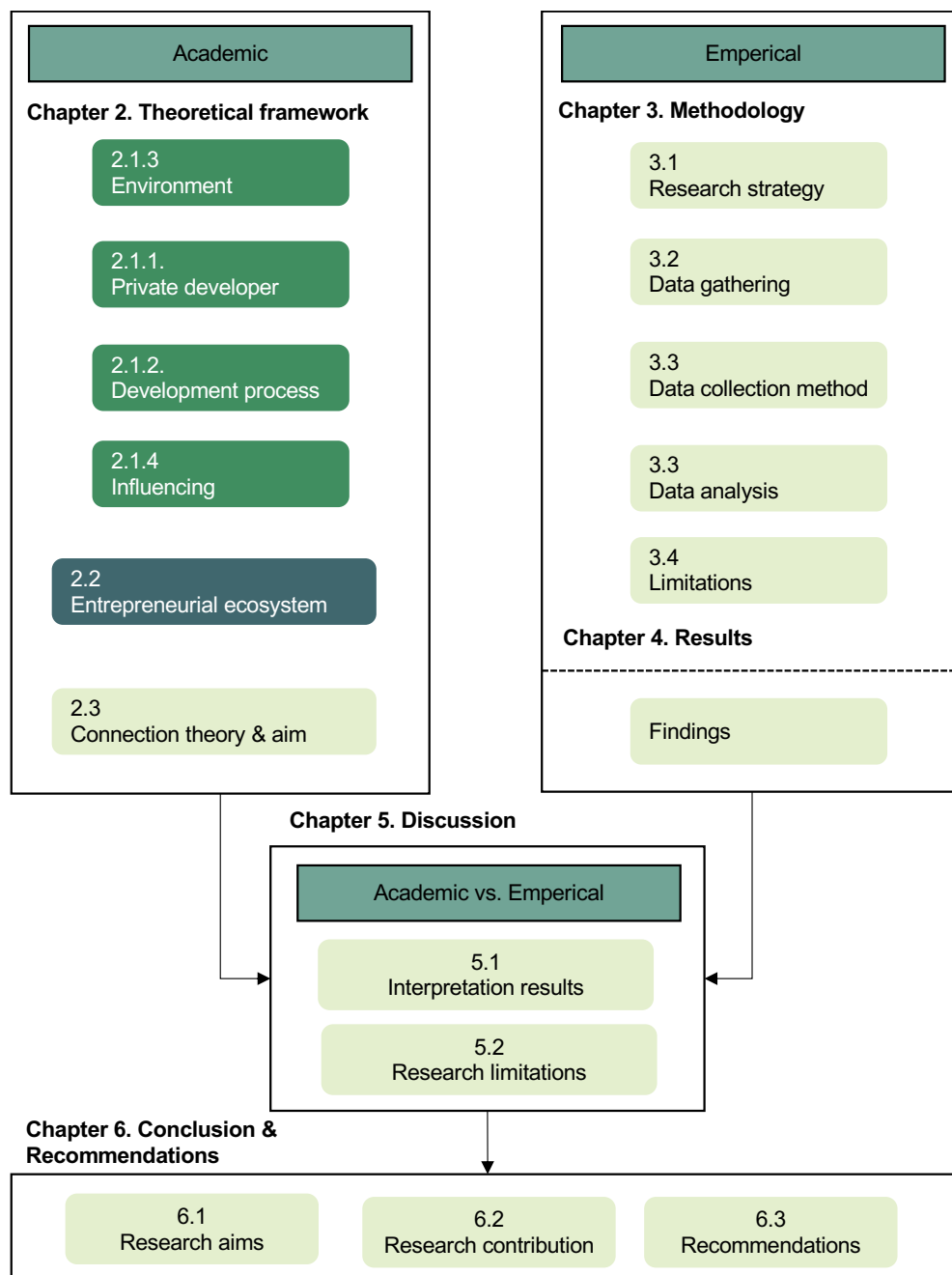
Figure 1.5: Outline thesis (own illustration)

2

Theoretical framework

This chapter begins by laying out the theoretical dimensions of the research and looks at the key variables used in this research. It can be seen as an extension of the problem statement in the previous chapter (section 1.2) and aims to get a solid grasp on the research gap by diving deeper into the existing literature. The eventual intention of this study was to discover the connection between the key variables **tactical influence of private developers** and **entrepreneurial ecosystems**. Before proceeding to do this, it is necessary to first investigate what the existing literature says about these variables. Therefore, the objective of this chapter is twofold. First, to review the literature about the tactical influence of private developers. Secondly, to review the literature about EE. In order to do so, the main research question of this research is decomposed into several questions, not to be confused with the actual research questions (see figure 2.1). These questions have been set up to gain profound knowledge about the variables in this research. In addition, during the research it also functioned to clearly structure this literature review chapter. Having addressed what is known about these variables in literature, creates a deeper understanding about what aspects are still uncovered. As a result, this chapter shows a comprehension of the literature in the knowledge domain of the proposed research and actual contribution to this knowledge domain (L. Cohen et al., 2002).

How can private developers tactically influence the shaping of an entrepreneurial ecosytem ?

Tactical influence of developers	Entrepreneurial ecosystem
1) What is the definition of tactical influence?	1) What is the definition of an EE?
2) What is the role of a developer?	2) What is the rationale behind using the term EE?
3) What are their responsibilities and motives?	3) What is the outcome of an EE?
4) What is a development process?	4) What actors are part of an EE?
5) In what environment do they operate?	5) What are the enablers and drivers of an EE?
6) What influence can they exert and in which stage?	

Figure 2.1: Decomposing research questions (own illustration)

The formulated questions in figure 2.1 are expressed in a theoretical framework on the next page (see figure 2.2). The 'control paradigm theory' of De Leeuw and Volberda (1996), is adopted in this thesis to comprehend the influential capacity of a private developer in a systematic way and to take an academic position in elaborating on influencing.

The data for the theoretical framework is collected in a structural way according to the four-step approach by Rowley and Slack (2004). In the first stage, information sources are scanned based on their relevance to this research. Papers with the terms *'(entrepreneurial) ecosystem', '(area) development', 'urban planning', 'innovation', 'entrepreneurship', 'influence', 'management' 'governance'* or

equivalent in their title or abstract are searched. Thereupon, these papers are scanned and rated on their relevance by reading the title, introduction and abstract. After that, notes are made based on these different papers by making use of 'Mendeley Reference Manager'. Relevant findings and critical standpoints in these papers, answering the question in 2.1, are highlighted and incorporated in a notebook. Subsequently, the literature review is structured by making a mindmap which eventually resulted in figure 2.2.
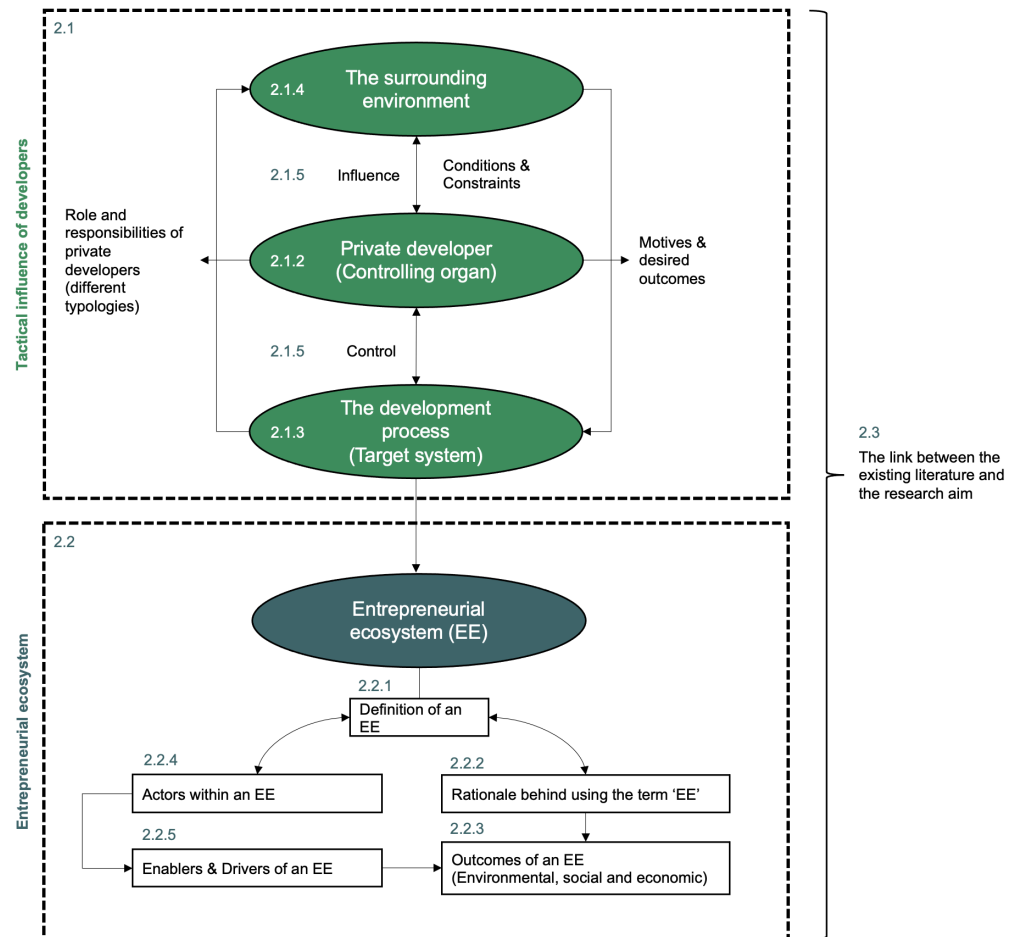
Figure 2.2: Theoretical framework (own illustration)

This chapter has also been organised in the same way as figure 2.2. It begins by covering the literature about the tactical influence of private developers by making use of the control paradigm of the De Leeuw and Volberda (1996) (section 2.1). This control paradigm composes three central elements: the private developer, the development process, and the surrounding environment. Each element is discussed separately. Afterwards, in section 2.1.5 the interconnection between these elements is addressed. The following section (2.2), reviews the literature on the term EE, by addressing the definition, the rationale, the related outcomes, the involved actors and the enablers and drivers. The findings of the literature in the sections 2.1 and 2.2 will be brought together in the remaining section (2.3). This section discusses how the existing literature relates to the research aim.

2.1. Tactical influence of private developers

This main section covers a review about the key variable: *tactical influence of private developers*. Before delving into the literature about the related phenomena, it is important to elaborate on the adopted framework, which is used to view this variable through an academic lens. To begin with, this study focuses on influencing the course of a development project, which is related to influencing the course of an organization. A fundamental and highly adopted theory in the field of 'systems theory' about organizational management is devised by De Leeuw (2002) and referred to as 'the control paradigm'. In his book, he makes the distinction between the **'Controlling organ' (A)**, the **'target system' (B)** and the **'surrounding environment' (E)** (see figure 2.3). Generally speaking, A governs and concerns all management related activities. A gives orders to B. B, on the other hand, is governed and concerns all operational activities. The results which occur in B are fed back to A. In addition, E is something that does not belong to the organization, such as customers, suppliers, or the public authorities who set up the boundary conditions (Delemarre and Verkaaik, 2016).
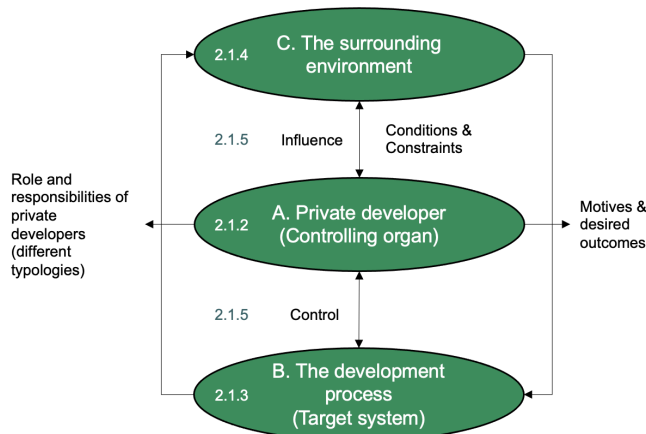
Figure 2.3: The control paradigm (adopted and adjusted from De Leeuw, 2002)

This section begins by elaborating on the definition of tactical influence. Thereafter, it has been structured in the same way as figure 2.3. The second part covers a review about the role of the controlling organ (A) i.e., the private developer. It will then go on to reviewing the literature about the target system (B) i.e., the development process. The third part deals with the surrounding environment (E). After identifying A, B and E, the remaining part proceeds by elaborating on the control and influence A could tactically employ on B and E.

2.1.1. Tactical influence

First of all, this subsection kicks off by answering the following question: *1) What is the definition of tactical influence?* Management consists out of different levels of control, varying in strategic, tactical, and operational management (see figure 2.4 on the next page). The use of these three levels is often referred to as the 'strategy pyramid' (Miles et al., 1996). Smals (2020) pointed out that long-term decisions and goals are made on a strategic level, whereas short-term decisions occur on an operational level. The translation between these two levels is described to as 'tactical management'. Moreover, Smals (2020) also claims that the management levels involve different activities. Strategic management appear to focus on policy and decision making on strategic goals (Smals, 2020). A part of strategic management is strategic planning, which involves decision making. It can be described as a systematic process within an organization about agreeing upon priorities, that are significant in reaching the organization's mission (Allison and Kaye, 2011). While several authors agree upon this definition, Martin (2022) has challenged it, arguing that planning and strategy is something different and strategic planning is simply planning. According to Martin (2022), strategies are desired outcomes and a description about how to get there. Planning, on the other hand, is according to Martin (2022) about what needs to be done. Therefore, planning might be more related to tactical management compared to strategic management. Hopff et al. (2019) labelled tactical management as *'steering the the realization of goals'*. Or in other words, tactical management is focused on translating the strategic goals into a plan.

While a strategic plan also involves describing how to get to a desired outcome, a tactical plan could be identified as a more sophisticated plan, so the operational management could actually execute the plan.

Figure 2.4: The strategic pyramid (own illustration)

Traditionally, the 'strategy pyramid' has been used for describing the management levels within an organization. A large number of studies have used the strategy pyramid to describe the organizational interactions (Gutierrez and Serrano, 2008, Misni and Lee, 2017, and Bilgen and Ozkarahan, 2004). Nevertheless, studies (such as conducted by Hopff et al., 2019 Ayele et al., 2022) have also made use of the strategy pyramid in the field of area development. In these studies, municipalities are often positioned on the strategic management level. The reason behind this, is because policymakers are usually public authorities. Some authors claim that strategic management in area development mainly occurs via public entities. For instance, He and Wu (2005) states that private developers have 'negligible influence' due to the regulations set up by the local authorities. In general, the public authority controls the pace and direction of a development project via policy intervention and land-lease governance (He and Wu, 2005). In addition, a study conducted by de Graaf and Dewulf (2010) about 'Strategic urban planning' showed that municipalities in the Netherlands barely share power and favour entire autonomy in area development projects. Hence, public authorities can oftentimes be described as context-setters because the set up the boundaries conditions in area development projects. Conversely, other authors argued that private entities could also be involved on policy-level. This also depends on the relationship between public and private parties. For instance, Dutch development projects started to become more collaborative since 2000 due to public-private partnerships that abets the integration of public objectives and 'private development goals' (van Bueren et al., 2016). Additionally, Ansell and Gash (2008) conducted a literature review about 'Collaborative governance' in which both private and public stakeholders are brought together to collaboratively make decisions on a consensus-basis.

To conclude, the reviewed studies in this section support the notion that tactical management is about translating the strategic goals into a plan, which subsequently is executed on an operational level. Tactically influencing the course of a project compromises of activities that could be undertaken to eventually achieve the strategic goals. According to the reviewed literature, tactical management usually relies on the private developer. Nevertheless, the developer could also be part of strategic management in collaborative governance forms. The next section moves on to discuss the exact role of a developer.

2.1.2. The controlling organ | The private developer

According to Adams and Tiesdell (2012), developers orchestrate a development process. Therefore, they could be identified as the controlling organ in a development process, whereas the development process can be identified as the target system. In order to get thorough understanding about private developers this subsection begins by discussing their role, responsibilities, and motives to shed light on who they are, what they do and why they do what they do.

The role of private developers

This sub section aims to answer the following question based on the existing literature: *2) What is the role of a private developer?* Developers could be characterized as opportunity seekers. Apart from getting a request by other parties to deliver a certain service, a project developer oftentimes actively looks for opportunities. As noted by Adams and Tiesdell (2012), opportunities from a developer's perspective arises from a need for space or an unsatisfied demand. Developers can gain revenue from the development project, by (re-)aligning the needs of the users or by offering a new space (e.g., dwellings,

retail space, offices, etc.). Project development originated due to building entrepreneurs and real estate companies who started investing in acquiring vacant plots. Because of the increasing focus and complexity towards project development, the profession gave rise to separate companies focused on project development (Piters, 2007). Developers operate on different scales, varying in retrofitting old buildings into new condominiums or developing a large area with a number of dwellings. The latter is often referred to as 'gebiedsontwikkeling' (i.e., area development) in Dutch. Daamen (2010), points out that private area developers arisen in the Netherlands due to a matter of 'scoping'. Public authorities started selling plots to private parties to compensate the development cost (Daamen, 2010). The literature on developers shows that they orchestrate a development project by connecting labour, capital and property rights (Adams and Tiesdell, 2012). They have a directing role in a real estate development project and manage other involved parties (e.g., architects, engineers, contractors, etc.) (see figure 2.5). Ciaramella and Dall'Orso (2021) describes a developer as a 'mediator', because they are occupied with identifying solutions and getting to a consensus with the main stakeholders.
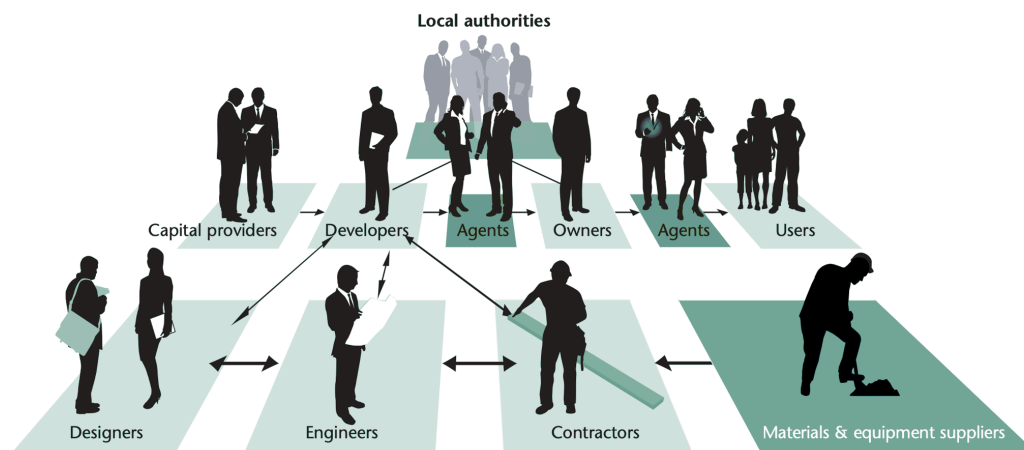
Figure 2.5: The complex value chain in (area) development (reprinted from EEB Facts and Trends Summary report, page 14, WBCSD, 2007)

According to Nozeman and Fokkema (2008), there are three types of private developers in the Netherlands: *Independent developers* (often small-sized, operational in niche markets, parcel developers, or family companies); *Developers related to building firms* (often production driven and aiming for a constant cash flow with small margins); and *Investing developers* (often focusing on long term yields, related to institutional investors). The Netherlands does not particularly have public developers. Nonetheless, the housing corporations in the Netherlands could, a couple of years ago, be identified as public developers, despite the fact that they are private entities. Even though they are financial and administrative independent, they still retain a socially driven purpose to provide affordable social housing, unlike private developers who are more commercially driven (Czischke et al., 2012). Nevertheless, since the housing act that came into effect in 2015, housing associations were not allowed to conduct DAEB-activities (i.e., services from general economic interest) anymore and are therefore not allowed to do project development (Jooren and Kunen, 2019). Moreover, there are also developers who act as consultants and managers. They often have hour rates and are contracted by other parties. For instance, a municipality could hire them to manage the development of a public building.

The reason why the municipality is portrayed at the top in figure 2.5, is because they often set up the boundary conditions and goals for a certain area. For example, the maximum floor space index, building heights, kind of functions, etc. They are commonly setting up the context in which a developer can operate. The developers tries to operate within these boundaries or negotiates to deviate from these boundaries, while taking the project risks (Nozeman and Fokkema, 2008).

In brief, a private developer has a directing role in (re)developing the built environment. Depending on the type of developer, these developments vary in residential and utility buildings. In addition, these developments also vary in terms of scale. For example, a development process could cover one building on one plot but also a large area with multiple plots and buildings. In general, the developer brings both investments, property rights and labour together. Their role is to direct the real estate development process by managing the involved parties. Having defined what their role is. The following sub section will discuss their responsibilities and motives.

The responsibilities and motives of a private developers

This part considers the following question: *3) What are the responsibilities and motives of a private developer?* The developer is responsible for the development process of creating new or renewed real estate. Within that responsibility they have several other responsibilities, differing in job-specific, environmental, and social responsibilities. First and foremost, developers have to make sure that projects stay within budgets and deadlines. The capital providers, such as an investor, portrayed in figure 2.5, namely provides liquid assets under the condition that they receive a certain Return on Investment. Developers are responsible for activities related with negotiating with contractors, conducting market research, performing feasibility studies, obtaining financial assets, coordinating architects and so on ("What Does a Real Estate Developer Do?", 2022).

Aside from their job specific responsibilities, they also have environmental responsibilities. The real estate sector is for a large extent responsible for the worldwide energy consumption and emits approximately 36% of all the carbon in Europe (Jensen and Cederkvist, 2021). Therefore, they hold a big responsibility to intervene. Hence, the European union decided that all newly built real estate should become 'nearly zero-energy buildings' (NZEBs) starting from 2021 ("Environmental responsibilities of newbuild developers", 2021). Aside from the European regulations, national and local authorities can also establish certain regulations to make the real estate sector more environmental responsible. On top of that, private developers also hold a personal environmental responsibility to build more sustainable.

Furthermore, apart from financial and environmental responsibilities, developers have social responsibilities. According to Idowu et al. (2013), socially responsible developers are developers trying to reduce the negative effects of the built environment on human health. Socially responsible development is about seeking efficient use of resources (e.g., water, energy) to protect the end-users' health, improve the productivity of workers, and reduce pollution, waste and environmental deterioration (Idowu et al., 2013). Both social and environmental responsibilities share a number of key features. For instance, reducing pollution is beneficial for the public health (e.g., longer life expectancy) and for the environment.

Making the bridge from the responsibilities of developers, this paragraph addresses their motives. These motives are slightly revealed in the previous sections. Developers are namely 'commercially driven'. They regularly seek to maximise the revenues and minimise the costs of development project. They do so by looking at the market potential (i.e., the price the market is willing to pay) and optimizing the development process by managing the costs. What stands central in developers' motive is 'value creation'. For example, they buy a vacant plot with usually a low value, develop a building on it, and sell the developed building for a higher value. Buildings or places with high appraisal are attractive for investors. Moreover, places with great growth potential are also attractive for long-term investments (Adams and Tiesdell, 2012).

In essence, there seems to be some evidence to indicate that private developers have financial, environmental, and social responsibilities. Apart from their accountability for gaining revenue out of their projects, they have environmental responsibilities to develop sustainable buildings, and social responsibilities to minimize the negative impact of buildings on human health. They have a commercial motive and try to create valued buildings and/or places, which in return will be highly appraised. It has been explained what the role, responsibilities and motives are of a private developer. The section that follows moves on to consider the development process which they are trying to influence.

2.1.3. The target system | The development process

Before proceeding to examine the development process, it is important to considered why the development process is identified as the target system of a developer. On the contrary, another way of looking at the target system, could be trough an EE approach. From this point of view, the developer is still the controlling organ, but the target system is the EE instead of the development process. Rajakallio et al. (2018), for example, looked in a similar way to this matter. In their pioneering study about *'Creating urban platforms'*, Rajakallio et al. (2018), criticized the linearity of development process models, and showed that a development process becomes more resilient if the developer takes a more dominant role in the operation phase. Rajakallio et al. (2018) claim that the delivery of the developed buildings are exactly the starting point of a development process since value is predominately created in the operation phase (Rajakallio et al., 2018). One major drawback of this 'platform ecosystem approach' is the lack of willingness of private developers adopting a long-term vision towards co-creating value, if the developer has an opportunity to sell the completed estates for good price (Rajakallio et al., 2018).

Turning now to consider the development process as target system. De Leeuw and Volberda (1996) points out that the target system also can be seen as the controlling organ and vice versa. In other words, they who are governed can also influence they who govern (De Leeuw and Volberda, 1996). Considering the development process, the variety of actors involved could also influence the developer. For instance, a developer is generally in charge of choosing their partners. Deciding which partners to cooperate with could influence the decision-making process of the developer. For example, architect A might be more practically oriented, while architect B favours unique aesthetics over practicality. Hence the involved architect could result in a different outcome of the development process.

As expressed, the developer could influence the development process, while they could also influence the operations phase if they choose to participate in this phase. In addition, the development process could also influence them, which often depends on the involved actors in this process. Having discussed how the interplay between the controlling organ and target system work, the following paragraphs address the definition of the development process.

The development phases

The corresponding questions is considered in this sub section: *4) What is a development process?* As noted by Adams and Tiesdell (2012) (p. 71), the development process can be defined as a process of *'shaping and reshaping the built environment'*. Developers highly depend on collaborating with a variety of actors with sometimes opposing interest (Adams and Tiesdell, 2012). The development process composes multiple series of events and various involved actors. There are various ways of describing the development phases. An obvious method is by illustrating the event sequences, described as a 'phasing system' by De Leeuw (2002) (see figure 2.6).
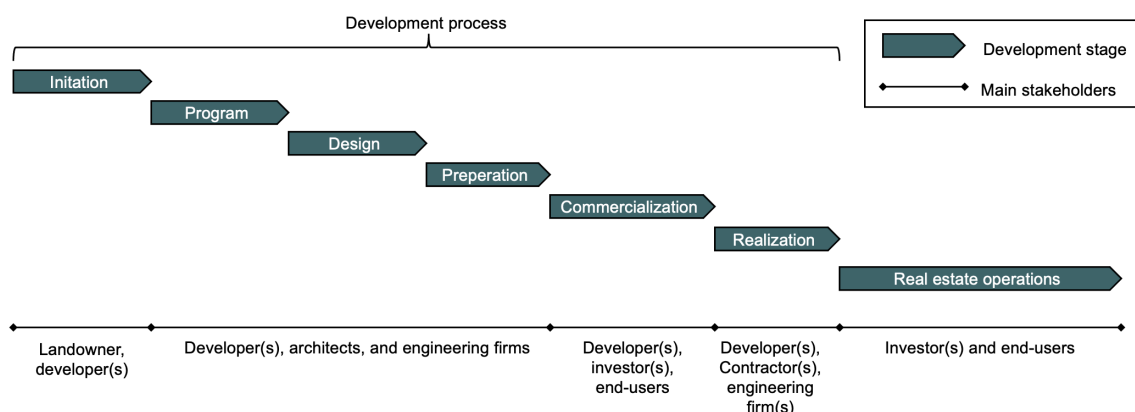
Figure 2.6: The development process (adopted and adjusted from Blokpoel et al., 2005 and Gomes and Pérès, 2021)

Yet, there are also other ways of illustrating the development process. Healey (1991) for instance, reviewed the literature about development processes and concluded that there are four types of models: event sequence, agency models, equilibrium models and structural models. The event sequence model is adopted in this thesis to describe the development process. This model clearly indicates what kind of activities take place in which phase of the process.

As previously stated, the development process starts with a need for space or an unsatisfied demand. This will lead to supplementary floor-space requirements which eventually result in concept development (Adams and Tiesdell, 2012). Concept development involves having an idea, setting up a preliminary design and conducting a preliminary feasibility study. The present stakeholders in this phase are usually the developer(s) and the landowner (as shown in figure 2.6). The phases thereafter involves programming in which answers on the following questions will be determined: *What kind of functions will be developed (e.g., residential, commercial, retail), what kind of typology (e.g., apartments, stores, workplaces), what will be the size, how many will be developed etc.* Subsequently, a design will be made and prepared for the construction phase. Often prior to or in the beginning of the realization, 'commercialization' takes place in which the designed program will be advertised to the market and/or investors. After the completion of the construction phase, the developed real estate will be put into service by the end-users and investors. This is often the end of the development process. Noteworthy, the presented sequence in 2.6 does not always occurs consecutively and could also happen simultaneously. Usually, the developer is involved from the initial stage until the realization stage, depending on the type of developer. For instance, investing developers could linger in the operation phase, while building developers usually leave after the realization (Nozeman and Fokkema, 2008).

To sum up, the development process consist of out several phases starting with an initial idea and usually ending with the completion of the developed estates. Every activity in between the initiation and the completion is part of the development process. Having touched upon the role of the private developer and the development process. It is now essential to examine the environment in which they operate.

2.1.4. The surrounding environment

The sub section covers answering the following question: *5) In what environment do private developers operate?* To begin with, an organization does not operate in isolated conditions. On the contrary, they operate within a complex environment (Rijsenbrij, 2021). From a company's perspective, the environment includes suppliers, competitors and customers (Rijsenbrij, 2021). The surrounding environment interacts with the controlling organ and target system and delivers in- and outputs. For instance, manufacturers receive materials from the environment (i.e., suppliers), transform these materials into products and sell these products to the environment (i.e., customers). The environment influences the target system and determines the market demand, while it receives products/services from the target system. Furthermore, the environment delivers information and could be influenced by the controlling organ (this will be later discussed in subsection 2.1.5).

As noted by Rijsenbrij (2021), the environment consists out of 'distribution channels'. Rijsenbrij (2021) defines the distribution channel as 'the route of a product' from its initial form (e.g., raw material) until the customer. The environment also involves competitors, aside from the distribution channel. M. Porter (1980) identified several factors that influence the competitive advantage of an organization. M. Porter (1980) introduced the 'Five forces model' (see figure 2.7) including 1) suppliers; determining the price an organization must pay for the incoming products 2) customers; determining the market demand 3) potential competitors; competing for acquiring the same customers and potentially entering the market 4) substitutes; companies who deliver different products, but can meet the same customer needs 5) and excising competitors, who already entered the market and are also competing for acquiring the same customers (M. Porter, 1980). The model is introduced, to position a business within their business environment (M. Porter, 1980) and being conscious about this environment. This view is supported by De Leeuw (2002) who writes that the controlling organ should be constantly aware of the surrounding environment. In this way, the received information about the environment could be translated into a suitable approach within the target system, that eventually lead to a competitive advantage.
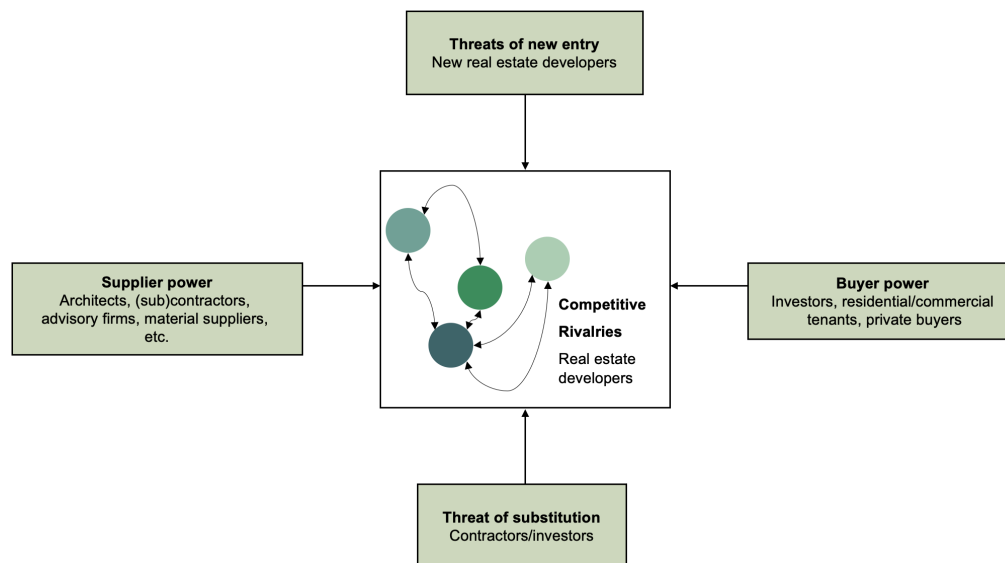
Figure 2.7: Five forces model private developers (adopted and adjusted from M. Porter, 1980)

The environment of development processes include a number of parties. The 'threats of new entry' and the 'competitive rivalries' are other developers. Usually, this competition only takes place in the initial stage of a development process when acquiring plots. As for instance, in form of a tender or the highest bidder. The suppliers of a developer are quite powerful. A developer is commonly highly depended on other parties to carry out designing, engineering, and constructing tasks. (Sub)contractors can be seen as suppliers in terms of services. They could influence the development process concerning the duration, money, or quality of the construction. The same counts for suppliers of building materials. Alternatively, the developer could also employ influence on the contractor. To illustrate, the developer is generally in charge of choosing his partners and contractors. Besides, the 'threat of substitution' of a developer could be a building contractor who starts developing on his own. Eventually, the buyers might be the most important parties since they are basically the 'market demand' from a developers' perspective. The output of the development process are the business premises which will be handed on to the end-users and buyers. Furthermore, investors play a significant role concerning the return of investment of the developer and the course of the operations, after the development (e.g., kind of tenants, maintenance, etc.). Nonetheless, developers could employ influence over them by setting up certain conditions in the purchase agreement. M. E. Porter (1979) his five-force model comprehensively describes the private competitive forces of an organization. Nevertheless, public parties are also part of the environment in which private developers operate. Local authorities could influence the development process by setting up or changing the boundary conditions in their zoning plans or by making use of other public instruments (e.g., planning act).

Overall, the studies presented thus far shows that the surrounding environment involves a variety of actors, who are either involved in the production, distribution, competition and receiving of products or services. Collectively, the studies of De Leeuw and Volberda (1996) and M. Porter (1980) outline a critical point of departure that the developer should be actively aware of what happens in the surrounding environment. Having defined what, the role of a developer is, the development process and the environment they operate in, the upcoming section addresses the influence they could exert.

2.1.5. Influencing

This section contains an answer on the question: *5) What influence can private developers exert and in which stage of the development?* Before rushing into an answer, it is important to review the literature about influencing in general. The first part of this section reviews the literature about controlling and influencing the course of a process. The second part concentrates on the influence of developers.

Controlling and influencing
When considering the terms controlling and influencing, its essential to clarify which things can and which things cannot be influenced. Covey and Covey (2020) created a tool called: *'The circle of influence and control'*, consisting out of three spheres: *'sphere of concern'* (i.e., the inner sphere); *'the sphere of influence'* (i.e., the middle sphere) and *'the sphere of concern'* (i.e., the outer sphere). The outer sphere of concern usually covers the things that are beyond the sphere of influence. From a developers' perspective these things could be a changing market demand, rising construction costs, or municipal rules which cannot be violated. Devoting to much energy on these issues is a waste of energy and time. Furthermore, the *'sphere of influence'* circle includes the things which actually can be changed. To what extent something can be influenced usually depends on the power position of a certain individual or party. Developers are to a certain extent (mutually) depended on other stakeholders. For instance, developers could deviate from a certain municipal condition, if the developer could convince (i.e., influence) the municipality the advantage of deviating from those particular conditions. Finally, the *'sphere of control'* speaks for itself a basically means the people that are managed or personal conducted work. However, fully controlling the course of a development process is difficult.

The study by Mintzberg and Waters (1985) offers probably the most comprehensive explanation about this difficulty. Mintzberg and Waters (1985) claims that people often assume that their indented strategy will result the realized strategy (see figure 2.8) and refers to this phenomenon as *'mesmerized by the myth of control'*.
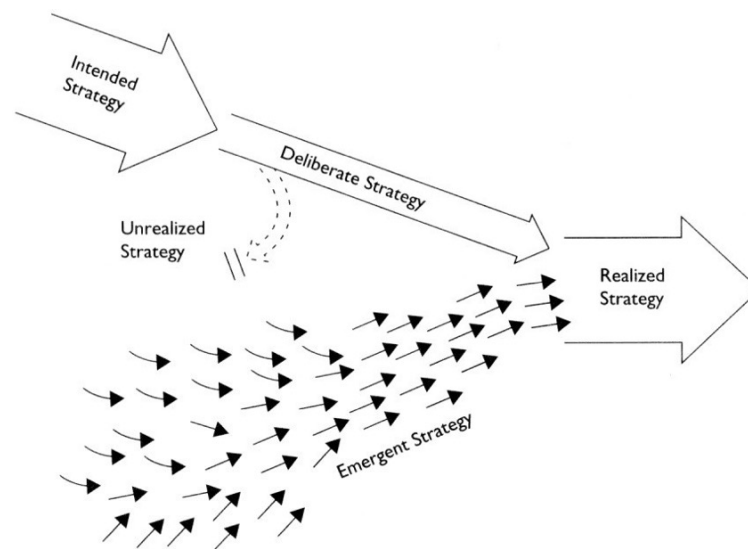
Figure 2.8: Forms of strategy (reprinted from Mintzberg and Waters, 1985)

In reality, the realized strategy is usually a mix between the emergent strategies that occur during the process and the deliberate strategy (Mintzberg and Waters, 1985). Mintzberg and Waters (1985) proposes that strategies should not be 'over-managed' nor forced. Instead, sometimes strategies should just emerge during the process (Mintzberg and Waters, 1985). From a developers point of view, this means that not every aspect in the development process could be controlled. For example, changing municipal regulations due to a new regional coalition could cause a strategy change, which was not foreseen in the first place.

What the studies of Covey and Covey (2020) and Mintzberg and Waters (1985) reveal is that not every aspect in a development process could be controlled. Moreover, despite having control or influence over certain aspect, there is always a possibility that the course of a process is changed, which require new emergent approaches to cope with these changes. This might raise the question: if some aspects cannot be controlled nor influenced, how could the aspects which actually can be influenced done effectively? The next part of will examine this.

Effectively controlling and influencing
To begin with, Koppenjan et al. (2011) pointed out that there are two competing approaches in managing large projects: *'Predict and Control'* and *'Prepare and Commit'*. According to Koppenjan et al. (2011) the difference between the two approaches, is that a *'Predict & Control'* approach tries to avoid uncertainties, by actively controlling the course of the project. Contrarily, the *'Prepare & Commit'* embraces uncertainties and involves being prepared to respond to any expectancies. In general, choosing the 'right' approach depends on type, size, and complexity of a project. A *'Predict & Control'* approach might be more suitable if there are barely any risks, the goals are clear, and the process towards that goal as well. On the other hand, a *'Prepare & Commit'* approach might be better when a project involves several uncertainties, which might be even unknowable upfront. Yet, there does not have to be a hard distinction between the two approaches, because Koppenjan et al. (2011) also maintained that a mix between the two approaches is also often used in projects. This suggest that choosing one of these approaches in developing an ecosystem, depends, amongst other things, on the uncertainties involved.

Regarding the effectiveness of controlling and influencing a process, this study adopted 'the control paradigm' of De Leeuw (2002), which is established to understand the controlling organ, the target system, and the environment. One of the reasons for using the paradigm is to gain understanding in 'effectively' steering the target system, in this case the development process. De Leeuw (2002) described five pre-conditions which must be met in order to 'effectively' steer a target system, which are presented below:

1. **Purpose**: There should be a clear picture of the desired outcome of the development process. From a developers' perspective this often is a resilient building or place which is highly appreciated. However, when considering the topic of this research, their purpose could also be to shape an EE.

2. **Sufficient measures**: In order to reach their purpose, there should be sufficient steering measures in place. Although developers must comply with certain municipal rules, they do have room of manoeuvre in the design of the area and in the end-user selection. Moreover, the steering measures also change during a development. Nozeman and Fokkema (2008) points out that during a development, the project becomes more and more elaborated, which results in a decrease to make changes during the term of the project (see figure 2.9 on the next page). These steering applies to the design and the construction of the real estate. Meaning that, in a beginning of a project there's room to manoeuvre in making design adjustments. Nevertheless, during the construction it could be more severe, in terms of costs, when making design adjustments, especially close to the completion. However, shaping an EE is not only about the built environment by also about the economic community in the environment. Therefore, the tenant selection could also be considered as an important steering measure. Hence, steering measures in shaping an EE goes beyond what's illustrated in figure 2.9. Because shaping an EE surpasses only the built environment and depends on the entrepreneurs, companies, organizations, and individuals within the environment.

3. **Model of the target system**: There should be an appropriate model of the development process to predict the effect on any steering measure.

4. **Sufficient information**: There should be sufficient information about the development process and the surrounding environment. For instance, this could imply that developers should be aware of the market needs. When developers, develop an office building they should possess of sufficient information about the demands in the office market. If there is no need for a new office space, it makes little sense to develop it. In addition, it is foremost significant to possess information about which tenant mix supports the creation and growth of new ventures and which tenants do not contribute to the community or could even hamper this creation and growth.

5. **Information processing**: The developer should have sufficient information processing capacity to be able to think through about alternative measures and consequences of the undertaken steering measure.

Another important remark, about the steering measures of a developer are the pre-conditions and constraints they are facing. As indicated previously and for example, developers are usually depended

on an investor who expects a certain return of investment and probably also expects they the project will be finished in time. Consequently, these constraints could cause cheaper design solutions which are ultimately less desirable for the end-users of the area.
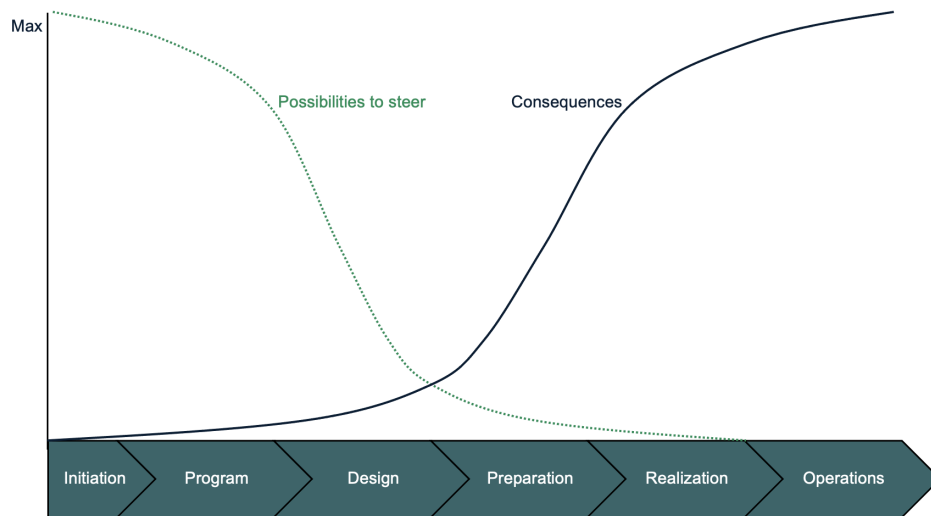
Figure 2.9: Steering possibilities during a development (adopted and adjusted from Nozeman and Fokkema, 2008 p. 80)

Altogether, this section has analysed the variable 'tactical influence of private developers'. De Leeuw (2002) provided five important conditions to steer the course of development process effectively. In general developers have plenty of opportunities to change the course of development project in the initial stage. On the other hand, when the end of the completion is near these opportunities are smaller and the changes more impactful. This means that shaping the built environment of an EE becomes less controllable over time. However, due to the significance of the people in an EE, they could exert influence in shaping an EE, by selecting certain end-users. This do asks for sufficient information and information processing capability, to make a tenants selection that supports venture growth. The next part of the literature review will examine the term EE.

2.2. Entrepreneurial ecosystem

So far, this thesis focused on the tactical influence of a private developer. This section focusses on EEs. The two variables tactical influence of a developer and EEs are closely related to each other. The developer tries to influence the development process and the outcome of it. The development of a new area results in the formation of a new EE where start- and scaleups are established. However, before stating something worthwhile about the formation of a new EE, one should consider the previous studies written about an EE. A review about these previous studies are addressed in this section. Figure 2.10 represents the structure of this section. It begins by defining EE. It will then go on to the rationale behind it. The part thereafter proceeds by elaborating on the outcomes, the involved actors, and finally the enablers and drivers.
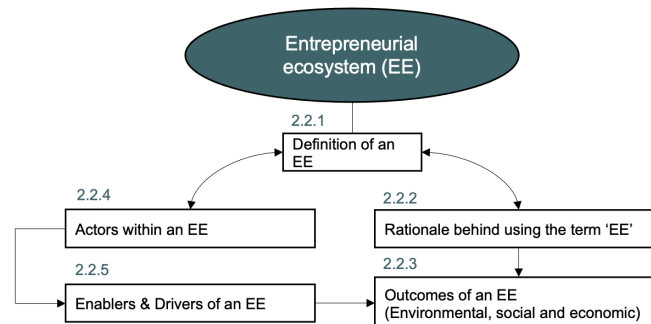
Figure 2.10: Theoretical framework EE (own illustration)

2.2.1. Definition entrepreneurial ecosystem

This subsection addresses the question: *1) What is the definition of an EE?* Other related terms to EE are also highlighted in this section since these terms has served as predecessors that led to EE. The definitions addressed in this section are a) ecosystems b) business ecosystems c) innovation ecosystems d) entrepreneurial ecosystems e) remaining antecedents of entrepreneurial ecosystems. All these terms are defined in a chronological order.

Ecosystem

'Ecosystem' was introduced by Tansley (1935) in his paper about 'The Use and Abuse of Vegetational Concepts and Terms'. Tansley (1935) argues that various researchers have misused the perception towards places where different organisms live. According to him, such places should be perceived as a whole system, including all surrounding physical factors (i.e., environment) and the organisms within it in the broadest sense This way of thinking became popular among several researchers in various domains (e.g., political, medical, environmental, economic, management, etc.). As an example, von Bertalanffy (1968) came up with the concept of systems thinking which is nowadays frequently used in management studies (Forrester, 1994). Generally speaking, systems thinking is about broadly viewing a situation and recognizing the interrelation between various elements in a system (Goodman, 2018). Additionally, systems thinking is also about looking at a specific system within a bigger system (i.e., holistic perception) (CFI, 2022). Nevertheless, what separates the term ecosystem from other terminologies including the word 'system', is the ecological background. Generally, the term ecosystem can be distinguished into two words: 'Eco-' and 'System'. Eco- means 'connected with the environment' (Oxford Learner's Dictionary, 2022) and system is 'A group of interacting, interrelated, or interdependent elements forming a complex whole' (The free dictionary, 2022). Together, authors such as Tansley (1935) and von Bertalanffy (1968) provided important insights into the holistic perception towards systems. In short, an ecosystem relates to an environment with all the interrelated, interacting, and interdependent living and non-living elements in it.

Business ecosystem

The term ecosystem could also be used from an economic perspective. Moore (1993) was the first author who did, by introducing 'Business ecosystems' in his book "The death of competition: Leadership and strategy". Moore (1993) points out that businesses can be compared to organisms in an

ecosystem. Hence, he used ecosystem as metaphor for describing the context in which various organizations operate. Moore (1993) defines a business ecosystem as an 'Economic community' of interacting individuals and organization, that produce services and goods which are eventually sold to customers. The economic community within the ecosystem include producers, suppliers, competitors, and customers (Moore, 1993). According to Moore (1993) everyone within the economic community strive for a common vision and therefore provides a complementary supportive role, in which one or more organization(s) take on the leading role within the community. In general, business ecosystems is all about the of the coevolution of the economic community and their "symbiotic" connection (Moore, 1993). Customers are required to generate income, producers and suppliers are required to produce and supply products, competitors are required to enhance the quality of the services and products, and so on. All actors are usually, if in a non-autonomous system, interdependent and interrelated to one another. The main idea behind business ecosystem is that a leading organization manages its ecosystem to work towards a 'competitive advantage' (Iansiti and Levien, 2004). Being critically, Moore's focal point is mainly on the organizations and individuals within the community or in other words: the living parts. However, an ecosystem is composed of living parts (e.g., plants, bacteria, and animals) and non-living parts (e.g., air, temperature, and minerals) (Helmenstine, 2020). Hence, Moore neglected the role of the non-living parts (e.g., surrounding environment) in describing business ecosystem. In the studies reviewed in this paragraph, 'business ecosystem' is recognised as a metaphor for describing an economic community within a certain context.

Innovation ecosystem
The meaning of business ecosystems has been broadened in recent years. By way of illustration, another frequently used term in literature is an 'innovation ecosystem', whereby innovation takes centre stage. There is a growing body of literature that recognises the importance of innovation in generating economic growth. Because of that, innovation ecosystems is used here to refer to a system emphasizing on creating value by means of innovation (Autio and Thomas, 2014). According to Jackson (2011), innovation is the source of wealth creation in an economy, and therefore fundamental. For example, in Torres-Preciado et al. (2014) their paper about the relationship between *'Technological innovation and regional economic growth'*, they concluded that stronger innovation activities leads to faster economic growth. This positioning is adopted by various authors (e.g., Curvelo Magdaniel, 2019) and often referred to as "creative destruction". Creative destruction, initiated by Joseph Schumpeter, describes that the economy is consistently evolving and that new products frequently replace old products (Liberto et al., 2022). In contradiction to business ecosystem, the focal point of an innovation ecosystems is not about a leading organization working towards a "competitive advantage". Nonetheless, the focal point of an innovation ecosystem is about the co-evolution of an interconnected network of firms who develop new services and products (Moore, 1993). Stam (2015) used an innovation ecosystem approach, for describing the prevention of 'system failure'. The shortage or absence of certain elements in an ecosystem (e.g., knowledge, capital, talent, etc.) or the lacking interaction between those elements, results in a dysfunctional ecosystem (Stam, 2015). The evidence reviewed here seems to suggest that innovation ecosystems describes, just like a business ecosystem, an economic community within a certain context. Yet, the focus of an innovation ecosystem is not to work towards a competitive advantage but rather to create value via innovation.

Entrepreneurial ecosystems
The role of the entrepreneur within an innovation ecosystem, has been critiqued by Stam (2015), who argues that it is a 'black box'. Therefore, Stam (2015) opts for making use of an 'entrepreneurial ecosystem (EE) approach', were the entrepreneurs stand central. Due to the emphasize on innovation, authors who wrote about EE tented to neglect to address how established companies fit within an ecosystem. Not surprisingly, since start and scale-ups face utmost uncertainty according to Ries (2011) and are therefore usually more dependent on the context they operate in (Stam, 2014). EE originally stems from the term entrepreneurial system (ES). Spilling (1996) was the first author that introduced ESs. Spilling (1996) claims that, when looking at economic development, several researchers are fixated on the individual firms who develop new businesses, while economic development is strongly linked to a complex process with various environmental factors and close interactions between ventures. What is not yet clear, is the difference between the ESs and EEs. So far, most authors give preference to using ecosystems (Xie et al., 2021). The studies presented thus far provide evidence that innovation

ecosystems focuses on value creation (Feld, 2020; Stam, 2015) while EE emphasises on the essence of the full economic context in fostering entrepreneurship (Adner, 2017). In other words, the creation of new ventures.

Other antecedents
The terms business/innovation/entrepreneurial ecosystems embodies a multitude of other concepts which in essence refer to the context (i.e., the ecosystems) that facilitate venture creation and development, resulting in regional economic growth. Instead of using the term ecosystem, other authors used different terms that can be regarded as antecedents. Marshall (1919) was one of the pioneers, with the introduction of 'Industrial districts'. The main findings of his paper is that the concentration of industrial ventures at specific location contributes to the economies of scale. In addition, the term 'Clusters' introduced by M. E. Porter (1998) in his famous book 'Clusters and the new economics of competition' also raised interest among numerous researchers. The emphasize in his book is also about the concentration of ventures at a place and their interconnection. M. E. Porter (1998) maintains that such a place benefits from knowledge spillovers (i.e., the utilization of knowledge from other firms). Additionally, Acs et al. (2017) claims that a bundle of comparable concepts, including regional cluster, industrial districts, innovative milieus, entrepreneurial infrastructure are all part of literature about regional development and antecedent of business ecosystem research (Cavallo et al., 2019). The practical implications of the above-mentioned terms are often expressed in 'sub-terms', such as innovation districts, business incubators, and urban living labs. Together these studies and terminology provide important insights about aligning the surrounding context in which companies operate to foster innovation and reach economic growth.

Three important terms emerge from the studies discussed in this section: business ecosystems, innovation ecosystems and entrepreneurial ecosystems. Despite its common usage, ecosystem is used in different disciplines (e.g., urban planning, business, entrepreneurship, and management literature) to mean different things. While all ecosystem-related terminologies refers to a complex system with interdependent and interacting actors, an EE specifically supports and stimulates the creation and growth of new ventures.

2.2.2. Rationale behind using entrepreneurial ecosystem
Equipped with a definition of EEs, this section discusses why scholars use the term. And therefore, aims to answer the question: *2) What is the rationale behind using the term EE?* To begin with, it has been widely accepted that entrepreneurship does not occur in isolation and often depends on the surrounding context (Nair et al., 2022, Spigel and Harrison, 2018, Ojaghi et al., 2019). Therefore, a number of studies have investigated these 'surrounding contexts' by using different terms. In addition, over the last few decades, there has been a shift from individual value propositions towards value propositions which are more complex and need inputs from several businesses (Burda et al., 2020). The term 'value proposition' here relate to the value a business assures to distribute to its customers when the customers decide to purchase the offered product/service (Twin et al., 2022). Jacobides et al. (2018) argued that in some cases market or hierarchical relations cannot fully clarify collaboration between businesses and their interconnection, due to the complexity of these value propositions. Therefore, a need arisen to explain the ins and outs of these collaborations (Adner, 2017). According to Burda et al. (2020), that is where the term EE came in. Additionally, Daniel et al. (2018) adds that entrepreneurship also depends on resources, aside from the human interactions. Daniel et al. (2018) points out that EE evolved to represent the synergistic interactions between humans and elements that leads to the cultivation of new technologies and the creation of new ventures. EE approaches are also used to analyse the level of entrepreneurship in a particular area. To demonstrate one's point, Stam (2014) made use of an EE approach to evaluate the factors which positively affects the entrepreneurial outputs and outcomes (e.g., employment).

In short, the presented studies provide evidence that the rationale behind EE emerged to comprehend entrepreneurship within a context. In particular, the interactions between parties and the presence of resources that leads to the cultivation of entrepreneurship. Getting a hold on these systems, bring about certain actions to foster these systems in particular areas, which in return results in an improvement of the entrepreneurial output. The following sub section, addresses the output of an EE.

2.2.3. Outcomes of an entrepreneurial ecosystem

This subsection aims to answer the following question: *3) What are the outcomes of an EE?* The previous subsection (2.2.2) already addressed cultivation of entrepreneurship as an outcome of an EE. Nevertheless, the outcome of an EE depends first on how these outcomes are exactly defined. According to the Cambridge dictionary cultivation means *'The act of trying to develop and improve something'* (" Meaning of cultivation in English", 2022). Yet, the term 'something' could be possibly anything. Therefore, this subsection addresses the more specified outcomes of an EE highlighted by a variety of authors.

Williams, 2020 describes an EE as a 'fertile environment' that drives economic growth where thriving start- and scaleups are established. Hence, according to Williams (2020), the outcome of an EE are start- and scaleups who thrive and economic growth. These outcomes are similar to those reported by Adner (2017) and Stam (2015), who both argue that EE results in entrepreneurship. Nonetheless, Stam and Spigel (2016) make the distinction between output and outcome. He describes entrepreneurship (i.e., thriving start- and scaleups) as output and economic growth as outcome. Being critical, only the terms 'entrepreneurship' and 'economic growth' are not necessarily measurable. Some authors attempted to make these terms measurable by classifying thriving ventures. As an example, Xie et al. (2021) examined the qualitative indicators such as the consistency of the firms within an ecosystem. Also, other studies (e.g., Acs et al., 2014) utilised a quantitative analysis to define "strong" (i.e., successful) ecosystems, using quantitative measurements variables such as 'New Tech' (i.e., percentage of businesses that use new technology in the last five of years). Moreover, authors such as Stam (2014) and Nicotra et al. (2018) made use of the variables: level of employment, income, and productive entrepreneurship. According to Baumol (1993), productive entrepreneurship can be defined as 'Any productive entrepreneurship that contributes directly or indirectly to the net output of the economy or to the capacity to produce additional output'.

Aside from the economic outcome, authors also addressed the environmental and social outcomes of an EE. Simply put, EE fosters entrepreneurship and Parrish (2010) points out that entrepreneurship is considerably important to human wealth and future generations since it contributes to 'sustainable developments'. Still, EE literature tended to neglect the promotion of sustainable entrepreneurship according to the literature review conducted by Volkmann et al. (2021). In addition, data from several sources have also identified the social outcomes of an EE, often referred to as 'social entrepreneurship'. Roundy (2017) states that an EE leads to both economic growth and the revitalization of communities.

Collectively, these studies refer to an equivalent outcome of an EE: 'Entrepreneurship and economic growth', whereby entrepreneurship often goes hand in hand with sustainable development and ecosystems revitalizes communities. Having discussed what, the outcomes of an EE are, the following section addresses the involved actors in an EE.

2.2.4. Actors within an entrepreneurial ecosystem

The previous sections addressed the definition, the rationale, and the outcomes of an EE. This section highlights the involved actors within an EE and therefore answering the question: *4) What actors are part of an EE?* Before moving on to describe these actors, the context is discussed. The range and type of actors namely depend on the considered context.

The context

A proper consideration about the context of EEs is significant, due to the aim of this thesis (i.e., tactical influence of private developers). Oh et al. (2016) reviewed the literature about ecosystems and found that ecosystems are brought up in a variety of contexts. These contexts could also be distinguished in different scales (see figure 2.11). The smallest scale of an EE is district based, focusing on the ecosystem within the district boundaries. In Oh et al. (2016) their paper this context is defined as either 'university-based ecosystem', an 'incubator' or a 'hi-tech SMEs-centred ecosystem'. Spigel (2020) even goes a step further, arguing that startup communities are a system within an EE. The largest scale, on the other hand, is the open or digital ecosystem. The latter refers to online platforms, such

as Google, which is accessible almost everywhere in the world (Oh et al., 2016). These ecosystems can be classified as intercontinental.
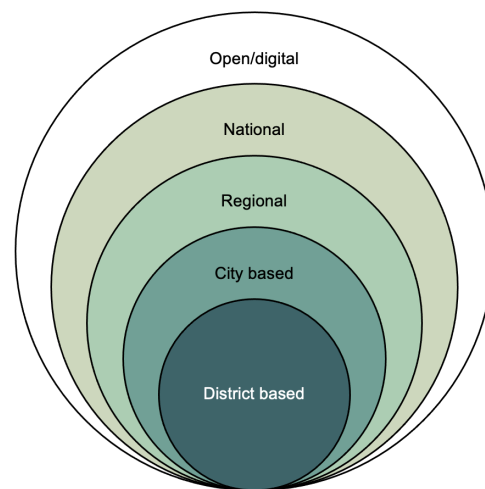
Figure 2.11: Scales ecosystems (own illustration)

Given the different scales of ecosystems, one could say that every ecosystem require a focus within the boundaries of that specific ecosystem. Everything that happens beyond the district are often external factors, which usually cannot be influenced by developers. Nevertheless, Banc and Messeghem (2020) conducted a qualitative study about micro-level (i.e., district-based) ecosystems and points out that the macro (i.e., national), meso (i.e., regional) and micro-level ecosystem are all interrelated with one another. Additionally, district-based does not mean that all activities occur within the district boundaries. An often-made misconception is that micro, meso, and macro-level are location-bound. Yet, microeconomics could also have an international component, due to the possible link between foreign markets via trade or investments (Rodrigo, 2020). Moreover, regions and cities also seen the advantages of an ecosystem perspective via triple helix models, or 'public-private-people partnerships' (Lappalainen et al., 2015), in which several sub-ecosystems interact with each other (e.g., the university campus with business parks). Returning briefly to the considered case of this study the Kabeldistrict, this means that a constricted vision solely within the boundaries of the development area should be avoided. Meaning, that the city Delft in which the development takes place, should also be considered.

The studies reviewed here point out that there is a connection between ecosystems within ecosystems and that they could vary from a district-based to a continental ecosystem. The next section deals with the involved actors in these systems.

The actors

An entrepreneurial ecosystem is composed out of a variety of actors. The kind of actors depend on the considered context. An industry-based ecosystem say, compromises individual organizations who are heterogeneous and have often distinct goals while they still contribute to the overall ecosystem (Theodoraki and Messeghem, 2017). Engel and Teece (2012) listed the varying actors within an industry-based business incubator and pointed out that such an ecosystem includes organizations and people varying in consultants, managers, elected officials, community members, public institutions, business angels, professionals, venture capitalist, universities and last but not least entrepreneurs (Engel and Teece, 2012). Furthermore, a qualitative and quantitative analysis by Purbasari et al. (2020) described the involved actors and their roles of a city-based ecosystem. Purbasari et al. (2020) categorized the actors in governmental, professionals, banks, social communities, 'cooperative management actors' and markets. Purbasari et al. (2020) found that the government, market participants and the social community are the most dominant actors. Alternatively, Croxford et al. (2020) made the distinction between the following sectors: knowledge, public services, capital, community, and businesses. While Purbasari et al. (2020) and Croxford et al. (2020) named the actors differently they are still equivalent to

each other (e.g., banks and capital sector). Nevertheless, Croxford et al. (2020) added the knowledge sector, such as universities and knowledge institutes to the list.

Another significant aspect of the actors in an EE is their role. Iansiti and Levien (2004), identified these roles and made the distinction between enablers, niche players, dominators, and hub-landlords. The enablers in an ecosystem, enable ventures to grow. This, by way of explanation, could be 'financial enablers' (e.g., investors) or 'personal enablers' (e.g., mentors) (Nicotra et al., 2018). The niche players could be identified as the businesses self. Furthermore, the dominator is known by conducting 'mergers and acquisitions' (Dedehayir et al., 2018). Take for example a grid operator company who acquirers a solar panel producer. Finally, the hub-landlords act as a facilitator. Both the dominator and hub-landlords are often described as the 'feeders' of the ecosystem since they are mostly concerned with offering resources to the ecosystem. A broader perspective has been adopted by Stam (2015) who argues that universities and municipalities could also act as feeders by providing for instance knowledge or subsidies.

Regarding the actors and roles within an EE, authors tried to explain what mix, in terms of type of companies, organizations and individuals, contribute to an EE. For example, Iansiti and Levien (2004) claimed that the dominator could have a negative impact on the EE when gaining to much control. In addition, Rego (2016) also pointed out that complementary businesses can benefit from 'network effects'. For Roja and Nastase (2014), network effects means that when people enter a community, it could enhance the whole EE value for existing members.

In sum, these studies indicate that the actors within an ecosystem vary upon the context and often include the knowledge sector, public services, capital providers, communities, and businesses. In general, an ecosystem composes three kinds of players, the enablers (helping the business), the players (businesses) and the feeders (offering resources for the businesses). Whereas a too big of a share of established companies could withhold an ecosystem, complementary companies contribute to the ecosystem. Having defined which actors are involved in an ecosystem, the next part moves on to examine the enablers and drivers.

2.2.5. Enablers and drivers of an entrepreneurial ecosystem

After decomposing the term EE by elaborating on the meaning, rationale, outcomes and the involved actors, the question remains how an EE comes into being. In other words: *5) What are the enablers and drivers (i.e., inputs) of an EE?'* The existing literature on EE is extensive and focuses particularly on these inputs (e.g., Asefi et al., 2020; Giannopoulos and Munro, 2019; Pancholi et al., 2018; Cross, 2015). Various studies have investigated flourishing EEs by examining the characteristics that sparked the success (Asefi et al., 2020; Morisson, 2015). This subsection reviews the literature on these factors. It begins by examining the facilitating function of the built environment in stimulating and supporting entrepreneurship. The second part covers the facilitating function of the ecosystem.

The facilitating function of the built environment

Since the development process consists of shaping the built environment, it is necessarily to first examine how the built environment could facilitate entrepreneurship. Literature about this facilitating function can often be found in corporate real estate (CRE) management journals. CRE refers to the use of real estate to conduct the operational activities of a company or organization. Researchers, such as Appel-Meulenbroek and Haynes (2014) and Heywood and Arkesteijn (2017), use the word 'alignment' for describing the facilitating function of the real estate for business operations. Previous studies mostly define alignment in CRE management as matching the built environment to the needs of the users. A commonly used model in CRE management is 'Micheal Porter's value chain' (see figure 2.12).
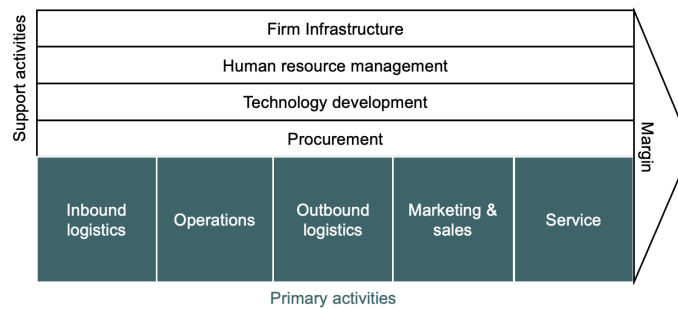
Figure 2.12: Micheal porter's value chain (adopted and adjusted from M. E. Porter, 1985)

A value chain is defined by Dowding et al. (2022) as *'A set of activities that an organization carries out to create value for its customers'*. The model tries to explain that a company creates value and that the profit margin is determined by deducting the cost made that created that value (M. E. Porter, 1985). In particular, all the more value is created, all the more profit will be generated. Eventually this results into a competitive advantage since more value is provided to the customers of the company (Dowding et al., 2022). The model can be used to analyse a company by breaking down its activities. This generates a more complete picture of, among other things, the cost drivers so changes can be appropriately made to increase the company's margin (Dowding et al., 2022). The value chain could be broken down into two kinds of activities: the primary activities and the activities that support the primary activities (see figure 2.12).

Value chain activity	Significance built environment
Primary activities	
Inbound logisitics	Accessibility and relationship to supplier locations; efficient and accessible workspace; functional workspace
Outbound logistics	Access to transportation to reach distribution system;
Marketing/sales	Real estate serves promotion and advertising purposes; Direct selling environment.
Service	Customer convenience and access to service facilities and service team
Support activities	
Infrastructure	Place location and space attributes largely influence the effective ness of administrative support functions and operations
Human resource management	Strategic decisions concerning place have profound implications for work experiences
Technology	Decisions concerning place and space configurations conducive to innovative work are integral to value additivity sought via technology development
Procurement	Ambiance of place can influence implementation of procurement activities

Table 2.1: Real estate significance for Porter's value chain (adopted from Roulac, 1999 p. 391)

While plenty authors mean by the 'firm infrastructure' activities such as legal, administrative, and accounting, real estate is also part of it. For instance, Vande Putte (2021) claims that CRE management is part of the firm infrastructure and a resource for creating value. This view is supported by Roulac (1999) who writes that a place and the attributes at that place (i.e., firm infrastructure) influence the effectiveness of the business operations. In addition, according to Roulac (1999), the built environment could also have an impact on the primary activities in the value chain of Porter. For instance, a supplier location in close proximity which is accessible could contribute to inbound Logistics of a company (Roulac, 1999). Aside from the inbound logistics, the built environment could actually contribute to all other activities within the value chain of Porter as well (see table 2.1). The expenditure of a company is partly on rent. The place, facilities, and service within this 'rent-package' should contribute to the value

chain of that company (Roulac, 1999). Otherwise, the offered real estate is rather seen as a burden than facilitating. Therefore, the value created by the tenant should surpass the amount of money paid on rent. Moreover, as noted by Kenley et al. (2007), CRE is significant as a resource on two levels. Firstly, in terms of the 'physical environment' (e.g., location or workplace) where the business operations take place. Secondly, in terms of an 'intangible resource' through supporting the employees and the 'organisational climate'.

Another way of shedding light on the function of the built environment to support the business operations, is by making use of the 'two-factor theory' by Herzberg. Herzberg et al. (1959) states that there are certain factors that causes job satisfaction (motivators) and other factors that causes job dissatisfaction (hygiene factors). The hygiene factors have to be present to prevent job dissatisfaction but cannot surely increase job satisfaction. On the other hand, motivators do not necessarily cause job dissatisfaction, but helps increasing job satisfaction. For instance, applying this theory on CRE, Wi-Fi is a hygiene factor and have to be present anyway. To the contrary, a café-lounge might be a motivator and could lead to higher satisfaction rates.

The studies of Roulac (1999) and Herzberg et al. (1959), seems to suggest a pertinent function for the built environment in supporting and stimulating entrepreneurship. While Porter's value chain teaches us how value is created for customers, Herzberg focuses on job satisfaction in general. Nevertheless, both theories are usually single-company oriented and do not cover an ecosystem perspective, covering an economic community of start- and scaleups at one place. Therefore, the upcoming section touches aligning the built environment for an EE.

The facilitating function of the ecosystem
Several of case study analyses have been conducted on particular EEs to discover their entrepreneurial successes (Padgett, 2017). One of the prime examples is Silicon Valley, which evolved into one of the most prosperous hi-tech tech capitals in the United states. Yet, there are several other places that became a successful EE (e.g., 22@Barcelona, Boston Seaport). The latter are places where the local authorities endeavoured to create a place that excels economic growth. Numerous authors have addressed the key ingredients of these successful ecosystems. For example, Stam (2015) refers to these ingredients as system elements. Where ensuring that all elements are present and interrelated stands at the basis. A shortage of or dissociation between specific elements might lead to a dysfunctional ecosystem (Stam, 2015). The literature about these ingredients is extensive and comes across as an accumulation of many factors.

Physical infrastructure	Finance	Markets	Human captial	Culture	Support	Policy
- Connectivity - Modularity - Interacted (Rajakallio et al., 2018) - Clusters (Porter, 1998) - Amenitites - Sense of safety - Sense of place - Place identity (Esmaeilpoorarabi et al. 2018)	- Angel investors (Zhao and Zou, 2021) - Subsidies - Venture capitalists - Access to debt - Financial supporters - Grants (Isenberg, 2011)	- Early adopters - Distribution channels (Isenberg, 2011) - Market demand - Networks (Stam, 2014)	- General degrees - Serial entrepreneurs - Skilled workers (Isenberg, 2011) - Talent (Stam, 2014)	- Creativity - Cultural support - Community (Feld, 2020) - Social support - Experimental (Isenberg, 2011) - Knowledge spillovers (Porter, 1998)	- Advisory services - Legal services - Accounting services (Isenberg, 2011) - Intermediaries (Stam, 2014) - Mentors (World economic forum, 2013)	- Incentives (tax benefits) - Research institutions - Financial support (Isenberg, 2011) - Leadership (Stam, 2014)

Table 2.2: Accumulation of ingredients for a successful EE

Table 2.2 shows an overview of these characteristics categorized in seven domains. Six of those domains are adopted from Isenberg (2011b) paper about 'Principles for cultivating entrepreneurship'. The domain 'physical infrastructure' has been separated from the 'support' domain in order to make the distinction between hard and soft ingredients.

Despite the accumulation of the ingredients in table 2.2, the academic literature on EEs has revealed four broad, common, and important theories that interfaces with several of these ingredients. To begin with, M. E. Porter (1998) addressed the significance of 'agglomeration economics' often referred to as spatial clustering. Which means that multiple ventures are brought together in close proximity. According to Giuliano et al. (2019), this allows benefits for companies such as sharing suppliers and labour pooling. The second theory is 'network effects', introduced by Saxenian (1990). As noted by Banton et al. (2022), a network effect is *'a phenomenon whereby increased numbers of people or participants improve the value of a good or service'*. This implies that an accumulation of networks improves the overall value that is being created. This view is supported by Zupic et al. (2018) who writes that a lacking network could form a social barrier of an ecosystem. Thirdly, Saxenian (1990) also enlightened the benefits from 'horizontal networks', which is basically the networks between companies. Lastly, the cutting-edge theory about the 'creative class' introduced by Florida (2001) also played a major role in EE literature. Florida (2001) maintains that innovating and creative entrepreneurs are indispensable for the growth and development of the economy. Altogether, almost all of these theories implies that the key 'characteristics' of an EE are a collaborative, trustworthy and creative community culture (Poonjan and Tanner, 2020; Asefi et al., 2020; Feld, 2020). The following part takes a deeper grasp on the exact ingredients.

Hard ingredients & outcomes

Whereas some authors make the distinction between tangible and intangible resources (e.g., Lehtinen et al., 2019), soft- and hard-infrastructure (e.g., Davari and Najmabadi, 2018) others (e.g., Ciaramella and Dall'Orso, 2021) use the terms hard ingredients (i.e., physical such as buildings) and soft ingredients (i.e., nonphysical such as talent). In this thesis, the term 'ingredient' is adopted to describe the elements of an EE. Figure 2.13 underneath shows what hard- and soft ingredients contribute to an EE based on academic literature. The figure is partly adopted from 2.2 and refined into ten main ingredients.
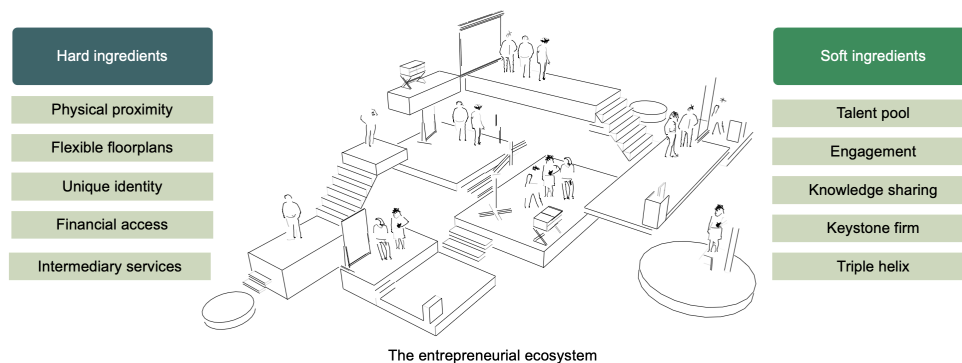
Figure 2.13: The hard- and soft ingredients of an EE (own illustration)

Before proceeding to examine what these ingredients exactly mean, it is important to mention where these ingredients originate from. A large part of the studies that investigated the physical characteristics that contribute to a flourishing EE can be found in land use policy or regional development Journals. To give an instance, Esmaeilpoorarabi et al. (2018a) interviewed 43 experts to discover the role of place quality on the effectiveness of an innovation district. Additionally, Pancholi et al. (2018) conducted an empirical investigation to discover the key attributes in designing a successful knowledge and innovation space. Looking at the two studies, selection bias is a potential concern because both studies focus especially on 'place-making'. According to Moreira (2021), place-making is about developing places to enhance the relationship between places and people. What usually stand central in place-making is creating a 'sense of place' (i.e., place identity) and a community belonging to a place. Creating a

'place with identity' does not necessarily mean that it hammers economic growth nor entrepreneurship. In fact, Ferreira (2007) suggest that place identity even contributes to economic growth. All the studies about place-making reviewed so far, however, suffer from the fact that the economic aspects, such as attracting talent and investments, so businesses can excel are overshadowed by the community aspects. The following paragraphs will elaborate the meaning behind the shown ingredients in figure 2.13:

- **Physical proximity**
  An EE with a 'porous' built environment could contribute to more interactions among companies. Several authors point out that these interactions enhance the exchange and flow of knowledge and ideas and eventually leads to stronger networks (Pancholi et al., 2018; Stam and Spigel, 2016; Audretsch et al., 2018; Ciaramella and Dall'Orso, 2021). Examples of a porous built environment are visible business premises, connectivity within the site, shared (lunch) facilities, and shared workspaces. Clare (2013) conducted a qualitative study about the role of place for creative industries and discovered that bringing workers together in close proximity (i.e., clustering), is highly important.

- **Flexible floorplans**
  Flexible floorplans within a building eases the opportunity for companies to scale up or scale down (Rajakallio et al., 2018). This let businesses grow organically, which is according to Isenberg (2011a), an important focal point in building a successful EE. A flexible floorplan can be delivered by, designing the buildings with adaptable floorplans or scale-able/reusable modular units.

- **Unique identity**
  The aesthetics of the built environment in an EE can supply amenable places (Zhao and Zou, 2021). Unique environments can be created by, for instance, heritage revitalization, preserving the historic character or making use of creative/innovative architecture. Pancholi et al. (2018) suggest that these mentioned interventions could give a place an 'identity boost'. As noted by Ciaramella and Dall'Orso (2021) a place with a 'great' identity attracts businesses and talent.

- **Financial access**
  Many recent studies (e.g., Xie et al., 2021, Poonjan and Tanner, 2020, Zhao and Zou, 2021) have shown that a fundamental key ingredient for a successful EE is financial access. To demonstrate that point, Al-Abri et al. (2018) stated that one of the main challenges is a shortage of financial access. Especially startups are in need for financial support to help them to commercialize their products and services. Accessible financing and funding options (e.g., venture capitalists/subsidy providers/banks) could facilitate the financial needs of entrepreneurs. Finance could be accessed online, due to digital age we are living in. However, access to finance could also be expressed in having financial providers in vicinity. For example, a relatively recent study of Xu and Dobson (2019), found that the main obstacle for building an EE in a peripheral place, is the lack of available financial providers in these areas. Based on the result of this research, it could be suggested that having financial providers in vicinity nurtures the functioning of an EE.

- **Intermediary services**
  Supporting intermediary services, such as accounting, legal, consulting, adds to the growth and continuity of businesses, and could therefore be interpreted as substitutes (Feld, 2020). For example, Zhang and Li (2010) claimed that these services provide both a small entry barrier for entrepreneurs to start and diminishes the time in which a product could be brought to the market. In addition, Xu and Dobson (2019) also pointed the advantages out of having companies who offer professional services also close by the businesses.

Soft ingredients & outcomes
So far, this thesis has focused on the hard ingredients. The following section will discuss the soft ingredients. Numerous studies examined the soft attributes that contribute to a successful EE. A large number of those studies can be found in business and entrepreneurship journals. The list on the next page sums up the main findings of the soft ingredients that helps fostering the functioning of an ecosystem.

- **Attracting a talent pool**
It is a widely held view that that talent is one of the most important factors for a successful ecosystem. For example, Lee et al. (2004) claims that the presence of a skilled and diverse group of employees is the most effective element in an ecosystem. Mahankali (2022) argues that to reach a competitive advantage compared to other regions, talent should be attracted from both within the geographical boundaries and outside. Nevertheless, the question remains: What attracts and retains talent? and why would talented people establish their business in a particular area and not elsewhere? The sociologist Richard Florida, famous by his book 'The rise of the creative class', came up with an argument on that question which is still supported by several authors today (e.g., Markusen, 2006, Badgett et al., 2019). Florida, 2001 states that places that possess an open-minded and inclusive community who have 'diversity of thought' attract talented people. These characteristics provide low barriers for people enter in that area (Florida, 2001). In a quantitative analysis of the correlation between inclusion and economic development on a macro-level, Badgett et al. (2019) found that economic development and inclusion are reciprocally reinforcing. In addition, individuals and business could also have economic motives (e.g., low rent price), 'logistic-wise' motives (e.g., closely to customers/suppliers), status-oriented motive (e.g., a place with prestige) or personal motives (e.g., family/friends in proximity) to establish at a particular place.

- **Early and continuous engagement**
Secondly, there is a large number of published studies (e.g., Feld, 2020, Isenberg, 2011a, Ciaramella and Dall'Orso, 2021) that points out that engagement is an essential ingredient of a well-functioning EE. For instance, Feld (2020) maintains that policymakers often fail in building a successful EE due to the absence of engagement with entrepreneurs. Similarly, Zupic et al. (2018) asserts that lacking public engagement causes a barrier in shaping an EE. Engaging (potential) businesses could contribute to identifying their aspirations, needs, deep motivations and behaviour. This information has an added value during and after the development. A good way in dealing with engagement is by experimentation, e.g., offering temporary business premises to observe start- and scaleups their behaviour. In addition, Langenhuizen and Dusée (2022) also emphasize on the importance of engaging the private parties, public authorities, and the university aside during the development process aside from the start- and scaleups.

- **Knowledge sharing**
Several lines of evidence suggest that knowledge sharing is critical to form a strong business network in an ecosystem (e.g., Stam, 2015). A great deal of previous research into knowledge sharing has focused on the benefits of knowledge spillover, first introduced by M. E. Porter (1998). In particular, non-codified knowledge that take place during informal interactions. Sharing tacit knowledge could contribute to shaping a community or a culture at a certain place. To create a strong community of businesses, interactions could be facilitated by organizing meetups, (professional) workshops, pitch days, hackathons, or informal after-work drinks.

- **Keystone firm(s)**
Important stakeholders within an EE can be defined as the 'keystone firms'. Iansiti and Levien (2004) defines the keystone firm as the 'vital species' within the ecosystem, which takes on the leading/mentoring role. As McPhee (2010) states: *'A keystone company is the member of a business ecosystem that owns, operates, and evolves the platform.'* In other words, the investor and operator of a building. Clarysse et al. (2014) points out that the keystone firm facilitates tools, services or technologies that enhances the performance of other businesses within the ecosystem. The keystone firms in an ecosystem should be accessible and committed according to Feld (2020).

- **Triple helix**
According to Zhao and Zou (2021), a strong EE has tight links between the local authority, research institutes and universities in the area. In literature this relationship between academia, policy and the market is often referred to as the 'triple helix'. Pan and Guo (2021) even points out that a collaborative relationship between these fields are indispensable for building a successful EE. Whereas universities can play an important role in knowledge sharing and providing graduate

students to new ventures (World Economic Forum, 2013), local authorities could provide support for start-ups (e.g., public subsidies).

In short, this section has attempted to provide a summary of the literature relating to both hard and soft ingredients for an EE. It went on to suggest that a collaborate community stand central. This community could be supported by offering a porous built environment and flexible floorplans, creating a unique identity, and incorporating both financial providers and intermediaries in the area. In addition, the presented studies also suggested the essence of attracting talent, engaging public and private parties, sharing knowledge, the presence of a keystone firm, and bringing the municipality and the university together with the entrepreneurs.

Altogether, the sections 2.1 and 2.2 have provided the foundation of this research. As was pointed out in the introduction of this chapter, it addressed the questions presented in figure 2.1. Armed with a solid grasp on what the two variables *tactically influence of private developers* and *entrepreneurial ecosystem* entail, it is now time to bring the two together in the upcoming section.

2.3. The link between existing literature and the research aim

This section covers a description and substantiation about how the addressed studies in the previous sections are linked with the research questions of this study. It has been structured in the following way. The first part brings the involved actors in the development phase and the operations phase together, by looking in holistic way how different actors could influence the shaping of an EE. The second part looks more specifically at the research gap by addressing the existing theory about the influence a developer could exert to facilitate entrepreneurship. The third part examines their role and the responsibilities. The part thereafter explores their interactions between the municipality and university. And the final part discusses their barriers and constraints.

2.3.1. Shaping an entrepreneurial ecosystem
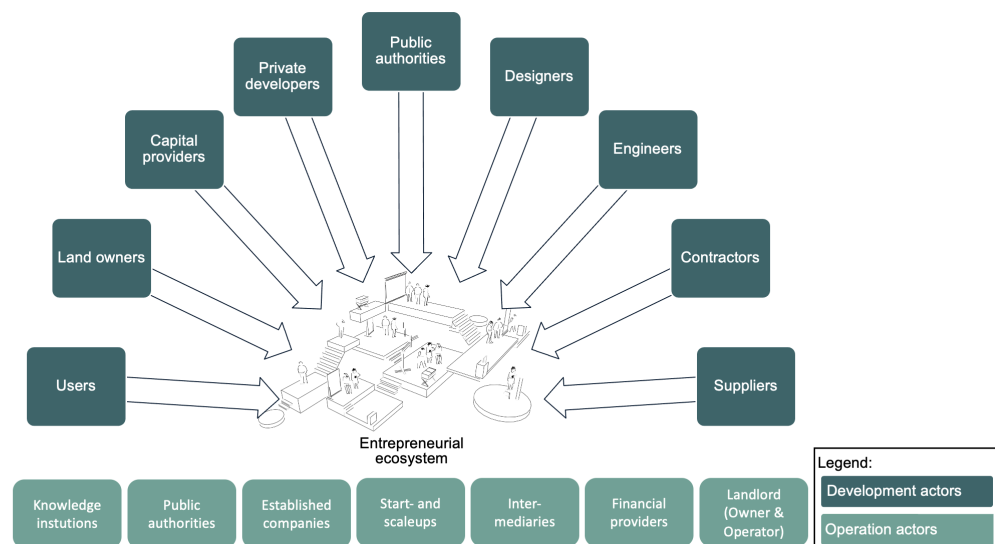
Figure 2.14: Actors in the development process shaping an EE (own illustration)

Figure 2.14 shows an overview of the actors in a development process according to WBCSD (2007) and the actors involved in the operations. Whereas the development actors give shape to the EE, the operations actors nurture the ecosystem. As indicated previously in the sections 2.1.2 and 2.2.4 a variety of actors are involved in shaping an EE. Altogether they could provide the needs of the ecosystem

in order to foster its functioning. As discussed in section 2.2.5, these needs (i.e., ingredients) vary in offering flexible floorplans, providing financial access for the startups, attracting a talent pool, stimulating interactions and knowledge sharing, etc. These ingredients can be offered by several involved actors. For example, and more precisely, the municipality could provide financial support in the form of jump start funds or R&D funds (Isenberg, 2011a), which supports startups to avoid the *'Valley of death'*. Fernando and Mansa (2022) describe the valley of death as: *'The span of time from the moment a startup receives its initial capital contribution until it finally begins generating revenue.'*. Moreover, in 2.2.5, Iansiti and Levien (2004) highlight the role of the keystone firm (i.e., the owner/operator) as vital for an EE. They could nurture the ecosystem by offering platform services such as shared machinery, meeting room services, and IT services for the startups (Clarysse et al., 2014). All in all, an ecosystem needs different inputs which could be provided by different actors. The following section moves on to discuss what the literature says about what input a private developer could provide.

2.3.2. The influence a developer could exert in facilitating entrepreneurship
A developer could exert their influence in two ways to support entrepreneurship. First, how they give shape to the built environment. Secondly, which kind of end-users they select after the completion of a development. This could be regarded as the hypothesis of this study. Before explaining these theories about how they could design the built environment or select the end-users, it is of the essence to straighten out the term 'influence'. Overall, the literature about influencing in section 1, shows that not everything could be controlled (Covey and Covey, 2020). Meaning that some things are beyond the control or influence of a developer. The same goes for entirely controlling an approach, in which Mintzberg and Waters (1985) explains that things always go differently than expected, which asks for emergent approaches. This indicates that also shaping an EE cannot be fully controlled by the developer.

Nevertheless, taking that into account, they could design the built environment in such a way to stimulate entrepreneurship as explained in section 2.2.5. For example, Roulac (1999) described the significance of the built environment for companies in reaching a competitive advantage. Over and above that, literature about EEs have described the importance of interactions. These interactions could in return enhance the knowledge exchange between ventures which results in a strong ecosystem (Pancholi et al., 2018 and Audretsch et al. (2018)). This could be influenced by developing a so-called 'porous built environment' which include for example shared lunch facilities, were startups run into other startups (Clare, 2013). Another way by supporting startups is by offering flexible floor plans (Rajakallio et al., 2018), so they could easily expand their business and rent more square meters, when they are growing. Besides Ciaramella and Dall'Orso (2021) has shown that giving a place an identity boost attracts business and talent, which consequently strengthens the ecosystem. This identity boost could be provided by designing the built environment in a unique way, by for example preserving the historic character (Zhao and Zou, 2021)).

Aside from designing the built environment in a certain way, developers could also influence the shaping of an ecosystem by selecting certain end-users. Section 2.2.4 explains that a proper ecosystem composes out of niche players (i.e., the ventures), enablers (i.e., enabling the ventures to kick-off e.g., venture capitalists and mentors) and feeders (i.e., providing the resources ventures need such as hub landlords and established companies) (Iansiti and Levien, 2004). A developer could play a role in selecting these parties in carefulness. For instance, Iansiti and Levien (2004) notes that established companies that deal with mergers and acquisition of other companies, could have a negative impact on the EE when gaining to much control. Moreover, Roja and Nastase (2014) also claims that putting complementary businesses together could improve the 'network effects' which consequently gives the ecosystem a boost. In addition, the soft ingredients described in section 2.2.5, presented the significance of a keystone firm i.e., the owner and operator of a building and ecosystem. Clarysse et al. (2014) suggested that the keystone firm could support entrepreneurs by providing tools and services that supports the business performance. All these claims suggests that developers could take the share of established companies in an ecosystem into account, try to put complementary businesses together, and sell the developed estates to an investor who takes care of the operations and adhere to providing services.

In essence, the reviewed literature suggested that a developer cannot fully control the shaping of an EE. However, they could have an impact on shaping an EE by developing a unique place where ventures encounter and could easily scale up. Besides, they could also select a mix between ventures, enablers, and feeders. Where one keystone firm takes the leading in the operations and service provision. In the section that follows, it will be argued what the role and responsibilities of a developer could be.

2.3.3. The role and responsibility of a developer
As indicated previously in section 2.1.2, the role of a developer is to orchestrate the development process (Adams and Tiesdell, 2012). They have a directing role to manage the process and the involved parties (e.g., engineers and contractors). They could approach a development process by predicting and controlling what is likely to happen or by preparing to uncertainties that might occur and commitKoppenjan et al., 2011 (see section 1). Usually, they are held accountable for the duration, the expenditure and revenue of their projects. Aside from these commercial responsibilities, they also have environmental responsibilities to develop sustainable buildings (Jensen and Cederkvist, 2021), and social responsibilities, according to Idowu et al. (2013), to minimize the negative impact of buildings on human health. Nonetheless, this role and these responsibilities comes along with the general profession of a developer. Others, such as Rajakallio et al. (2018), (see section 2.1.3) have highlighted and criticized their responsibility in shaping an EE. According to Rajakallio et al. (2018) developers could have a more active role in the operations phase after the development in order to make the ecosystem more resilient. Thus, according to the reviewed literature, developers could, aside from the general responsibilities, also take a responsibility in the operating phase. The next section describes the interactions between the municipality and university.

2.3.4. The interaction between the municipality and university
The academic literature on the role of public entities has revealed its importance in shaping an EE (see section 2.2.5). For instance, Feld (2020) stated that the failure of shaping an EE could be a result of policymakers who are lacking with engaging the entrepreneurs. In section 2.2.4 about the actors in an ecosystem, Stam (2014) has pointed that the municipality could financially support the entrepreneurs. Moreover, Stam (2014) also underlined the significance of the university in sharing knowledge and the provision of labour. So, in general, the literature has described the relevance of the roles of the municipality and the university. However, there is a small body of literature is concerned with the type of interactions between the developer, university and municipal could contribute to shaping an EE. What follows is the barriers and constraints developers face.

2.3.5. The barriers and constraints
To begin with, the difference between barriers and constraints, is that barriers are removeable, whereas constraints are not (Couchenour, 2021). Barriers could therefore be temporary, depending on how people deal with it. As noted by Couchenour (2021), this implies that *"Whereas you overcome barriers, you compensate for constraints."* Before proceeding to examine the barriers of an EE, it is important to highlight the barriers developers face, since the ultimate aim of this study is to address the influence, they could exert in shaping an ecosystem. The five forces model of Porter in section 2.1.4 is used to describe the business environment of a developer. Each of these five forces could form a constraint. For example, the buyer power of real estate investors could negatively affect the selling price after the completion. Besides, the supplier power of contractors could cause high construction costs. These two examples, indicate that the influence of a developer is limited. Furthermore, their influence also changes over time. For example, in section 1, Nozeman and Fokkema (2008) described that the possibilities to steer become smaller and the consequences bigger when a development project comes near to the completion.

Turning now to consider the barriers and constraints of shaping an EE. The presented literature in section 2.2.5 provided useful information about the enablers and drivers of an ecosystem. The absence or lack of the mentioned aspects could lead to a barrier or constraint in shaping an EE. Consider the example of isolated companies who lack in interacting with other entrepreneurs, hence knowledge sharing. Besides, as previously stated, by Feld (2020), policymakers who insufficiently engage with

the entrepreneurs could also cause a constraint. Developers could convince them to act, yet whether convincing them could be decisive remains undetermined. It is clear that developers could face the same barriers and constraints as in any other development project. Nonetheless, constraints they face when shaping an ecosystem might be the occurrence of lacking interactions with ventures or lacking engagement from the public parties.

Overall, this chapter provided a summary of the literature relating to the tactical influence of private developers and entrepreneurial ecosystems. With this backpack of theoretical knowledge, the following chapter moves on to discuss how the empirical knowledge was acquired.

<div style="text-align: right; font-size: 3em;">3</div>

Methodology

The previous chapter laid out the theoretical dimensions of this research. This chapter includes the research methodology. The aim of this thesis is to explore the facilitating role of private developers in entrepreneurial ecosystems. In particular, the goal is to shed light on how they can influence the shaping of an EE. This chapter discusses the research design choices made to the direction of this research aim. All these choices are specified and substantiated here.

The overall structure of this chapter takes the form of four sections. The first section (3.1) begins by discussing the research approach. The second section (3.2) is concerned with the data gathering method. It will then go on to data collection method (3.3), followed by the data analysis method (3.4).

3.1. Research strategy

Before proceeding to elaborate on the adopted research strategy, it is important to address the *'research philosophy'* first (Crossley and Rautenbach, 2021). This study adopted an interpretivist research philosophy instead of a positivist research philosophy. A positivist philosophy usually refers to realism, which means that there is something unknown to be uncovered (Gemma, 2018). A positivism research philosophy is often adopted in quantitative studies to discover the effect of one variable on another variable (Crossley and Rautenbach, 2021). On the contrary, interpretivism knowledge relies mainly on the interpretation that people attach to their action. An interpretivist research philosophy is therefore more often adopted in qualitative studies. Returning briefly to purpose of this thesis, the aim is to explore what influence a developer could employ in shaping an EE. This role could be identified by testing their influential capability in shaping an EE. However, the aim of this research is not necessarily to test the correlation between the influence of a private developer and an EE. On the other hand, it is rather about studying human behaviours, i.e. exploring how different actors perceive the influence they can employ in shaping an EE. This is investigated by inventorying their role in shaping an EE, which is why an interpretivist research philosophy with a qualitative research approach is adopted. It is now necessary to explain what type of research strategy is used.

There are various qualitative research strategies, such as phenomenological, ethnography, case studies, action-oriented, and narrative research (Padgett, 2017). Many researchers have utilised case study analysis to investigate EEs. For example, business studies make use of case studies to discover entrepreneurial success and failure factors and eventually formulate learning tools (Padgett, 2017). In addition, Gu et al. (2021) also found in her literature review that case study analysis approaches are often applied in studies about innovation ecosystems. Nevertheless, while adopting a case study strategy might have been an evident approach, an **expert interview study** was adopted instead. The aim of this research was namely not particularly to investigate an EE. On the other hand, it was rather about exploring the influence of a developer, because that is were exactly the research gap lays. A commonly used method to gain information about a particular field is by adopting an expert interview study (Döringer, 2021). According to Bogner and Menz (2009), there are three variants in using an

expert interview study: exploratory, theory-generating, and systematizing expert interviews. A systematizing expert interview approach was employed since this approach is indented for getting a hold of exclusive information possessed by experts (Bogner and Menz, 2009).

In short, the philosophy of this research is based on interpretivism, to eventually inventorize how different actors perceive what influence developers could employ in shaping an ecosystem. Besides, a systematizing expert interview approach was chosen because the focus of this study was on the influential capability within a particular field. Having defined what the research strategy is. The following section will discuss how the data was exactly gathered.

3.2. Data gathering

This section substantiates and elaborates on how the data was gathered for this study. It begins by elaborating who the chosen experts are and why these respondents are specifically chosen. The part thereafter examines how they were approach.

3.2.1. The interviewed experts

In total, 16 interviews were conducted (see table 3.1). The interviewed experts can be distinguished in three groups of subjects: developing parties, operating parties, and companies. Some of the respondents were approached based on their expertise in a certain field. The others were interviewed because of the experience they gained working on or at a particular case. Before elaborating on who the experts are and what the rationale is why they are approached, it is essential to explain which specific cases are depicted and why.

No.	Main category	Type		Case
1	Developing party	Private developer		Kabeldistrict, Delft
2	Developing party	Private developer		Kabeldistrict, Delft
3	Developing party	Private developer		BIC, Eindhoven
4	Developing party	Public servant		Strijp S, Eindhoven
5	Developing party	Public servant		Delft
6	Developing party	University member		TU Delft campus
7	Developing party	University member		TU Delft campus
8	Operating party	Ecosystem manager		-
9	Operating party	Directing manager		YES!Delft
10	Company	CTO	Startup	YES!Delft
11	Company	Employee	Startup	YES!Delft
12	Company	CFO	Startup	YES!Delft
13	Company	Employee	Startup	YES!Delft
14	Company	Employee	Scaleup	YES!Delft
15	Company	CEO	Scaleup	YES!Delft
16	Company	CTO	Scaleup	YES!Delft

Table 3.1: Respondents

The reference cases

To begin with, the respondents were approached based on their involvement in particular cases. They were either part of the development or the operations of an area with the presence of multiple start- and scaleups. The following five places are selected for the research (figures 3.1, 3.2, 3.3, 3.4, 3.5)):

Figure 3.1: Yes!Delft (©Magnetme)

Figure 3.2: TU Delft campus (©Campus development TU Delft)

Figure 3.3: Brainport industries campus (BIC) Eindhoven (own photo)

Figure 3.4: Strijp S, Eindhoven (own photo)

Figure 3.5: Kabeldistrict Delft

The five cases are selected purposefully. Both TU Delft Campus (fig 3.2) and Strijp S (fig 3.4) are areas which are partly developed. The reason why TU Delft campus is chosen, has to do with the fact that Delft has the best entrepreneurial ecosystem and is therefore the best place for entrepreneurship in the Netherlands, according to a recent quantitative study by Hendricksen et al. (2022). Furthermore, the focus of the development of TU Delft campus is, aside from education and research, also knowledge valorization and offering housing for startups, which is frankly closely related to the Kabeldistrict Development. Strijp S in Eindhoven (fig 3.4) is selected to learn insights about another place in the Netherlands then Delft. It also can be regarded quite similar as the Kabeldistrict since it covers an area development project with a mix of business premises, residential and commercial functions.

TU Delft campus and Strijp S contain smaller projects within or close to the same area. For instance, YES!Delft (fig 3.1) is a building located at TU Delft campus and Brainport industries campus (BIC) (fig 3.3) is a building closely located nearby Strijp S. Whereas the chosen area development projects are used to zoom out to consider the overall ecosystem, the smaller cases are selected to zoom in. YES!Delft and BIC are depicted because of the presence of a clustered community of entrepreneurs.

In short, the selected cases are four ongoing and partly completed development projects, were multiple start- and scalups are housed. The following section discusses which exact individuals are approached due to their involvement in one of these cases or due to their expertise in the field of area development.

Developing parties

Obviously, developers are interviewed because this research focuses on the influence a developer could employ. Nevertheless, the municipality and the university are also interviewed to unravel their stance towards the influence of a developer. These parties are interviewed to enhance the validity and credibility of the results by making use of data source triangulation (Bhandari, 2022). As noted by Carter et al. (2014), data source triangulation involves *'The collection of data from different types of people, including individuals, groups, families, and communities, to gain multiple perspectives and validation of data.'* Therefore, the developers were the research and observation units in this research and the municipality and university only the observations units. Together, three developers were interviewed, one was linked to an institutional investor and the other two to a building contractor. It was for this reason why different developers were interviewed, because they might think differently about shaping an ecosystem. For example, a developer linked to an institutional investor aims for a long-term yield, whereas a building developer might be more short-term oriented and usually tries to sell developed estates for a price that meets what they are aiming for. Besides, one of the developers was interviewed due to his involvement in the development and operations of BIC.

Moreover, two public servants of the municipality were interviewed. One of them had a main advisory role for the economy in Delft. The reason why specifically this respondent was approached, is because of his expertise in the economy in Delft and the corresponding public governance to support this economy. The other interviewed municipal official was the director of a public private partnership, who was approached due to his twelve year experience in developing and operating Strijp S in Eindhoven.

Additionally, the representative individuals for the university of the TU Delft were also approached. They were both active in the development of the campus in Delft. Since the university itself is not involved in the development of the campus, one of interviewees was part of the campus development organization and the other one of an organization focusing on knowledge valorization. The latter was interviewed due to the interplay connection between the university, startups and the campus development organization. Both organizations are part of the university. Yet, their core tasks are not education and research, but rather real estate development and knowledge valorization.

As expressed, the interviewed developing parties are developers, the municipality and the university and were during the research involved in the development of BIC, Strijp-S, and the campus in Delft. The next two section addresses the interviewed operating parties and companies.

Operating parties

It was highly relevant to view the influence of a developer from the perspective of an ecosystem. In other words, to say something meaningful about shaping an ecosystem, one should consider the knowledge possessed by the people in the ecosystem. For this reason, *operating parties* are interviewed. The reason why they were approached had to do with the fact that they have an active role in the real estate operations. These operating parties have an overarching view upon the functioning of the ecosystem. Two respondents were approached. One of them was during this research directing manager of YES!Delft. The other one was purposefully approached due to his function. The organization

he worked at was involved in developing, investing and operating campuses all around Europe. His responsibility was mainly on managing the ecosystem of these campuses.

Companies
Additionally, the third category are *companies* and varied in startups and scaleups. Eventually, and EE is shaped for ventures so they could grow. A qualitative research about EE, while omitting these respondents, could have left out important insights. In total, seven start- and scaleups are interviewed. An advantage of gaining insights from them is that they could potentially establish at the Kabeldistrict in the near future. Therefore, their input was valuable. The interviewees varied in founders, usually the chief executive officers (CEOs), chief technology officers (CTOs) and employees. The interviewed startups were all operational in the hi-tech sector, varying in biotech, artificial intelligence, medtech, aviationtech and robotics.

Overall, 16 individuals are interviewed in this study based on their participation in particular development projects, but also do to their role in an existing ecosystem. The following section will discuss how these respondents were approached.

3.2.2. The sampling strategy approach
A mix between a probability and non-probability sampling strategy is adopted in this study. A non-probability sampling strategy, means that the approached interviewees were not randomly selected, but selected on a *'subjective judgement'* (Elfil and Negida, 2017). The developing and operating parties were purposive sampled online and via company connections. On the other hand, the entrepreneurs and employees of early and later stage startups were convenience sampled and spontaneously face-to-face approached. They were approached at the business incubator YES!Delft. One advantage of this approach is eased the opportunity to talk with many different early and later stage startups face to face. YES!Delft namely supported more than 200 business over from 2012 and 2022 ("Startups", 2022).

To sum up, this section has presented who the interviewed experts are, why specifically they are interviewed and how they were approach. The next part of this paper will elaborate on the data collection method.

3.3. Data collection method
The data is collected by conducting **in-depth one-on-one interviews** via face-to-face and online settings, using a few open questions. Fontana and Frey (2000) claim that in-depth interviews is a powerful data collection approach to understand topics in depth, since it allows flexible and spontaneous responses. The majority of the interviews were in Dutch. *Microsoft (MS) Teams* was used to record the entire interview, and transcribe everything that has been said afterwards. The face-to-face interviews were recorded via mobile phone and later transcribed. In addition, one interview was conducted via a phone call. One of the major benefits of conducting an open interviews instead of a structured interview, is that it enabled the collection of more data and underlying thoughts apart from predetermined questions (Baarda et al., 2013). The interviews composed out either five or two questions, depending on the expert, an approximately took half an hour each. As shown in figure 3.6 on the next page, The interview questions are based on the research question. Nonetheless, the questions are slightly adjusted to leave jargons, such as *Entrepreneurial Ecosystems* out, so that the questions asked were simple and understandable for the interviewees. The interviewees were first introduced with the goal of my research. This goal is shaping an EE for the hi-tech sector and translated to *'Developing an area where hi-tech start- and scaleups are established, that stimulates innovation, and leads to job/company creations.'* Afterwards the interview questions were asked. Before the interviews took place, the interview questions were answered based on the built up theory in the theoretical framework (chapter 2) and can be found in appendix A. This was done for two reasons. First, to practice whether the right questions are asked by practicing which potential answers might rise. Second, to form a foundation for the discussion chapter (5), where the findings are compared with the theory.

Research Questions

SQ1. What influence could developers employ to facilitate entrepreneurship?

a. How should developers design the built environment to shape an EE?

b. How should developers effectively select their end users and investors as part of the EE?

SQ2. What role should developers exercise, and which responsibilities should they take in shaping an EE?

SQ3. What interactions of the developer between the municipality and the university influences the shaping of an EE?

SQ4. What environmental conditions and constraints do developers face while shaping an EE?

Interview questions for developing and operating parties:

How can the built environment be designed in such a way that it facilitates entrepreneurship?

What should be the role of the developer and/or investing operator? Do they have certain responsibilities?

What should be the role and responsibility of the municipality and the university? How do you envision working with the developer/investor to achieve 'this goal'?

Which company mix contributes to entrepreneurship and the interaction between companies and what company mix doesn't? And what role should the operator have to foster this?

What barriers have you encountered in developing/operating an area with a similar purpose?

Interview questions for companies:

What are your 'must-have' & 'nice to have' factors in terms of the space you rent? What is, for instance, the reason that you are specifically established here?

What kind of parties do you need for your company in close proximity? And how can connections be facilitated by the built environment and the managing organization of the building/place?

Figure 3.6: Research questions and interview questions (own illustration)

In brief, the data in this study was collected by conducting one-on-one in-depth interviews. The interviewees were in the beginning informed that the goal of research is to explore how an area that supports and stimulates entrepreneurship could be developed. Afterwards they were asked to answer the rephrased research question of this study. Having stated how the data is collected, the final section of this chapter examines the data analysis method.

3.4. Data analysis

There are numerous ways of analysing qualitative data. The best way of choosing the right method has to do with the intention of the research, which is in this case: addressing the influence of a private developer in shaping an EE. Remarkably, the goal of this thesis aims at understanding something. Intending to reach this goal, two suitable analysis approach are a qualitative content analysis (QDA) or a thematic analysis, because both approaches focus on making sense of data by observing the patterns in the data set (Warren, 2020). A QDA has a quantitative character because it focuses on the frequency of terms. According to Warren (2020) this could leave out the important nuances. Therefore, a **thematic analysis** approach is applied for this thesis, which do include more nuances (Warren, 2020). Adopting a thematic analysis involves highlighting certain phrases in the transcripts based on a specific topic (i.e. theme). Afterwards, these themes can be compared with each other to discover any patterns, supporting opinions or contradictions.

The data collected in the interviews, was analysed as presented in figure 3.7, by using the software *'ATLAS.ti'*. These six steps shown in 3.7 on the next page, are adopted from Braun and Clarke (2006) their paper about conducting thematic analysis. Each step is elaborated underneath. The analysis of this research started with **perceiving** the data obtained during the interviews. All interviews were recorded and transcribed into a transcript. The transcripts served as *'analysing documents'* to eventually parse the data.
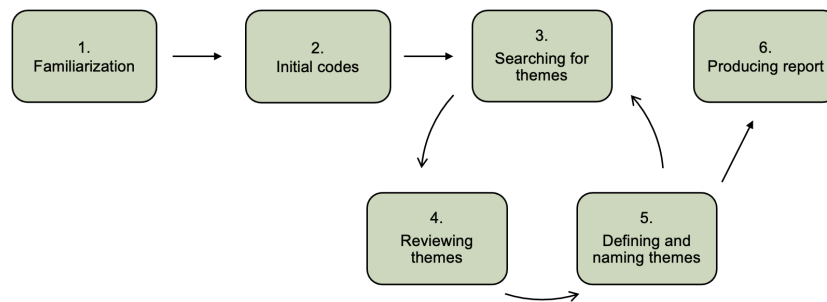
Figure 3.7: Analyzing transcripts (own illustration, steps adopted from Braun and Clarke, 2006)

1. The first phase, familiarizing, consisted out of interviewing and writing transcripts to get familiar with the data obtained.

2. Subsequently, initial codes were generated in a descriptive manner. These codes can be found in appendix B. Several phrases and words out of a data set are grouped into categories (i.e. themes). This is done by labeling codes with certain phrases. Phrases and words in the transcripts are in targeted and coded. This means, that the research questions are kept in mind while analysing the transcript, to discover which phrases contribute in answering the research questions (Baarda et al., 2013). For instance, sub question two of this research is *What role do, and could developers exercise, and which responsibilities could they take in shaping an EE?'*. When an interviewee stated something like *"I think a developer could do ..."*, these statements are highlighted and coded with the them *'role developer'*. On the contrary, some themes were open coded, meaning that phrases are initially coded due to their relevance, and not because these codes were directly related to the sub questions. Open coding is basically summarizing the chunks of data by using a couple of words (Gallicano, 2013). For example, when several respondents pointed out that a developer should be *'Actively engaged in the operations phase'* for some reason, as a result these phrases are highlighted with the themes: *'Active engagement'* and *'Involvement operations'*. While doing this, the transcripts from the various interviewees were analysed and synthesized separately, to identify differences and similarities, and to discover how dissimilar respondents affect the findings (Carter et al., 2014).

3. Thereafter, these initial codes were used to collate into broad-ranging themes via tree structuring. Baarda et al. (2013) points out that the advantage of analysing data via a tree structuring method, ensures that all deeper aspects are taken into account. This was by **inductive reasoning**, meaning that certain specific themes were connected to more broad ranging themes using a bottom up approach. A bottom up approach starts with collecting sub-themes and joining these themes to an overarching central theme. Contrastingly, the research question of this study did form the main theme. By way of example, sub question three is: *'What barriers and constraints do developers face while shaping an EE?'* which led to the broad ranging theme: *'Barriers and constraints'*. Everything said about any barriers or constraint is part of this main theme. Therefore, one might argue that deductive approach is also applied, which on the contrary to an inductive approach, starts with setting up the central theme and thereafter adding sub-themes to this central theme. Nevertheless, still the majority of the themes are inductively reasoned.

4. Later these themes were reviewed and refined to make a more well-organized and concise overview of all the themes. This was done by adjusting, combining and omitting the themes, leading to 140 codes instead of the 273 codes in the beginning. To provide one example amongst many others, the initial codes *'shared spaces'* and *'shared makerspaces'* (see appendix B, id. 223 and 224) were combined into one theme *'shared spaces'*.

5. In step 5, all these themes are brought together and rated on their relevance by questioning whether it answers the research questions. This eventually result in the final codes, which could be found in appendix C. Step 3, 4 and 5 can be characterized as iterative, due to the interplay between perceiving, analyzing, and reflecting data.

6. The last step consist of producing a report, in which the findings of the analysis are exposed. These findings can be found in the upcoming chapter (4).

   This chapter has demonstrated that an expert interview is adopted as research strategy. The data was gathered and collected via developers, the municipality, the university, operators and start- and scaleups by conducting one-on-one in-depth interviews. Afterwards these interviewees were transcribed and analysed using a thematic analyses. The results of this research methodology are presented in the upcoming chapter.

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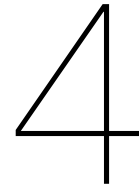
Results

</div>

This chapter presents the outcome of the conducted interviews. A thematic analysis was used to discover and compare the perceptions of the different respondents about the asked topics. The findings of this analysis are presented in this chapter. Returning briefly to the problem statement and research aim of this study, the role of the private developer and their involvement in developing an EE is underexposed. Hence, this study aimed to explore the influence that a developer can employ in shaping an EE. Therefore, this study aimed to answer the following research question: *'How can private developers tactically influence the shaping of an entrepreneurial ecosystem?'*

This chapter covers the emergent themes from the analysis which are presented in the order of the sub-questions of this research. The first part deals with the themes of the physical built environment. The second part involves the themes about how developers effectively select their end-users, in terms of the type of companies and organizations and the involved lease agreements. The part thereafter examines the role and responsibilities of a developer. It will then go on to a description of the interactions between the developer, the municipality, and the university. The remaining section addresses the themes of the constraints and barriers faced by a developer.

4.1. The physical built environment

4.1.1. Inventorize the companies needs

A common view among the interviewees was to inventory the company's needs. In almost all interviews, the respondents mentioned that the first step of shaping an EE is to get to know your end-user and their specific needs. The theme reoccurred 19 times in all the transcripts and is sometimes repeatedly mentioned in the same transcript. The informants reported that identifying these needs is critical. For instance, one of them stated the following: *"[...] How can we optimally facilitate the entrepreneurs that we are going to house? You should know what the needs of entrepreneurs are to be as successful as possible. That could be accommodation-related, but it can also go beyond accommodation. I think that's the basics. Based on those needs, you can determine the so-called critical success factors or preconditions you need, whatever you want to call it, to be able to make a successful ecosystem. [...]"*

One respondent argued that these company needs are not solely the number of square meters and type of spaces they are looking for. He went on by explaining that other needs, such as the presence of a talent pool, are even more relevant for some ventures. While he was having conversations with potential tenants, their main concern is access to talent: *"[...] It is quite funny that most of the companies that we house, do not discuss the number of square meters they want to rent at all during the first introductory meetings. It's about: Do we get access to talent? [...] And then we'll talk about the square meters they want to rent. But in the first instance, they find that irrelevant. Because if there is no talent, they don't want to rent. [...]"* This result is somewhat counterintuitive.

As mentioned in the extract above, the presence of a talent pool could be decisive for a company to establish itself at a particular place. The presence of this pool could depend on the geographical

location. Therefore, in some cases, the developer is unable to fulfil all the needs of the companies. For instance, multiple interviewed start- and scaleups pointed out that the reason that they are at YES!Delft is due to the fact the university is in proximity. When asked about why the startups were established at YES!Delft in particular, one interviewee said: *"[...] The first reason is the location. We were born, let's say at the TU Delft. So, it's an easy step for us. [...]"* Moreover, these locations bound reasons could also depend upon other factors such as accessibility. For example, one interviewee mentioned an example of another building and the success behind it: *"[...] Sometimes it depends on the location. Take for example a large commercial building, such as the CIC in Rotterdam. They have responded very well to the trend, also towards workplaces and small spaces, nicely decorated and all very cool. But one of the major reasons that explain its success is simply because it's next to the Central Station. Logistics is a very important factor for this, in combination with a pleasant working environment. [...]"*

In general, the majority of respondents emphasized the importance of analysing the company's needs. These needs are divergent since they could depend on the amount of space in a physical building or on the presence of talent in a particular area, which could be location-bound. This might raise some questions about what the specific needs are for the target group of this research (i.e., hi-tech industry). This point will be further discussed in the upcoming paragraphs.
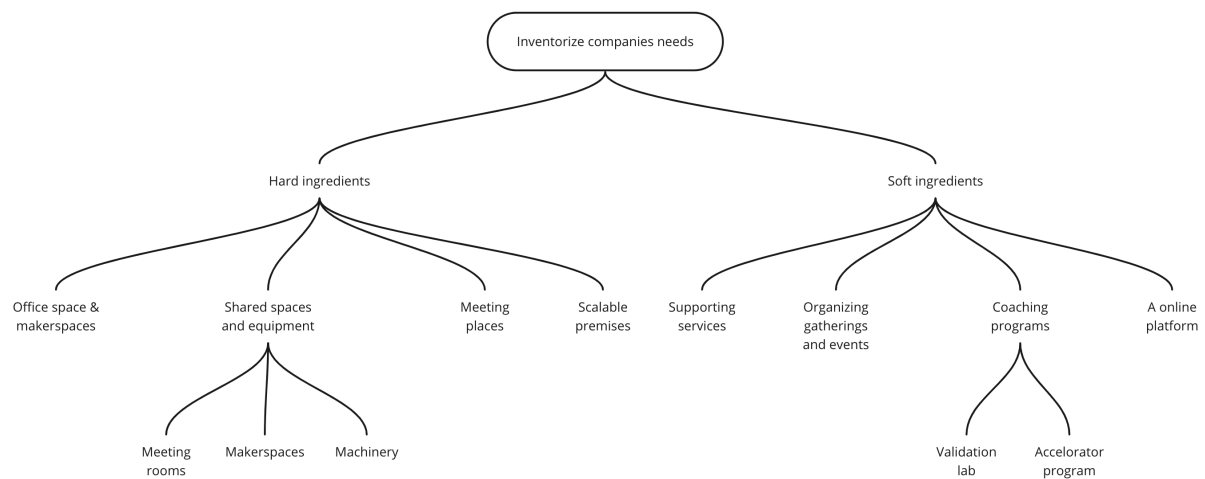
Figure 4.1: Inventorize the company's needs (own illustration)

Many related sub-themes were identified as part of the main theme *'Inventorize the companies needs'*, which can be distinguished into hard and soft needs. Figure 4.1 shows the related sub-themes that emerged. Developers employ their influence to support entrepreneurship by facilitating these needs. The first subsection covers the physical design principles developers adopt when shaping the built environment for an ecosystem, in other words: the hard ingredients. The part thereafter examines the influence of a developer in facilitating the non-physical soft ingredients (e.g., services).

4.1.2. Hard ingredients

Office- and makerspaces

Start- and scaleups in the hi-tech industry are usually in need of makerspaces and office spaces. The makerspaces are needed for testing, prototyping, assembling, and producing products, and the offices are required for other business activities. For instance, one person stated the following: *"[...] Our target groups are technology-driven companies. So generically, those companies always need an office space and space in which they develop their products. So that's a lab-like environment or a workshop-like environment. We call this a makerspace, where they can build their prototype, which could be large or small.[...]"*. This can be perceived as a standard accommodation-need for hi-tech start- and scaleups. Besides, several interviewees also mentioned that spaces for leisure activities, such as ping pong or padel, improves the work atmosphere and attract talent. As one interviewee

said: *"[...] Creating all kinds of facilities for leisure attract young people. And certainly, if you are talking about enterprising people, often younger companies, such as a padel centre.[...]"*. Apart from the mentioned accommodation-needs above, there was a pattern in the transcripts about the shared usage.

Shared spaces and equipment
Several participants who mentioned shared usage were unanimous in favour of sharing the spaces and tools. They argued that shared spaces and equipment are especially beneficial for early-stage startups since they often do not have enough financial possibilities to rent or buy such *'assets'* entirely for themselves. The mentioned shared assets are workplaces and machinery. As a result, companies can utilize and pay for the shared assets when needed, which saves costs. For instance, one individual said: *"[...] You don't want to make one major investment in the first production if you're building your first robotics product. You'll preferably use flexible production lines, which can simply be hired for a certain period and then be used by someone else.[...]"*. Furthermore, another mentioned theme that came across a few times was the presence of shared meeting rooms. The added value of these places is that it offers the possibility to showcase one's products or to conduct important meetings with investors or other parties. Take for example the following extract from a startup: *"[...] What we need to do when the investors come, a potential customer, we should be able to showcase what we're doing. [...] A way to present our product to the customers or investors. [...] They have already done a good job in a given situation, that we're able to sit, talk and show what we've done. At least in terms of presentation rooms. [...]"*.

As expressed, the hard ingredients for hi-tech companies are often both makerspaces and office spaces. Especially shared usage of makerspaces, the machinery in these spaces and meeting rooms are convenient for startups to reduce their expenses. These ingredients could be identified as preconditions for a hi-tech venture to conduct its daily activities. The next paragraphs touch upon what design principles developers adopt to shape an ecosystem.

Physical meeting places
Various participants mentioned the significance of physical meeting places. A fair few brought up that meeting places, for example, are areas where everyone gathers for lunch. The added value of these places is that it facilitates interactions among companies, which allows startups to build up a network, gain personal and professional advice, and even meet new clients. For instance, one interviewed employee mentioned: *"[...] First we thought that it would be nice to have a coffee machine in our office. But then, you isolate yourself in your own office. While, walking around, chatting a little together, we also have a cafeteria and everyone eats, you get in touch with other businesses. For example, recently bumped into a new client. [...] I think we signed a contract with them last year.[...]"*. Apart from the *'business-wise'* benefits of these meeting places, another repeatedly mentioned benefit from meeting places, are the social interactions, which create a pleasurable work environment. For example, one person said: *"[...] In an ordinary office building, you rent an office and that's it. There is really limited public space. [...] The shared coffee place is great here [...] that enables you to encounter other startups. That's the atmosphere. There is a lot of energy here going on.[...]"*

Moreover, one of the interviewed developers shared some concrete examples of the meeting places they developed to stimulate encounters: *"[...] Everyone walks through the same entrance at BIC. Everyone parks in the same garage, and everyone walks through the same park. After you've entered the front door, you enter the communal coffee corner. All companies go to the central eat & meat [...] So everyone meets each other at these places [...] This ensures acquaintance and cooperation. And that is what campus development is all about.[...]"*

One surprising and worth mentioning finding is that one interviewee argued that too many meeting places are not desirable. He experienced that having an abundance of meeting places caused segregation at Strijp-S. He said: *"[...] You shouldn't have too many meeting places, because then you'll see that people use these places, outside their own office, merely for their own employees. [...]"*.

Until now, the findings demonstrated that physical meeting places where ventures encounter each other lead to collaborations, knowledge sharing, and improve the ambiance of the environment according to the respondents. In one of the reference cases, a developer developed a shared lunch space, one entrance, and prohibited companies to have their own canteen. Yet, the findings indicate that an abundance of meeting places is disadvantageous. It is now necessary to explain how a developer responds to the dynamic needs of the companies in an ecosystem.

Scalable premises
The themes of *'flexibility* and *'scalable premises'* recurred throughout the dataset. These themes refer to flexibility in terms of space. Some interviewees maintained that the startup industry is dynamic, and therefore continuously has fast-changing needs. As a response, these interviewees emphasized aligning the spatial needs with shrinking and growing ventures, by for instance offering scalable premises. Interestingly, one venture pointed out that flexibility of space is one of the key reasons that they established at YES!Delft: *"[...] We are mainly here because of the facilities, the flexibility in facilities. They offer growth here, especially in terms of space. So, if you need a workshop, you can quickly find a space for it. Or if you have just bought a milling machine, it can be placed in a separate room.[...]"*.

Three concrete approaches emerged from the data in offering scalable premises. Firstly, offering standard rental units of, for example, $20m^2$, $50m^2$; and $100m^2$; and so on. So, startups or scaleups can move to a bigger unit whenever they are expanding. Secondly, applying *'(re)moveable'* walls in the floorplan layout. Thirdly, two other respondents shared a fascinating, yet non-obvious, approach they adopted to anticipate on the growth of ventures. They purposefully left a certain number of square meters vacant, to foresee the growth of the tenants and align the spatial environment to their growth. As one interviewee put it: *"[...] We already develop buildings if we have rented out zero square meters. [...] Then you can keep up with the growth rate of a company because otherwise you will be continuously behind the facts, which in turn inhibits your own success.[...]"*. And another stated: *"[...] YES!Delft can afford slightly more than standard market parties, to have some frictional vacancy. So, you can say: I'm not going to rent 97% of my building but 93%, so I can capitalize on whoever grows or who falls over. [...]"*.

Overall, offering flexibility in terms of space is especially functional for growing companies in case they need to expand their business. The data indicates that developers and landlords keep a margin of vacancy into account within a building, to foresee and respond to one's growth.

To sum up, the findings show that developers adopt three key design principles when shaping the built environment of an EE, aside from providing standard accommodation-related needs such as office- and makerspaces. First of all, developing shared spaces that can be utilized by various tenants. Secondly, developing physical meeting places where people encounter and get in contact with each other. Thirdly, developing and offering scalable premises that align to the growth of the tenants. Having touched upon the hard ingredients developer adopt, the following part discusses the influence they could exert in terms of soft ingredients.

4.1.3. Soft ingredients
Aside from the hard needs, the soft needs (i.e., service provision) are also highlighted as relevant for an ecosystem. One interviewee mentioned that they adopted a different development approach at Campus south in Delft, compared to an *'ordinary development'*. This development approach surpasses only offering the buildings and especially involves offering soft services. She started by saying: *"[...] Is that company going to use it full-time? Do you offer a standard lab that the company will customize? [...] You ask all that, and from there you will not only realize the buildings [...] But also the service package. So, we think differently in area developments where you realize a residential area, a standard office, a business park, or a part of the city. Let's go a step further here, we don't solely think about the building's four walls. But also, what kind of services should be offered from those shared buildings.[...]"* These services are shown in figure 4.1 and further specified in the upcoming paragraphs.

Supporting services
To begin with, some of the emerging themes about services are perceived as supportive and necessary. Some interviewed startups mentioned the operator taking care of certain tasks, so they could solely focus on their business and be unburdened by other activities. For instance, they stated the ease of having a communal reception and the ease of someone taking care of the distribution of packages, putting things up the wall, or moving machinery. As was pointed out earlier in this chapter, these supporting services also have some overlap with the theme *'Shared spaces and equipment'*. Such as offering a service that allows companies to temporarily rent a presentation or meeting room for a couple of hours whenever a potential client pays a visit.

Organizing gatherings and events
Moreover, next to unburdening the ventures by the provision of these supporting services, a variety of examples were expressed about other services, such as organizing promotion events, workshops, and after-work drinks, often referred to as *'programming'* by the interviewees. During one interview, someone provided some examples of the services they offer: *"[...] If there are a lot of companies saying: I am growing, so I have to arrange something for the pensions of my employees, help. And it also turns out that more companies are struggling with this. Then we will arrange a pension workshop for employees. That's what we call service. So that's the business content of a company [...] And the second thing is, it should also be pleasant, so a pub quiz, a monthly drink, that sort of things, without necessarily being organized around the business content.[...]"* Furthermore, another interviewee shared the benefits of an operator who promotes upcoming events outside of the community. As he put it: *"[...] They also promote things like upcoming fairs, etc. Maybe contact from outside. You may be less isolated here because you are with several companies, but you are still isolated within the property.[...]"* The participants on the whole demonstrated obliging people to attend events. One participant mentioned when organizing events, interactions should not be forced. This view was echoed by another informant who stated that events should be non-committal: *"[...] You have community managers walking around here. And I think it really is their role to give space for interactions. [...] Of course, they can't force it too much when explicitly inviting people to come to an event. Then people will say: I have something more important. [...] Like there's a specific workshop about something [...]. Then it's: Nice to have you here again.[...]"*

Validation lab and accelerator programs
When the interviewed start- and scaleups were asked about why they decided to establish at YES!Delft, four of the respondents reported that one of the reasons was the *'validation lab'* and *'accelerator'* programs. The validation lab program is a 10-week program provided by YES!Delft to help startups acquire the right skills, talk to potential customers, validate the business idea, and deal with challenges during the lifecycle of a startup ("Validation lab", 2022). Moreover, the accelerator program focuses more on venture growth and strengthening the foundation of one's company. These programs are offered by YES!Delft helped several startups and made them enthusiastic. As one interviewee said: *"[...] At one point, we signed up for a program. They ran a validation lab here. [...] We particularly chose YES!Delft because we were enthusiastic about the program and how much it helped us.[...]"*. And another interviewed startup commented: *"[...] The programs both the validation program and the accelerator program are helpful for startups. You get a network, you get to know many startups, and maybe they can help you with ideas if you have troubles, if you need something. You get tips, and you built a network that is very useful when you're at the beginning of a startup.[...]"*. Despite the indicated relevance of these programs, the data suggest that the role of the developer in facilitating these programs is nil. The views about these programs surfaced mainly concerning the role of the landlord or operator of a building. Surprisingly, at Strijp-S these programs even arise in a bottom-up manner. As one interviewee put it: *"[...] The interesting thing here was that from within the communities, all kinds of coaching programs were created for those startups in particular.[...]"*.

An online platform
Another emergent theme was *'offering a platform'* which could be regarded as an additional soft service that supports ventures. This theme expands on the discussions about soft service provision and refers

to an online platform for startups where they could access multiple parties. The respondents explained that online platforms are a useful source for information provision, getting in contact with investors, or workforce recruitment. To illustrate this point: *"[...] We also sometimes hear from candidates that they specifically search: I want to work at a startup. Then I will search the YES Delft website. And that's how they end up here. That's nice to have.[...]"*.

In brief, the soft services take place in the background and in the foreground. Background services unburden ventures from certain activities, which will eventually lead to more time and focus on their business. Foreground services, like organizing gatherings and events, help startups to get in contact with and learn from other parties. Nevertheless, forcing people to attend certain events is not desirable to most respondents. An additional service is providing an online platform where companies acquire new employees.

To conclude, this section (4.1) explained that unravelling the needs of the ventures is the initial and highly relevant step in shaping an EE. In particular, this section shed light on the hard and soft ingredients developers exert to support and stimulate entrepreneurship, and which ingredients they could apply. The next section will discuss how developers effectively select the end-users as part of the ecosystem.

4.2. The end-user selection

This section covers the how developers select their end-users as part of an EE. The interviewed companies at YES!Delft were asked about what companies and organization they need in the same building who contribute the growth of their business. Furthermore, the interviewed developing and operating parties were asked what company mix at a particular place contributes to entrepreneurship. As a response the theme *'selection procedure'* came up, which developers adopt, in selecting the end-users. A variety of perspectives were expressed about what company mix developers pursue to shape an ecosystem. Figure 4.2 shows an overview of the emerged themes regarding this topic. This section starts with presenting the perspectives on the integration of different kind of companies, organizations, and institutes. It will then go on the selection procedure criteria.
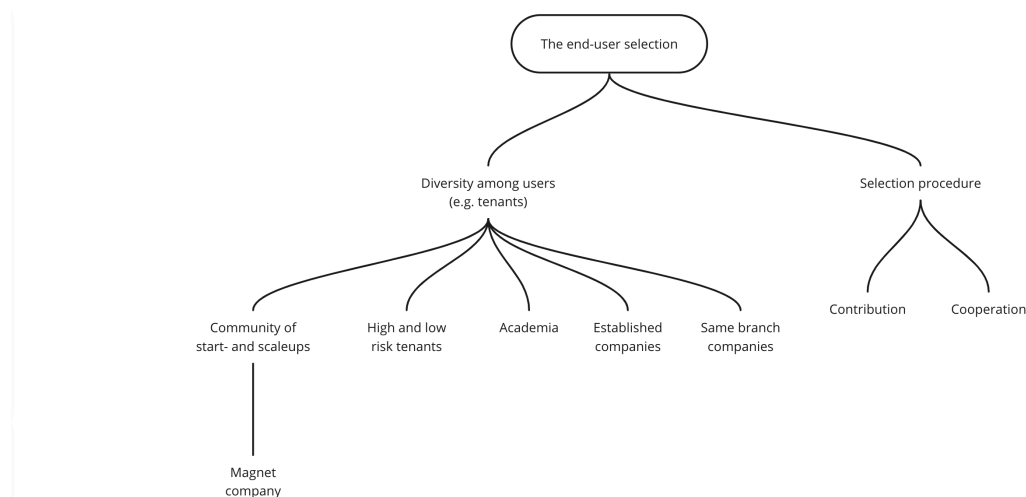
Figure 4.2: The end-user selection (own illustration)

4.2.1. Diversity among tenants

Community of startups

A common view among the interviewees was the significance of the presence of a community of startups. Intriguingly, a fair number of startups even mentioned that the community was one of the reasons to establish at YES!Delft. Some stated that this community is essential to operate and grow their business: *"[...] Actually that community was also a must-have, because we realized it was very valuable to us, and we're doing it for the first time. Then we thought it's good for your network and support.[...]"* A

community of startups could also be beneficial for acquiring new customers. In one case, the participant said: *"[...] You can see that a place like a YES!Delft actually contributes. Most of our initial contacts come from it. Scooby, who also started out in YES!Delft, is actually one of our largest customers now. [...] Then you see for yourself, at such a moment, it is useful to be close to other companies.[...]"* And another commented the benefits of a community for encouragement: *"[...] Having a startup, is a tough process. Being with a group encourages you to move on. Sometimes when you're alone you might just give up, but when you're with a group you realize that .[...]"* Accordingly, the data suggests that a community of startups is beneficial business-wise, to build up a network, receive support and acquire new customers, but also on a personal level for encouragement. Moving on now to consider how a startup community takes shape, the next paragraph elaborates on a certain approach to attract ventures.

Magnet company

Remarkably, one individual addressed the presence of a 'magnet company' within the community. Often referred to as a company or a CEO with a popular reputation. This company attracts other people and venture to a particular area due to the status. He indicated that a magnet company is undesirable, despite that it could be useful in the initial stages. At Strijp-S they namely adopted this strategy, which eventually did not lead to a success. The following extract illustrates this: *"[...] What you often see [...] if you have a building and you want a community there, you'll often choose a well-known entrepreneur or a well-known company. What is interesting, what suits the brand. And around that company you look for all kinds of parties that belong together with the company. And that goes well, because the company has an attraction, hence the word 'magnet', so you get a community. But you do notice that the 'magnet' party remains the most important party in the first years. So, you get a lot of noise coming from other companies. [...] They'll always consider themselves subordinate. [...] That is simply inherent to entrepreneurs and an entrepreneurial climate. So, you have to make everyone equally important. When the magnet company sells the business or goes bankrupt, I don't know. Consequently, the magnetic effect is gone. And then the question remains whether the community has become so strong that it can continue without the magnet. In our experience, you often see that it is super cool in the first few years, everyone wants to belong. But at some point, the chemistry just isn't there anymore. And then the whole house of cards collapses. So, I think this is the least solid approach because it is often built on people.[...]"* As expressed, according to one interviewee having a 'magnet company' within the ecosystem contributes to the formation of a startup community. In spite of that, it also negatively affect the resiliency on the long-term of the community. Another significant aspect of the community is the different typology of companies in terms of scale, which will be addressed in the upcoming paragraph.

High and low risk tenants

Some interviewees indicated that developers select their end-user mainly on their risk profile. Solely housing startups is not desirable for a developer, since the data suggest that the startup sector is a high-risk target group. Therefore, developers need to house lower risk tenants as well, such scaleups, SMEs and established companies, to make a business case out of a development. Their main concern is that the developed premises will be occupied and have a steady rental income. For instance, at Microlab in Eindhoven they purposefully select established companies for this reason. As one interviewee put it: *"[...] Microlab in Eindhoven, for example, needs a few large parties that pay a lot of rent. They have offices in the superstructure and the makerspaces on the ground floor.[...]"*. In addition, another interviewee alluded to the notion of scale regarding the company mix. Stating that diversity among tenants depends on the scale. Having a small building with no more than startups is fine. Nonetheless, a large area with exclusively startups is problematic. As he put it: *"[...] Scale is a crucial factor [...] When you talk about Kabeldistrict, it is really important that you have a diverse range of business activities. [..] The startup industry is very erratic. 9 of the 10 startups go bankrupt. So, in that sense, there is a strong competition. And having solely startups, isn't desirable. On the other hand, they strengthen each other [...] On the other hand, it's also not healthy for your business case."* In general, developers usually select their end-users based on their risk profile to avoid running at a loss. The upcoming paragraph covers the role of the low-risk tenants, i.e., established companies, in an ecosystem.

Established companies

The opinions about integrating established companies in the ecosystem were widespread. Whereas the majority agreed that their presence contributes to the ecosystem. A small number of respondents

indicated that established companies disrupt the overall ecosystem. For instance, a municipal official said: *"[...] We have a continuous influx or the hi-tech manufacturing industry. We want to provide space for that type of business. But we have already made a certain indirect choice. We don't want to have Philips in Delft, because want to give many more entrepreneurs the opportunity to start, also linked with the TU Delft. That's a decision we've made. Because, I mean a big established company has thousands of employees. We could easily reach our municipal goal to create more jobs by welcoming them. But then, the ecosystem would become quite monotonous. A big established company says: You are a competitor of ours, so we don't want you in close proximity. That disrupts the balance of an ecosystem. So, we have deliberately chosen diversity for the manufacturing industry. [...]"* Similarly, another interviewee expanded on this view. By stating that there are definitely benefits of integrating established companies in an ecosystem. Nevertheless, she mentioned that it requires cautiousness that they do not take a too large share in the ecosystem. She commented: *"[...] You have to consider to what extent you put the big companies next to the start- and scaleups. So that mean that we have to be critical that, for instance an Airbus does not go in with an entire army. But that it is a modest space. And that we are sure that the innovation managers are there. Not a whole army of people who eventually produce goods.[...]"*

Interestingly, established companies are physical integrated in the same building as the startups at Delft campus at the 'Aerospace Innovation hub'. The following comment illustrates this: *"[...] Airbus has an office at the Aerospace Innovation hub and Embraer as well. Those are two huge aircraft manufacturers. [...] We do this consciously, so that they'll meet each other at the coffee machine, that is the goal. [...] In Robohouse, there is that startup community, but Ahold Delhaize is also there, with their innovation managers and a number of promovendus who are doing their PhD at TU Delft on behalf of Ahold Delhaize. [...] So that's where you literally bring the large cooperates and dynamic startups together in the area.[...]"*

The majority of those who mentioned the integration of established companies claimed it as a necessity. On one hand, from the perspective of the investor, because established companies usually have a low-risk profile as tenants. Hence, the lease contract is often long-term with a steady passive income for the landlord. On the other hand, established companies are typically looking for innovative ideas. They basically need startups around them to adopt their innovative products/services in their company. Talking about this issue an interviewee said: *"[...] Corporates want to be in an area with a lot of technology companies, early stage, later stage, and things like that. That in turn is attractive to them, to acquire them.[...]"* From the other perspective, startups are also in need of established companies as clients or as sponsors to financially support their business. For instance, one interviewee shared the added value of the integration of Heineken at *'Robohouse'* at Delft campus: *"[...] Young companies are agile, creative, fast, innovative, but they need money and sometimes production power or specific facilities. Or they need a client. For example, it is very nice if Heineken formulates an assignment to develop a robot. That's how both parties empower each other.[...]"*

In summary, the integration of established companies is valuable for the involved real estate investor due to the related the passive rental flow. In the second place, for the provision of financial assets for the start- and scaleups. In addition, physically integrating established companies in a building stimulates physical encounters between them and startups. A key concern, however, is that their share should not be too big in an ecosystem. So far, the emphasize was on the kind of surrounding commercial companies. The section that follows moves on to consider the integration of academia.

Academia

When the respondents were asked about the company mix, some of them mentioned the integration of academia within the ecosystem. The interviewees who addressed this topic also claimed that academia is not purely the university and also consists of post-secondary/higher vocational education schools, and knowledge institutions. The addressed benefits of integrating academia in an area for the companies in the same area are the provision of (research) interns, acquiring new employees who recently graduated, and sharing scientific knowledge. Interestingly, at BIC, the developer rents out spaces for schools in the same building where companies are located. The interviewee said the following about

this approach: *"[...] We have Avans and Fontys, both HBO courses. We also have Summa techniek, which is the largest education at BIC. They are all integrated in BIC. Just with a part-time education program. They are on the Fontys campus three days a week, and that one day they are at BIC. This applies to the HBO courses. At Summa, students attend one day out of five. With those very specialized things they (i.e., those students) already become part of the ecosystem. And that is also the value, because it is precisely those students, who walk around there and become familiar with BIC, that also ensure that they want to work there. I think that could be a unique selling point for your ecosystem. So, I would recommend to also conduct conversations with the MBO and HBO. Enter into those conversations. We are in constant dialogue with those kinds of parties.[...]"* Another respondent reported the physical integration of research institutes at Robohouse at Delft. As this interviewee put it: *"[...] TNO has a workplace there, not a desk but also a real lab. TNO is, of course, an institute that operates at the intersection of knowledge institution and business. Literally by bringing these different pillars together in one environment, we therefore try to stimulate interaction, to ensure that they can help each other.[...]"* In a nutshell, the data indicates that physically integrating universities, schools, and knowledge institutes in the ecosystem, nurtures the EE with talent and knowledge. The findings about competitors will be presented in the next paragraph.

Same branch companies

Two different and contrary experiences were expressed with putting the same branch companies in vicinity. When the respondents were asked about a well-functioning company mix, one of them shared an experience with putting together the same branch companies at Strijp-S. Initially, they thought it will lead to cross pollination. However, in the end it did not turn out that way. As he put it: *"[...] It has little to do with the same branch companies. We used to think: If we'll put all the designers and all the architects together, you get a lot of cross-pollination. But that doesn't work that way. We observed that they all look inside each other office and wonder why a certain company does have that customer and they don't. Apparently, that only works at shoe stores, or at jeans giants apparently in shopping streets, but not with entrepreneurs.[...]"*. On the contrary, three startups addressed the benefits of having companies in the same branch around them. One interviewee said the following about this: *"[...] We are in the medical field and there are several medical start-ups here, in that respect it is nice, from the support of YES Delft, that workshops are also offered in that direction. And that there is information provision for startups in that sector. I think that this supports the development of companies.[...]"* Another interviewee stated: *"[...] The advantage is that there are a few medical startups here. We deal with the same external partners, the same suppliers, and the same consultants. Because of that, you can exchange experience with other companies, like asking something about: Hi, you guys worked with that party, how did you like that?[...]"*. Overall, opinions about putting together ventures in the same branch are widespread. For some its beneficial, since they could share their network and knowledge with each other. However, one individual experienced a downside due to the reciprocal competition.

Complementary companies

In addition, one of the interviewees also addressed the benefits from having complementary companies together at one place, who are part of a larger supply chain company and make small product which are all part of a bigger whole. That is basically the approach of BIC. The companies in BIC make specific products for larger original equipment manufacturers (OEMs). As one of the interviewees said: *"[...] There are a number of OEMs in Eindhoven, like ASML. VDL is also an OEM, and NXP too. So, you have a number of companies that are OEMs. Those OEM companies, they come up with a product, and they sell their product, but in between, maybe 2000 companies from the region are working on that, they're making specific components for the overall product of those OEMs. And that, that is the chain of the hi-tech manufacturing industry. This is model of Eindhoven.[...]"* Simply put, at BIC they select their end-users if they are part of the hi-tech manufacturing chain of OEMs. To the contrary, the public authorities in Delft deliberately chose not to go into business with these large OEMs. This decision is based on the fact that they endeavour a diverse ecosystem.

What this section (4.2.1) reveals is that developers usually select their end-users based on their risk profile. Preferably they select only the low-risk tenants. More precisely, the data also indicated that they select a cluster of startups and scaleups, integrate academia and established companies,

or select complementary companies as part of an ecosystem. Furthermore, in some reference cases they selected the same branch companies. The results of putting these companies together turned-out contradicting. Whereas in one case it appeared to be advantageous, in another case it was disadvantageous. Besides, the presence of a magnet company also turned out disadvantageous in one case. Having addressed which company mix developers pursue, the following section addresses ways of selecting the end users.

4.2.2. Selection procedure
When the respondents were asked about a favourable company mix, several of them mentioned having a selection procedure. This selection procedure could be considered as an assessment process to acquire the 'right' tenants for the ecosystem.

Offering
As most of the interviewees pointed out, collaboration stands central for community in an EE. Therefore, companies varying in startups and established companies should contribute to the community according to some interviewees. As previously mentioned, established companies are usually looking for innovative startups, to adopt their innovative products in their company, whereas startups are looking for a client which financially supports them. By complementing each other with either money, talent, or innovative ideas, they mutually empower the ecosystem. At Delft Campus, there is an assessment criterion called *'contribution community'* whenever a new tenant want to establish at one of the buildings of the campus. For example, as one interviewee said: *"[...] It's important that you don't only focus on type of company, but always think about how does everyone here add value together? So how do we ensure that they need each other? So that is the assessment criterion: community contribution. What are you coming to get and bring? That is generic, getting: knowledge and talent. But those big companies that say I have an innovation agenda and I'm not going to work it out in-house. I want to work with companies that are way ahead in innovation compared to me. I can bring capital, I can bring knowledge, or I can provide an environment in which to build a prototype. [...] How can they ensure that you always look at how can they help each other? [...]"* In a few words, at Delft campus they access the potential end-user on what they bring on the table, and what their contribution is to the overall community.

Cooperation
Apart from offering something, *'cooperation'* also emerged throughout the transcripts. The interviewed startups argued that they need each other, to collaborate, gain advice and expands their networks. As one interviewee put it, this calls for an open community, where several parties cooperate with each other. In some of the reference cases, some tenants are rejected or accepted based on whether they going to cooperate with the existing tenants.

In summary, the data shows that developers assess whether the potential tenants contribute and cooperate with in the existing ventures in the ecosystem before they offer them the premises they want to rent.

4.3. Lease agreement
Another theme was the type of lease agreement of the end-users. Despite the fact that there was not a specific question asked about this topic, it did emerge frequently. Furthermore, the type of lease contract offered is also part of effectively selecting the end-users. Concerns regarding the lease agreement were more widespread. The two most discussed topics about the lease was flexibility, in terms of lease duration, and affordability.

Flexibility
Four respondents brought up the topic flexibility of the lease duration. As explained earlier, startups are fast growing companies who continuously call for different needs. As previously mentioned, (see section 4.1.2), there is an option to respond to their needs in terms of space, in which they have room to grow. Moreover, this need could also be provided in flexibility of lease. The following comment illustrates that flexibility of lease turned out to be one of the most significant 'success' factors in Strijp

S during the first phase of the development:*"[...] So we started renting it out, especially during the financial crisis, from the end of 2007/2008 until 2012/2013. That was a very important 'cork on to float on', because of the income. Secondly, it was existing real estate and relatively cheap. And we wanted to dispose those buildings quickly. Therefore, we had monthly terminable leases and that was especially for startups, cheap, flexible. [...] Flexibility, in addition to a brand and identity, turned out to be the most important asset, especially for that startup environment. And today that flexibility is no longer the most important asset, it is much more about the community. And the programs that are created by others in those communities.[...]"* Talking about the flexibility of the lease agreement, another interviewee said:*"[...] I understand it's nice from the investors' wallet, to rent out the premises for five years for everyone. But that does not stimulate the development of startups, because then they are stuck. If they then have to sign a lease, there are many obligations attached to the lease. Many companies are sensible and then say: I won't even come. So, what you need to understand as a real estate investor to offer flexibility, hence a two-year lease. That you ultimately get a very loyal tenant through that flexibility. Because that tenant can then develop, that company grows and it could potentially continue to grow, and consequently rent more square meters. [...] So through that flexibility you invest in your future tenants.[...]"*

Affordability

Another emerged theme about the lease agreement was affordability. Several interviewees indicated that one of the major struggles of startups is the lack of finance. Hence, having a lease contract that also suppresses their financial liquidity could decelerate their business operations. For example, one interviewee provided an example of a multi-tenant scaleup building, that the involved investors asked too much rent. As he put it: *"[...] You should think about the product-market combinations that you offer, whether it fits within your business model. [...] One multi-tenant scaleup building for example, offered in the beginning way too high lease prices, which later on drastically dropped. They haven't really thought about their target audience. They wanted to have later stage startups, but they asked a corporate rent. Of course, no one can afford that.[...]"*

The municipality in particular also brought up the theme affordability. Their responsibility, according to one interviewee, is to support and safeguard entrepreneurs who cannot pay too much rent. To do this, they offer subsidies to keep the lease affordable for these entrepreneurs, what they do at the Kabeldistrict. As put by a municipal servant: *"[...] The municipality is in charge of certain things. Like I said about social housing. This also applies to entrepreneurs. [...] We have received a subsidy and we are actually trying to achieve a respectable rent for as long as possible. An article has been included, and that article is about affordable business premises for the hi-tech manufacturing industry.[...]"*

Finally, the findings point out that short lease agreement are favourable for start- and scaleups. In addition, affordable leases is also an important point of attention for early-stage startups due to one of their main struggles: lack in finance. The influence of a developer is limited in offering these short-term and affordable lease contracts. Therefore, the data indicates that the municipality jumped in, in certain cases, to financially support providing such leases. On the whole, the previous sections (4.1 and 4.2.1) addressed the hard and soft ingredients, the company mix, the selection procedure and the type of lease contracts developers adopt to shape and foster an EE. The section that follows moves on to consider the role of the developer in this context.

4.4. Role of a developer

The expressed opinions about how developers position themselves, and how they could position themselves, in shaping an EE were divergent. The point of views about the role and responsibilities of a developer were expressed in two ways: 1) how the respondents perceived their role 2) and how they wish to see their role and the responsibilities they take. The two key themes that emerged are 'the adapting facilitator' and 'the orchestrator'. These themes will be further specified in the upcoming paragraphs (see figure (4.3).
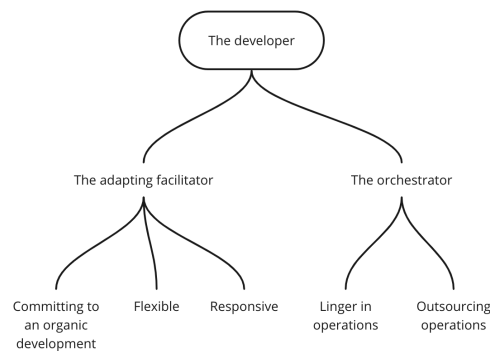
Figure 4.3: Role of a developer (own illustration)

4.4.1. The adapting facilitator

The name of the theme *adapting* came forward due to the emphasize of the interviewees on flexibility. A common view amongst interviewees was that ecosystems arise organically. They claimed that there is no exact definition about building an ecosystem, and these developments are unpredictable to a certain extent. Hence, a way of dealing with this is rather to prepare and commit, instead of predicting everything and trying to control it. One individual stated that:*"[...] Usually such things happens by itself. Sometimes we overestimate our role as a developer and see that everything actually happens very organically.[...]*" This view is supported by another interviewee, who experienced at Strijp S that the success behind the area development is particularly due to the entrepreneurs themselves. As he stated: *"[...] We have usually no idea where this will end. We can think of all kinds of scenarios. On the one hand, this is something that has arisen quite spontaneously. On the other hand, it is stimulated and facilitated from a vision/strategy. We still ask ourselves: does it fit with what we had in mind here? But the power, the energy, and the entrepreneurs really come from below. It's not that all parties came here because we had a vision of a developing a creative district. [...]*" Another interviewee expanded on this view by stating, that in his experience, certain urban planning principles gives a direction of the development process. However, it always turns out differently than expected. The following comment illustrates this: *"[...] In the beginning of a development you can come up with a number of urban planning principles. [...] It's more difficult to predict how it will actually look like, and how it will be developed in the coming years and you also may not want to go there. On the contrary, you have to think about how I can offer space for an organic area development.[...]*" Based on these findings, developing an ecosystem asks for adaptability to ultimately cope with the dynamic nature with changing needs of the start- and scaleup industry.

4.4.2. The orchestrator

A variety of perspectives were expressed about the role of a developer in shaping an ecosystem. Yet, there was a pattern in how the respondents perceived their role. The majority of respondents identified them one way or another as *'the orchestrator'*, because they bring several parties together and try to organize and manage the development process. For example, as one respondent stated: *"[...] The developer brings the end-user and the investor together. [...] An investor wants a good product. Well, that includes, return on investment, but that also includes quality. And you can, for example, make a specific product, as we are doing here. However, suppose that the tenant goes bankrupt, that means that the investor has to have such a good product that he can rent it out again. [...] Because a special product, that is for a certain group, but that may also yield more money. [...] There are all kinds of different examples how that can be done technically... Such as a casco delivery, and within the floor plan you can do different things. The role of a developer is to be sharp in that. So not only bringing together the investor and the user. But also, financially, and technically looking at the possibilities to help the investor a step further, but also the user.[...]*"

One expressed concern about the role of the developer in shaping an ecosystem, is the uncertainty whether the long-term vision of the area will be safeguarded once the developed estates are transferred to another party. Plenty participants suggested to safeguard a long-term vision when developing an

EE, without deviating from it. This view about safeguarding a long-term vision is both supported by the interviewed municipal officials and developers. One of the interviewees also pointed out that they transferred and safeguarded certain conditions in the sale agreement to the new owner. In addition, and by way of illustrating, in Delft the municipality also signed an agreement with the developers about meeting certain conditions. The concern of the municipal official was more along the lines of protecting vulnerable entrepreneurs. As one interviewee put it: *"[...] The developer has entered into an agreement with the municipality. In this agreement we have set a certain condition. So also in that context, I expect that if a developer transfers the real estate to an investor, that the same conditions will be met.[...] On the long-term, one of the exciting things for us is: how affordable do those square meters remain, in terms of possible rent for those manufacturing companies? [...]"*.

In general, whereas the data identified the developer as the orchestrator of the development process, multiple respondents also claimed that the long-term vision should be safeguarded by the developer. The following two paragraphs discuss to separate emerged approaches, from the dataset, in doing so.

Linger in operations

One approach how a developer could safeguard the vision is to *'linger in the operations'*. The emphasis is particularly on the word *'could'*. One of the interviewees namely pointed out that the core business of a private developer is to develop buildings. So, they *'could'* also solely focus on that. A broader perspective has been adopted by another interviewee who argued that the approach of a developer depends on their goal, which could be either developing solely the real estate or developing an ecosystem that allows startups to grow. The difference between these two approaches, is that the latter could make a significant impact on the appraisal of the real estate since investors know the value of it. As an illustration, one participant commented: *"[...] Strijp S has already more or less proven itself and those investors also know what the minimum guaranteed return is on their investments on whatever buildings.[...]"*. This extract indicates that a developer could make a more significant difference by being actively engaged and sticking around in the operations phase. This engagement goes further than solely the buildings and particularly emphasizes on actively engaging with the start- and scaleup community.

Outsourcing operations

To the contrary of linger in operations, another emerged theme was *'outsourcing operations'*. Some interviewees maintained that the developer could and probably will transfer the developed estates and sell it on to a third party, who invests and manages the operations. For example, one interviewee said: *"[...] If you'll consider a building, the maintenance, and the operations of the units in this building. A developer isn't going to do that. They'll try to get an investor on board to take care of that.[...]"* Thus, according to some interviewees it is unlikely that the developer sticks around after the completion.

To summarize, this section described the role of the developer from the angle of the interviewees. Developing an ecosystem for entrepreneurs is considered as organic and therefore requires the developer to be adaptable. Over and above that, an important consideration is that the developer safeguards the long-term vision of the area. Two emergent approaches are, that they could make an significant difference if they play a role in the operations after the completion, since an area becomes highly appraised if it proves to be flourishing. On the contrary, they could also outsource the operations fully to another party. Having described how the respondents viewed the role of a developer, the following section focuses on their interactions between the municipality and the university.

4.5. The collaborations with the municipality and the university

This section entails the roles of the municipality and the university and which interactions with them, and the developer leads to an EE. Figure 4.4 portrays an overview of the emerged themes. The key findings regarding these interactions can be found in this section. The topics addressed are a) the role of the municipality, b) the role of the municipality and c) the interactions.
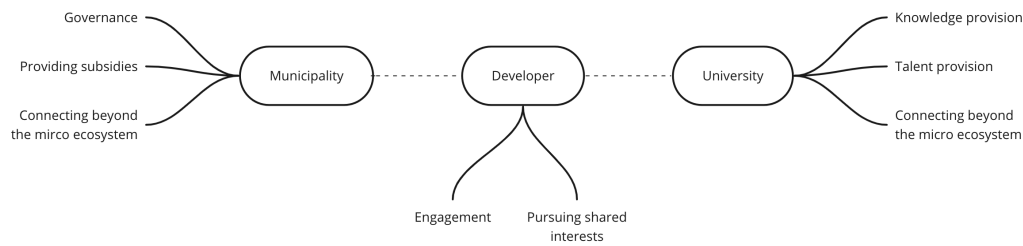
Figure 4.4: Interactions between the municipality, the developer, and the university (own illustration)

4.5.1. The role of the municipality

Several interviewees highlighted the significance of the municipality. As shown in figure 4.4 and pointed out by the respondents, the municipality has an important governance role. For instance, one interviewee agreed that the engagement of the municipality in Delft is one of the reasons why the city is successful. As he put it: *"[...] The Municipality of Delft is fully aware of the scale-ups in YES!Delft. And if they are looking for a new residence. They have people at the Municipality of Delft, who are actively engaged with these scaleups, to ensure that they also stay in Delft and won't go to another region. That's a good example of how actively engaged the municipality. In that respect, it is also somewhat the reason of the success of Delft. The university in combination with municipality, are also really leading in the ecosystem. The municipality is very decisive.[...]"* Strikingly, in some cases the municipality played an important role in making connections between (inter)national companies, and organizations beyond the region.

Furthermore, the municipality also played a significant financial role in the development projects the interviewees were involved in. As indicated previously (see section 4.3), in Delft they provided subsidies to keep the leases low and affordable for startups. Interestingly, public subsidies are not solely utilized to keep leases artificially low. As explained earlier (see section 4.1.2), at YES!Delft they keep some spaces in the building vacant to respond to the growth of the companies in the building. The investor was able to afford this approach due to subsidies they acquired. Moreover, at another multi-tenant building for scaleups at Delft campus, the municipality also jumped in, to financially support the realization of the community spaces. As the interviewee said: *"[...] At the scaleups building we wanted to have community spaces. However, the involved investor was unable to develop this space due to the related costs. Of course, I tried many times: "You obviously have deep pockets, come on" Yet, there's a limit to their expenditure. So, I went to the municipality and said "I want the investor to develop community spaces, that's good for the campus, you can have a cup of coffee there, you can also work there, maybe someone will meet their potential customer there. And it is also the living room for knowledge-intensive Delft." [...] After deliberation, and I really had to substantiate it with the business case, the municipality offered a subsidy.[...]"*. In short, the municipality plays a significant role in governing, bringing together parties which are usually out of the reach for the developer, and subsidizing ecosystems. The next part moves on to discuss the role of the university.

4.5.2. The role of the university

Furthermore, the significance of the university, according to a couple of interviewees, is knowledge provision. Other interviewees also revealed their importance in offering talent, in the form of internships and workforce, and connecting European collaborations. One of the interviewees said the following about the provision of these sources in Strijp S: *"[...] The TU/e Eindhoven is a completely different one. They mainly participate in projects and that is often the third flow of funds. For example, through European projects or provincial projects, or simply with all kinds of graduates or entrepreneurs. In particular Fontys, who has brought entire courses here. The same goes for Lucas and Summa. So, in that way, you actually try all kinds of different types of coalitions [...]. They bring the students in this direction to gain some practical experience.[...]"* Evidently, the role of the university is to offer graduates and providing knowledge. Likewise, they also assist in making the connection between other organizations. The following part moves on to describe the interactions between the developer, the university and municipality in greater detail.

4.5.3. Engagement

To begin with, three respondents claimed the importance of involving and bringing the industry, academia, and the public authorities together. This was also one of the approaches at Strijp S, when they notice the rise of a community of entrepreneurs. As one participant said: *"[...] Suddenly, we just got a kind of living community. We thought that's interesting. Consequently, we started developing further and asking our self the question how can we help those communities further? At first, it always starts with yourself, but sooner we also searched for help with [...] the municipality, the province, but especially the knowledge institutions, the TU in Eindhoven and Fontys. So eventually we tried... Triple helix, so bringing the government, knowledge institutes and businesses together in a good way.[...]"*.

4.5.4. Pursuing shared interests

One of the main findings in bringing these parties together is to collaborate with the municipality and the university by seeking for shared interests and working towards these interests. This also involves fulfilling one's responsibilities. One individual provided the suggestion to collaboratively work towards the shared course: *"[...] A development always goes differently compared to what you expected. So, the most important thing is that you actually have some sort of final idea [...] and certainly not a final plan. But you do have to know where you are heading. Also, by keeping all committed parties on that same course. [...]"* Another individual maintained that working towards a shared course also involves putting aside your own interest above the shared interest. On top of that, in the same vein, one of the interviewees explained the benefits of a public private partnership, in which the municipality and developers partner up and serve both public and private interests: *"[...] Due to the shortage of staff and prioritization discusses within the government, discussions arisen about let the market do all the market activities and the government should stick to our core tasks. And then of course you get the political discussion, what are those core tasks? Consequently, this is translated into the legal duties, and does duties do not include a PPP. But on the other hand, what I have experienced of 12 years of Strijp-S, is that a PPP often works better if you want to achieve public goals. It's better compared to facilitating at the front and verifying it at the end. [...]"*

On the whole, the municipality and university play an important role in governing, subsidizing, providing labourers and innovative ideas, and making the connection between other organizations and parties which could be out of reach of the developer. Interacting with each other by working towards a shared vision is perceived as key in shaping an EE, along with active engagement. This involves being committed by keeping one's responsibilities and putting the shared interest upfront.

4.6. The constraints and barriers

In the final part of the interview, the respondents were asked about the barriers and constraints they faced in developing and operating an ecosystem. The identified barriers and constraints were wide-ranging and often case specific. Yet, it was also somehow connected with each other. In total, four broad categories emerged from the dataset, including: economic, social, regulative, and organizational barriers and constraints (see figure 4.5). These themes will be further elaborated in the upcoming paragraphs.
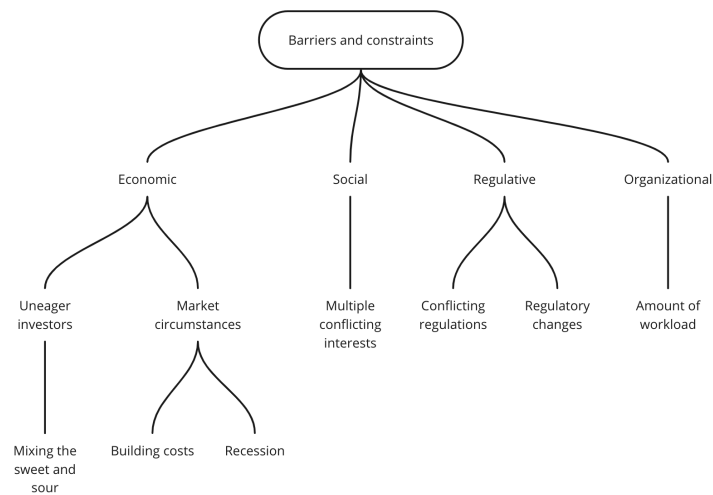
Figure 4.5: Constraints and barriers (own illustration)

4.6.1. Economic

Uneager investors

Six interviewees pointed out that one of the main barriers in developing an EE is attracting investors. In the beginning of a development project its often uncertain what the outcome will be, which could make investors reluctant to get on board. If the development already have proven itself to be flourishing, investors might be more eager. Noticeably, several interviewees have addressed this barrier and pointed out that they were struggling in the first phase of the development to get investors embarked. As one interviewee said about the campus south case in Delft: *"[...] Now campus south has already been developed in parts, so the interest of the outside world increases. We have entered in a positive upward spiral. But in the beginning, it was different, we had a large a vacant area and no development have proven itself yet whether it was successful or could be successful. Back then we were searching for a collaboration with a private partner who, just like the TU, strongly believed in its potential [...] with a long-term commitment who could participate in the development. [...]"* Also at Strijp-S, the development organization was facing difficulties in attracting private investors: *"[...] In the beginning, we actually had to convince and entice the investors. Now it's the other way around. Now they're standing in line [...]"*. These findings suggest that an EE usually becomes valuable if it has proven itself, which makes it hard to get investors on board in the initial stage of a development. Sometimes, as described in section 4.5.1 of this chapter, the municipality provide support by offering subsidies to, among other things, finance the community spaces in a building. Besides, at Delft Campus, the development organization adopted another approach, this approach is addressed in the next paragraph.

Mixing the sweet and the sour

Interestingly, one of the interviewees shared an approach in dealing with attracting investors, referred to as: *'mixing the sweet and the sour'*. He pointed out that there is a continuous spatial demand for housing scaleups. Growing startups become scaleups someday, outgrown their size, and therefore need a larger space. Yet, usually private investors are not eager to fulfil this housing demand, because today's scaleups may not exist at all in a few years. To still ensure to accommodate growing startups, and get a private investor on board, one interviewee shared an approach how they cope with this. As the interviewee stated:*"[...] We came up with the idea, instead of just that one multi-tenant building for scaleups, which apparently isn't attractive for investors. And organized a collaboration with a private party that gets both the single-tenant preferential position and new single-tenant buildings, which every investor would like. But in return, they should also invest in realizing the multi-tenant building for scaleups. [...]"* What this extract reveals is that an approach to attract investors is to offer a building with a low-risk single user tenant, under the condition that they also invest in the multi-tenant building for scaleups.

Market circumstances
Some interviewees also addressed the market circumstances as constraints for the development of an ecosystem, which could both negatively impact a developments revenue and costs. For instance, one interviewee touched upon the downsides of the high rising interest rates that formed a constrain: *"[...] What we see from the current market conditions, mainly due to the turmoil in the market, but especially due to the increase of international interest rates. The international investor who had just found Eindhoven is now taking a step back. So, you'll mainly see the Dutch institutional investors who remain attached. So, you see that are a little more cautious. That's a pity, because it was interesting to have just a few more international parties.[...]"* Another individual, mentioned not really an experienced constraint or barrier, but more an uncertainty. For instance, as the interviewee said: *"[...] The biggest uncertainty is whether the development takes place. Certain building materials are becoming more expensive, which might lead to a postponement of the projects. As a result, those square meters will not be there for the manufacturing industry. That's a risk. That is definitely a risk.[...]"*. These findings show that rising building costs and interest rates could form a constrain in developing an ecosystem. Thus far, the economic constraints and barriers are described, the following part covers the social ones.

4.6.2. Social
Multiple conflicting interests
The second most frequently mentioned barrier are the multiple conflicting interests. These interests were either from the municipality, the university or academia. One respondent described a specific example about the campus south development in Delft. Were the university's endeavoured their own core interest, while putting aside the interest of the accessibility of an area. She mentioned the following: *"[...] From an area development perspective you just really can't understand to have the tram connection stop before X. The tram is not going to science park south. [...] Because a tram causes vibrations and radiation. That's all very exciting for the new labs, so we're not going to run a tram. [...] I'm thinking A. we have a lot of brilliant people, who could come up with something so that the labs won't suffer from those radiations and vibrations. B. you should also encourage a CO2 neutral campus. And C. Practice what you preach, impact for a better society. [...] Well, in response the TU says: Thank you, I hear what you're saying, but my core business is 'Research and education', without those two, no valorisation [...]. Of course, I can understand that. However, I find it very complicated to understand.[...]"*. As previously stated, multiple interviewees also suggested to deal with conflicting interests, by working towards a shared interest (see section 4.5.4) by putting one's own interest aside. However, as expressed conflicting interest could still cause a barrier.

4.6.3. Regulative
Conflicting regulations
Besides the social barriers, some interviewees also mentioned the municipal regulations as a barrier, that it formed an obstacle during development process. Additionally, one interviewee mentioned a constrain about regulatory changes coming from higher public authorities: *"[...] Housing associations were challenged to get into extracurricular real estate. Trudo (housing associations) has tackled this like no other in Eindhoven and realized fantastic projects. However, a few cabinets ago it was like: We shouldn't want that anymore. [...] Housing associations should go back to doing their core task, which is only social housing. That was quite a barrier. Because Trudo mainly did next to social housing, unprofitable projects for the commercial market. Which was super important for Strijp S. So again, after that was no longer possible, we came up with all kinds of funds to still make it happen.[...]"* He went on by explaining that these regulatory changes also asks for creative solutions. By providing the following example: *"[...] You'll see that every setback... Mobility-S actually originated because we couldn't make a parking building anymore. With every setback, you start thinking about what then? So, every setback has led to creativity. And that makes Strijp S special. Because we are part of a relatively small team, you also get the opportunity to do things differently. So, we are not afraid of setbacks, but it shouldn't be too much.[...]"*. Thus, changes coming from higher authorities could form a constraint. Nonetheless, this could give rise to creative solutions to deal with these changes.

4.6.4. Organizational

Amount of workload

Turning to the organizational barriers and constraints, an addressed theme that reoccurred in the data-set was the lack of workforce due to, among other things, the high amount of workload. This issue was not only addressed among developers but also by a public official, who stated that there lacking workforce could also negatively affect a development project: *"[...] From the municipal side, certainly regarding the developments we currently working on, we just want to be able to bring them to a successful completion. But we're also realistic about our capacity and the accumulation of the current developments. [...] We have a limited capacity. That's a risk, especially if you start a process with a development company. [...] If I'm considering the risks, [...] we should create realistic expectation management with too few employees and prioritize the projects as well.[...]"* As demonstrated, a lack of workforce from both the developers side, but also from other parties could cause delays.

In conclusion, the presented constraints and barriers of the interviewees varied from economic until organizational and were distinct compared to each other, since their frame of reference was the case, they worked on. The key points drawn from this section is that the main barriers and constraints are struggling to get real estate investors on board; market circumstances that influences the costs and revenue of a development; public regulations; and the amount of workload.

Overall, this chapter has described what the key findings of the interviews are. It began by describing that the physical built environment should be aligned with the hard and soft needs of the future ventures. It went on to suggest how a developer could effectively select their end-users. The section that followed examined the role of a developer in shaping an ecosystem. Followed by an examination of the interaction between the municipality, university, and the developer. The remaining section addressed the themes about the faced constraints and barriers. All these findings will be discussed in the next chapter.

5

Discussion

This chapter discusses the analysed findings from the interviews presented in the previous chapter (4). This involves discussing the meaning and the connection between the research questions and the results. In addition, this chapter also compromises a discussion between the empirical findings and the presented existing literature in chapter 2. As was pointed out in the introduction to this research, the aim of this study was to explore the influence a private developer can exert in shaping an EE. The following key findings are gathered from the empirical evidence of this study:

To begin with, developers exert their influence in shaping an ecosystem in four main ways. First of all, they develop shared spaces, physical meeting places, and scalable businesses premises. Secondly, the data shows that in some cases they participate in the operation phase, and play a role in facilitating supportive services, organizing events, organizing coaching programs, and offering an online platform. Thirdly, another way how developers exert their influence is by selecting end-users who benefit from each-other. More specifically, this study found the developing parties that selected a mix of a cluster of start and scaleups, established companies, and knowledge institutes, greatly took advantage of one and all. Fourthly and lastly, a relevant finding was the convenience of offering affordable and short-term leases. In addition, an initial objective of this study was to identify the role and the responsibilities of a developer in shaping an EE. The study found that several developers adopt an adaptable approach in developing an ecosystem. Which implies that they not fully control and work towards a specific goal, but on the contrary leave room for what is about to come and respond to the contemporary end-users needs. Hence, the data identifies them as *'the adapting facilitator'*. Besides, developers could position themselves as *'the orchestrator'*, thought managing and taking responsibility in both the development process and the functioning of the operations. Nevertheless, the data indicates that developers usually transfers the real estate after the development. Furthermore, the third question in this study sought to determine which interactions between the municipality and the university leads to an EE. The data indicates that their involvement is indispensable in shaping an ecosystem. The experienced successes of the reference cases in this study, are often due to active engagement, and pursuing each other's shared interests between these parties. Lastly, the data revealed that unwilling real estate investors are one of the major barriers developers face when shaping an ecosystem.

This chapter has been divided into two parts. The first part deals with the interpretation of the results by connecting the dots between the research questions, the empirical findings, and the existing literature. This section has been structured in the same order of the research question, starting with the influence a developer exerts, followed by their role and responsibilities, the interactions between the municipality and the university and lastly the barriers and constraints. The second part of this chapter covers the limitations of this study. These limitations are openly acknowledged with the intent to make the study replicable and comprehensible, so that authors could embroider on the research.

5.1. Interpretation of the results

5.1.1. The influence that a developer exerts

The hypothesis of the influence a developer can exert in shaping an ecosystem was expressed in two ways. They design and develop the built environment in a certain way to stimulate entrepreneurship. Besides, they select and put certain end-users together with the philosophy that these parties will work together and ultimately strengthens the overall ecosystem. However, the findings have shown that there are also other ways to influence the creation of an EE, which will be discussed in this section. This section begins with discussing the influence of developers in terms of how they designed the built environment, which services they provided, how they selected the end-users, and lastly how they designed the lease agreements.

5.1.2. The influence in shaping the built environment

The influence in terms of physical design principles

First and foremost, one of the most frequently mentioned themes in the analysis was to know what the accommodation-needs are of the companies. This result can be interpreted as straightforward, since that is also what the development business entails. The business model of a developer is namely to facilitate the accommodation needs of their target groups. For instance, as mentioned in the literature review, Roulac (1999) presented the importance the built environment could have for ventures to eventually reach a competitive advantage. Notwithstanding, the needs for the target group of this study, i.e., hi-tech start- and scaleups, can be expounded as wide-ranging. Overall, four physical housing related themes about these needs arose out of the analysis: office- and makerspaces, shared spaces, meeting places, and flexibility in terms of space.

The current study found that start- and scaleups are usually in need of both of maker- and office spaces to conduct their business. Furthermore, one unanticipated finding was that leisure was also pointed out as relevant for the businesses. Obviously, integrating leisure in the built environment, such as a pool table as called out by one of the respondents, might not directly have a significant impact on the business development of the companies. However, a possible explanation for the significance of leisure in an area could be that it makes places more pleasant, which in return could be impactful for the acquisition of talent. Take for example, one of the interviewees mentioned that the integration of leisure attracts young people.

Secondly, the results of this study also show that the theme *'shared spaces and tools'*, such as meeting rooms, machinery, or makerspaces, reoccurred throughout the data set. Various shared spaces are integrated in the buildings of the reference cases, where the interviewees of this study were involved in. The respondents pointed out that sharing spaces is in particular convenient for startups. There are several explanations for this result. Firstly, and probably most obviously, utilizing shared spaces reduces the costs which ventures make, so they do not have to invest or rent entire spaces for themselves. Despite that, this result has not explicitly been described in previous EE research. The cause of this might be due to the fact that EE literature tend to focus on the interconnections between people and the resources ventures need to grow, while underexposing how the ventures in an ecosystem could use their resources effectively.

The most obvious finding to emerge from the analysis is that facilitating interaction in an ecosystem, supports knowledge exchange and collaborations. The results of the analysis show that these interactions are stimulated by developers who realized physical meeting places were people encounter each other. Whereas some interviewees did this by developing a shared lunch place, where everyone gathers for lunch. Another interviewee mentioned having only one entrance, which everyone uses when coming to or leaving work. This finding is consistent with that of Pancholi et al. (2018) who addressed *'a porous built environment'* as being a fundamental ingredient in an ecosystem because it causes spontaneous collisions among entrepreneurs and other people.

Lastly, another important finding was the theme 'scalable business premises'. The start- and scaleup industry is perceived as dynamic due to the high number of bankruptcies, but also due to the fast-growing potential of the businesses. It is interesting to note that in four cases of this study the inter-

viewees mentioned the benefits of using scalable business premises to align with the growth of the companies. These results reflect those of Rajakallio et al. (2018) who also found that a *'flexible modular design'* contributes to a gradual development with changing needs and end-users. This study took a step further and suggested other specific ways of dealing with the growth of companies and aligning the built environment to this growth. Surprisingly, two respondents alluded the notion that they kept spaces within a building vacant on purpose, to cope with the needs of the dynamic end-users. This rather contradictory result may be due the usual philosophy of practitioners in the real estate sector: the less vacancies, the better the business case. A source of uncertainty with this approach, however, is the financial possibility of the investor to keep spaces vacant if their budget allows these vacancies.

In general, these findings suggest that the developer adopted several physical design approaches to support entrepreneurship. Varying in developing and offering maker- and offices spaces, shared spaces and tools, meeting places, and scalable premises.

The influence in terms of nonphysical design principles
Other than physical design principles, another repeatedly mentioned theme was the provision of soft services (i.e., nonphysical design principles). These soft services do not shape the physical built environment, but instead shapes and nurtures the ecosystem within the built environment. The data shows that usually the developer does not adopt these principles, but rather the (hub)landlord of a building or area. Nevertheless, in some of the reference cases of this study, such a BIC, Strijp-S, or the temporary operations of the Kabeldistrict, the developer participated in the operations phase. Hence, they also played a role in offering these services. The interviewees addressed four main soft services they provided in the reference cases.

To begin with, at YES!Delft, the operator provided so-called *'supportive services'*. These services have an *'unburdening-nature'*, meaning that the operator takes care of certain activities, which allows startups to focus more on their business. More precisely, these supportive services are a communal reception, the package distribution within a building, and a service for renting meeting rooms for one or a couple of hours.

Besides, the results also pointed the efficacy out of an operator who is active in organizing events and workshops and promoting fairs to facilitate interactions beyond the region. This result may be explained by the fact that feeding and enabling an EE requires active engagement. This was also reported by a number of authors (e.g., Feld, 2020, Isenberg, 2011a and Ciaramella and Dall'Orso, 2021) who emphasized on the significance of engagement with the community in an ecosystem.

Thirdly, the validation lab and the accelerator programs at YES!Delft were, according to the interviewed start- and scaleups, highly appreciated and helpful. These programs supported the companies to start and grow their business. Moreover, these programs were also decisive for them to establish at YES!Delft. Yet obviously a developer did not provide these programs. Therefore, they could hire another party who takes care of these workshops during the operations.

Moreover, another unexpected practical finding was the convenience of an online platform, that presents all the involved companies in the ecosystem. The data indicated that companies acquired new employees via such a platform. On top of that, this platform could also be use full for companies if they want to attract investments.

In short, the data shows that operators, sometimes in collaboration with the developer, adopt four main nonphysical design principles to give shape and at the same time nurture an EE. They offer supportive services; organize gatherings, events and promote fairs; provide coaching programs; and facilitate an online platform. The next section moves on to the discuss how developers select their end-user as part of an EE.

5.1.3. The influence in selecting the end-users
The second question in this research was about how developers effectively select their end-users as part of an EE. The interviewed companies were asked which kind of parties they need in close prox-

imity that supports the growth of their ventures. Whereas the interviewed development practitioners were asked what company mix support entrepreneurship. These questions were asked, with the line of reasoning that a developer could respond to this in selecting the eventual end-users. The paragraphs underneath discuss these findings.

To begin with, an important finding was that developers select multiple start- and scaleups and put them together in vicinity to eventually create a startup community. This finding is consistent with the clustering concept of M. E. Porter (1998), who maintains that the concentration of multiple startups at one place benefits from knowledge spillovers.

Furthermore, several interviewees also pointed out that real estate developers and mainly investors, select their tenants based their risk profiles. Evidently, a low-risk tenant is the most convenient tenant to have. Nevertheless, there is no escaping from housing high-risk tenants when shaping an ecosystem. Especially startups are usually high-risk tenants, due to the great uncertainty their facing when aiming to create a new service or product (Ries, 2011). The data therefore indicated that low risk tenants (e.g., often larger established companies) are required, so the real estate investor could spread the risks. Clearly, integrating established companies in an ecosystem is beneficial for the involved real estate investor. Usually, they sign long-term leases and provide a steady passive rental income. Moreover, the data suggested that integrating established companies also ensures benefits for the EE. In the reference cases they financially support startups, so startups could work out their innovative ideas, which in return can be integrated in the established companies. Yet, the analysis also revealed that a too large share of established companies could be problematic. This result may be explained by the fact that established companies usually have more financial power and could therefore extrude startups. This result is consistent with those of Iansiti and Levien (2004) who claimed that dominating companies (i.e., established companies) could negatively impact an EE when gaining too much control. On top of that, Berk and Saxenian (2022) argued that public actors could implement anti-trust policies that makes it harder for established companies to conduct acquisitions and mergers, resulting in a more collaborative EE. This study revealed that private actors can respond to a more collaborative community of startups and established companies, by offering solely a modest space within a building for established companies. In one of the reference cases of this study, they literally did this.

Likewise, one unforeseen finding was that in some cases knowledge institutions, schools, and universities are physically integrated in a building. This integration resulted in knowledge sharing, but also the provision of (research)interns or new employees graduated students, and collaborations. This result also accords with the literature about EE and the connection between academia. For example, Zhao and Zou (2021), maintained that a strong ecosystem have tight links between academia. Nevertheless, the suggestion and example to literally put academia and businesses together at one building came unexpected. An implication of this finding is that the developer selects a school as end-user, so it could be part of the ecosystem.

Three approaches emerged how developers select their end-user of an ecosystems. The first approach that emerged was putting complementary companies together. This is basically the approach of BIC. The companies at BIC are making small components, which are part of a large product, for an established OEM. This finding was also reported by Roja and Nastase (2014). They claimed that putting complementary businesses together, stimulates 'network effects' which afterwards gives a boost to the ecosystem. On the other hand, the data showed that the municipality in Delft deliberately chosen not to go into business with a large OEM, to strive for a diverse ecosystem.

The second approach out of the analysis was the presence of a *'magnet company'*, known by their popularity or reputation, who could act as a 'magnet' by attracting other companies and people. This approach was adopted in one of the reference cases of this study. In the beginning, this work out well. Nonetheless, this created a community built around one company. As a consequence, at a sudden point the chemistry was not there anymore. This finding indicates that an ecosystem built around such a company is not desirable since other companies in the ecosystem could be reliable and dependent on this company. This raises the question if the community remains strong enough to move on when this company goes bankrupt for example. Nevertheless, this result should also be interpreted with caution,

because this occurred in one of the reference cases of this study.

The third approach was rather contradicting and about selecting the same branch companies. Some medical startups mentioned the benefits of having other medical startups around them, so they share their networks with each and every one. On the contrary, it is somewhat surprising that the findings also presented that putting the same branch companies in proximity have a downside, because they are likely to compete with each other and hence isolate themselves to keep their business hidden from other ventures. A possible explanation for this might be that the former respondents probability dealt with companies who are in the same branch yet develop other products. The later result may be explained by the reason that the same branch companies develop and offer equivalent products or services. This indicates that developers could select same branch companies as end-users, while paying close diligence about what products or services these companies produce or offer.

Lastly, the most relevant finding was the view that companies or organizations who enter into the ecosystem should contribute to the community. Generically, established companies offer money, and startups offer innovative ideas and talent, which in exchange for that could empower the overall ecosystem. However, although the idea and essence of empowering each other in an ecosystem is line with those of previous studies, this specific approach has not previously been described in literature. A possible explanation for this might be that researcher have not treated a selection procedure for an EE in much detail.

Altogether, the findings of this study show a pattern that selecting the end-users in diligence is imperative in shaping an EE. Overall, the data indicates that developers effectively select their end-users by pursuing a mix of a cluster of start- and scaleups, established companies and academia (see table 5.1). In addition, the current study found that these end-users are assessed by a consideration of their contribution (e.g., innovation, money, knowledge, and workforce) to the ecosystem. Besides, the risk profile of the tenants also play an important role for private developers and investors in selecting the users. In total, three applied approaches emerged from the data how developers select their end-users as part of an EE. They either select complementary ventures who are part of a larger OEM, they select a *magnet* company who attracts other ventures, or they select the same branch companies. The data shows that neither approach is better or worse, because each of these approaches are case specific and worked adequate in the reference cases of this study. However, it could conceivably be hypothesised with nuance that selecting the same branch companies, who do not produce competing products or offer competing services, is the most solid long-term approach for a diverse EE.

Tenants	Contribution	Risk profile	Approaches
Cluster of start- and scaleups	Innovation	High	Complementary
Established companies	Money	Low	Magnet
Academia	Knowledge and workforce		Same branch
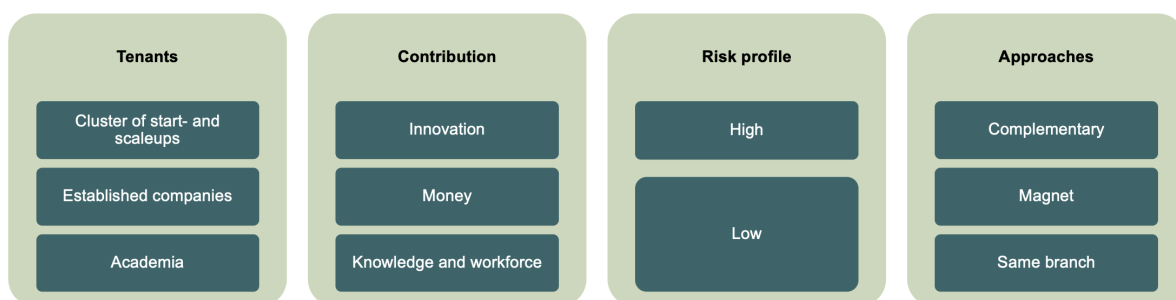
Table 5.1: Effectively selecting the end-users of an EE

The influence in terms of designing the lease contract

An unanticipated finding was the frequency mentioned topic about the lease agreement of the eventual tenants. The interview question namely did not include any questions regarding the lease agreements. However, several respondents did highlight the topic more than once. An obvious finding to emerge from the analysis is that the lease agreements are decisive for startups. Due to their growth potential, but also their uncertainties of not going bankrupt, they want short flexible leases. This also accords with the earlier findings, which showed that the start- and scaleup industry is dynamic, and therefore asks for flexibility in terms of space. Besides, the data as well as the theory (e.g., Xu and Dobson, 2019) show that the lack of finance is one of the main obstacles for startups. Hence, the affordability

of the leases are also deemed as important. The data of this study revealed that in some references cases the municipality played a part keeping the leases affordable. In another case, affordable leases are made achievable because the existing real estate was bought relatively cheap.

Generally speaking, flexibility can also be expressed in terms of the lease duration, meaning that developers offer short-term and affordable leases for startup- and scaleups. Having discussed what physical and nonphysical design approaches developers adopted, how they selected the end-users as part of the EE, and how they designed the lease contracts that contributes to the EE, the next section of this chapter addresses ways of how they position themselves.

5.1.4. The role and responsibilities of a developer

Little was found in the literature on the role of a developer in shaping an EE. Therefore, the second question in this research was about what the role of a developer is and could be, and which responsibilities they could take in shaping an ecosystem.

A relevant finding is that developers adopt an adaptive management approach is shaping an EE. Several interviewees have pointed out that an EE grows organically. This signifies that the needs of the companies constantly change, due to the dynamic nature of the start- and scale-up sector. A way of dealing with such an altering development, is to be adaptive. This finding may partly be explained by the earlier findings, which shows that they leave plots vacant on purpose without knowing whether it is going to be occupied on the short-term, and to quickly respond to the end-users need of space (section 5.1.2). These results reflect those of one of the management approaches of Koppenjan et al. (2011) who prescribed: *'The predict & control approach'* and *'The prepare & commit approach'*. The later approach is suggested to me more suitable when dealing with uncertainties. In addition, this finding also broadly supports the work of Mintzberg and Waters (1985) about emergent strategies. Namely, Mintzberg and Waters (1985) states that the eventual realized strategy is often a mix between the deliberate strategy and the various emergent strategies that popped up in between. The data demonstrates that during a development process and especially when shaping an EE, the final end goal/product cannot fully be controlled, and therefore ask for an adaptable approach. Hence, the developer can be characterized as *'the adapting facilitator'* of an ecosystem, in which they monitor what's needed, and prepare and commit for what is about to come.

Over and above that, Adams and Tiesdell (2012) identified the private developer as the *'orchestrator'* of the development process, since they are having a directing role in the development process and bring labour, capital, and property rights together. This differs from the findings presented in this study. Namely, this study focused on their role in shaping an EE, which goes one step further than solely the development process. The results of this study indicate that an ecosystem is especially shaped during the operations phase. Multiple interviewees suggested, and some interviewed developers already adopted, a participating role in the operations phase. Therefore, the change of the goal of developer, from developing real estate to developing an ecosystem, also changes their role to becoming the *'orchestrator'* of the EE. This finding was also reported by Rajakallio et al. (2018), who maintains that the value of an ecosystem predominately created in the operation phase.

Two contradicting approaches arisen from the findings how developers could engage in the operations phase. The data shows that it is usually common that the developer outsources the operations to a third party (i.e., the real estate investor). Noteworthy, the data also indicated that this approach requires that the main principles will be transmitted and met by the third party who take responsibility over the operations. These principles can be about the soft services or the type of tenants. This implies that the developer could set up a purchase agreement which include these requirements. The more surprising approach is that they could linger in operations phase. This means that a developer sticks around in the operations and do not sell the developed buildings directly after the completion. This insinuates that, if they adopt this approach, they gain a kind of ownership form in the ecosystem and become part of one of the keystone species in an EE. These results also reflect those of Iansiti and Levien (2004) who also described the owner and the operator, who takes care of these soft service, as the keystone firm and the 'vital species' in an EE. The latter approach comes along with a shift in their

responsibility. As mentioned in the literature review, private developers have a financial responsibility to gain revenue out of their projects, an environmental responsibility to develop sustainable buildings, and social responsibilities to minimize the negative impact of buildings on human health (see 2.1.2). When the private developer becomes part of the keystone firm of an EE, they gain an additional responsibility to invest, engage, and facilitate the needs of the community to the best of one's ability. However, operating an EE is not the core business of a developer. Therefore, they could partner up and invest in a collaborating with a specialized organization.

On the whole, the data of this study identified the developer as 'the adapting facilitator' of an EE, since they prepare to what the future holds and adapt to the present needs of the companies they house. Moreover, they are both in this study and in the literature described as the 'orchestrator of the development process'. On the other hand, they could become the 'orchestrator' of the ecosystem by participating in and taking responsibility over the operations phase in a certain ownership form. Yet, this depends on their actual goal, whether they solely aiming to shape the built environment or shape the ecosystem. Having addressed what, the responsibilities and the role of a developer is or could be, the following section moves on the discuss the interactions between the municipality and the university.

5.1.5. The interactions between the municipality and the university

In reviewing the literature about EEs, the engagement of the municipality and the university was highlighted as important. For example, Feld (2020) claimed that the lacking engagement of public authorities with the entrepreneurs, is often the cause of a failing ecosystem. In the same vein, Pan and Guo (2021) mentioned that tight links between the public parties, academia, and the industry (i.e., triple helix) is vital for shaping an ecosystem. Overall, this study corroborates these earlier reviewed studies. The finding that the university plays an important role in the provision of graduates students, interns, and knowledge is consistent with that of the World Economic Forum (2013). This study also indicated that the municipality plays a significant role governing, and subsidizing ecosystems (Isenberg, 2011a). For example, in some of the reference cases they co-pay for the business premises for startups to keep it affordable. Nevertheless, and contrary to expectations, this study also found another rather interesting role which the municipality and university fulfil. In the reference cases of this study, they expanded the networks of the entrepreneurs in the ecosystems, by facilitating connections with parties and organizations beyond, for instance, via European projects.

The findings and the theory suggest that the input of the municipality and the university are indispensable in building an EE. Still, aside from their role, this study focused on how private developers create an ecosystem, and which interactions between them and the public and academic parties contributes to the shaping of an ecosystem. The data unveiled the importance of working towards each other's shared interests, which also involves putting one's own interest aside from the shared interest. These results corroborate the findings of the literature review of Ansell and Gash (2008) about collaborative governance between public and private parties. Ansell and Gash (2008) identified the critical variables about whether or not this form of governance produce a successful collaboration based on prior history cooperation or conflicts. One of these critical variables are, as Ansell and Gash (2008) notes: *'The development of commitment and shared understanding'*. Moreover, as mentioned in the literature review in section about effectively steering the course of a project, De Leeuw (2002) described the important pre-condition *'sufficient steering measures'*. These steering measures expand when multiple actors could exert their influence in shaping an ecosystem. For instance, the university can provide new talent that eventually becomes part of the ecosystem. It can thus be suggested with caution that effectively shaping an ecosystem can be best done in a collaborative manner.

According to the data and the existing theory, this implies that early and continuous engagement and pursuing the shared interests of both the public, academic, and private parties, are perceived as fundamental interactions in creating an EE. However, shaping an ecosystem does not come without any constraints nor barriers, which will be addressed in the next section.

5.1.6. The barriers and constraints

Needless to say, the influence a developer exerts is not limitless. There are certain restraints, such as deadlines they need to meet and their restricted expenditure that influences the return on investments. Although the described actions or approaches in the previous paragraphs are in some reference cases adopted, that does not mean that developers are always able to adopt these. Hence, this section discusses the identified barriers and constraints.

All the identified barriers and constraints from the analysis are not specifically ecosystem related. The barriers and constraints that did emerge were often project specific and faced by the respondents during the development and operations of the concerned reference case, such as conflicting interests among the involved parties or regulatory barriers. One of the main findings is that developers face the same struggles as usual, which they also could face in other different development projects, like one of the five competitive forces of M. E. Porter (1979). Take for example, the supplier power of contractors that drives the cost of a development project up. Another example are the changing market circumstances, such as the rising inflation that caused a constraint at Strijp S in Eindhoven in acquiring international investors.

Be that as it may, in response to the question about the barriers and constraints, some of those interviewed indicated that the development of an ecosystem requires more time invested into the community compared to an ordinary development project (e.g., condominium). This result may be explained by the earlier findings (discussed in section 5.1.2), which showed the significance of the provision of soft services in shaping an ecosystem. As a consequence, that the amount of workload formed a constraint in some of the reference cases.

Additionally, one of the most frequently mentioned barriers out of the analysis is that real estate investors are often uneagerly to get embarked, due to the related risks of housing start- and scaleups. Despite the great potential of a housing startups, it is also perceived as s high risk investment, considering that tenants might go bankrupt. Two interesting approaches emerged, in dealing with this barrier. Some interviewees mentioned the benefits of a developer in playing a part in the operations phase. In this way they work on a proof of concept. Ultimately, once the concept has been proven, they could literally share with an investor how much the real estate actually yields. The data of this study reveals that investors are way more eager to invest and piggyback on a particular area that is proven to be successful. The findings also showed another applied approach, in which the developers compromise with the private real estate investor. In this approach they offered the real estate developer the low-risk-profile building with a single tenant, under the condition that they also invest in the high-risk-profile multi-tenant building with scaleups. In either case, this suggest that the main barriers and constraints developers face when shaping an ecosystem is the amount of workload and unwilling investors.

To conclude, the results indicate that private developers influence the shaping of an entrepreneurial ecosystem by facilitating the needs of the entrepreneurs, in which stimulating interactions, facilitating support, and flexibility in terms of the use of space stands central. Further findings show that their influence could go beyond the development process. It suggests that the operations phase, in particular, demands attention as well by offering soft services that sustains the businesses in the ecosystem.

5.2. The findings in relation with the research gap

The previous section discussed how the findings and the theory gave rise to an answer on the research questions in this study. It is now necessary to take a step back and consider the initial research gap again. The aim of this study has come about through the research gap that the role and the influence of private developers in shaping an EE is underexposed in literature. The theory have shown how public authorities influence the shaping of an EE. For instance, Isenberg (2011a) stated that in order to create an ecosystem at a particular area, a public impulse of governmental involvement is essential, especially in the first stages. After a while an EE becomes self-sustaining, whereas governmental involvement becomes less important (Isenberg, 2011a). This public involvement varies from governing and financing ecosystems. Public authorities can govern ecosystems by providing regulatory frame-

work incentives (e.g., tax incentives) for startups (Isenberg, 2011b), which provides low entry barriers; or implementing antitrust policies that makes mergers and acquisitions for established companies more restricted and leads to a collaborative community between established and starting companies (Ansell & Gash, 2008). In short, public authorities give shape to an EE in several ways.

This study revealed that the core activities of private developers are different compared to those of the public authorities and that they also pursue different interests. This does not detract from the fact that an EE needs the same inputs. However, developers use different approaches to shape an EE. For instance, the literature about EEs addressed the essence of active engagement in the triple helices (i.e., public, industry, and academia) (Pan & Guo, 2021). Private developers endeavours this engagement by physically integrating established companies, schools, and universities in the same building. Another example, one of the main *'first-stage-barriers'* of startups is lack of finance (Xu & Dobson, 2019). The literature shows that public authorities gives them a boost by financially supporting them. The private developers, on the other hand, offer shared spaces and equipment which reduces the capital expenditure and operating expenditure on rent or equipment. Obviously, in some cases it occurs that developers cannot provide the required inputs of an ecosystem. This study found that in some of these cases the municipality contributes by for example, subsidizing community spaces and co-paying the leases to keep the rent affordable for the startups. These examples also ties back to the tactical influence private developers employ. Whereas the public authorities set up the strategy of an area in the form of a zoning plan, the developer operates within these conditions and tries to translate this strategy into a tactical plan, which eventually is executed by the contractor and the eventual owner/operator.

Lastly and unexpectedly, this study presented and suggests that if a private developer aims to effectively shape an ecosystem, they should become part of the keystone firm of the EE. This is the private impulse which a developer can exert. In line with Isenberg (2011a) his theory, they can transfer, i.e., transfer the developed products, at the tipping point when the EE becomes more self-sustaining. Now, having touched upon the discussion of the findings, what follows is an account of the limitations of the research.

5.3. Research limitations

This section elaborates on the limitation of the research design. It starts with the limitations of the research units. It will then go on to discuss the limitations of the data analysis. The remaining paragraph covers the limitations of the research approach.

To begin with, the scope of this study was limited in terms of type of start- and scaleups. The interviewed start- and scaleups in this study operated in the hi-tech sector and worked on robotics, hard- and software, artificial intelligence, etc. However, the *'non-hi-tech'* start- and scaleups were not considered in this study, while their needs may differ. The aspects that make a hi-tech startup great, does not necessarily have to make a startup in the creative industry great. One concrete example and finding in this study about selecting a mix of the same branch company makes this clearer. The findings indicated that hi-tech startups benefit from having other hi-tech startups around them, whereas clustering startup architects was counterproductive.

Secondly, a potential weakness of the data analysis was the paucity of conveying the wrong message. The majority of the interviews were conducted in Dutch and all the extracts used in the results chapter were translated into English. The downside of translating these extracts, could be that the underlying thought is slightly different expressed. Nonetheless, the benefit of the fact that the majority of the interviews were conducted in Dutch, is that the interviewees were able to express themselves in their native language. If the interviews were conducted in English, on the other hand, the language could have caused a barrier in their expressions.

Thirdly, the generalisability of these results is subject to certain limitations. That is to say, the open interview approach brought some limitation. This approach was chosen to make sure that the interviewees responded in a flexible, responsiveness and spontaneous manner. It also resulted in valuable

detailed insights and shed light on importance aspects which might not have been considered in previous studies. The downside, however, was the lack of saturation in some of the themes. Hence, this study has some loose ends. Some statements, perspectives, or experience were not mentioned more than once. The answers of the interviewees often related to the cases they were working on, which resulted in a wide-ranging of unique answers. The empirical evidence suggest that some shared experiences and approaches worked in one case. In spite of that, it might not have worked in another case. For example, one interviewee shared his experience that creating a community based on a popular company (i.e., magnet), which as a result attracts other companies, is not a resilient approach in shaping an ecosystem. Even though the interviewee who addressed this, speaks from several years' experience, this statement is not generalizable in every ecosystem. Despite all of that, the unravelled findings in this study certainly have an added valued since it raised attention about certain aspects which might not have been addressed in the first place. Some non-saturated themes opened the doors for future researcher.

Lastly, an additional uncontrolled factor is the possibility that the researcher is biased. The researcher of this study built up his background knowledge by conducting a literature review about EEs. In addition, some addressed topics in the first few interviews also had an effect on the subsequent interviews. This sometimes made it hard to reach full openness in the interviews. Due to the background knowledge, the researcher was tempted to ask questions in the direction to verify what he already knew from the literature and the previous interviews, while subconsciously neglecting to unravel the full personal story of the interviewees. However, the upside of this limitation, is that it did result into more saturated themes.

What this section reveals, is that one of the limitations of this study was a selection bias of the sample. The second limitation was that some extracted expression in the results chapter might have come across differently since these extracts are translated. The third limitation was that a number of specific findings were not fully generalizable. And lastly, the remaining limitation was the involvement of the researcher which sometimes resulted in the temptation of asking more verifying questions, rather than exploring questions.

5.4. Concluding remarks

This section discussed that, developers adopt both physical and nonphysical design principles in shaping an EE, in which flexibility and interaction is key. Furthermore, the literature and the findings both corroborate that an ecosystem is predominately created in the operations phase, which asks for a participating and ownership role of the developer in the operation phase. Moreover, developing an ecosystem calls for an adaptive management approach and a collaborative attitude with the municipality and university. Lastly, one of the major faced barriers is the eagerness of real estate investors to get embarked. With regard to limitations of this study, one of the main limitations is that not all findings are generalizable.

In sum, this section discussed the interpretations of the result and the limitations of the research design of this study. The findings of this study and the existing literature suggest that there are various way how a developer influence the shaping of an ecosystem. In the chapter that follows all the addressed subjects will be connected and translated into the overall conclusion of this study.

6

Conclusion & Recommendations

This chapter concludes the overall study. The first section composes out of a summary of the main findings and the answers on the research questions (6.1). The part thereafter zoom out and describes how these findings relate to the initial research gap and the research aim of this study (6.2). Section 6.3 includes what the added value of the research findings are, how these findings contribute to the field of knowledge, and the theoretical and practical implications. The final part covers the recommendations for practitioners and about future research directions (6.4).

6.1. The research questions

The purpose of this study was to unravel the private developer's potential in shaping an entrepreneurial ecosystem. It therefore aimed to explore the influence they exert, and the steps they undertake and could undertake in shaping ecosystem. Before jumping right into the main conclusion of this study, it is necessary to address the key findings on the sub questions first.

SQ1. What influence do developers employ to facilitate entrepreneurship?

  (a) What design principles do developers adopt when shaping the built environment of an EE?

  (b) How do developers select their end-users as part of an EE?

The first research question of this study aimed to address the influence a developer employ to facilitate entrepreneurship. It is broken down into two sub questions which aimed to explore the influence they exert in shaping the built environment and choosing the eventual end-users after the development process.

The findings suggest that the built environment should facilitate and align with the needs of the end-users. Obviously, this is often the case with development projects. However, the results of this study suggest that shaping an ecosystem for hi-tech start- and scaleups require certain specific needs. This study shows that three main design principles are adopted by developers in shaping an ecosystem. First of all, consistent with the literature (e.g., Stam, 2015), this research found that interactions are fundamental in an ecosystem. When companies interact with each other, they built up their network, share knowledge, and hence empower the overall ecosystem. Developing meeting places where people encounter, facilitate these interactions. Secondly, the results demonstrate that flexibility in terms of space or lease greatly contributes to the life cycle of a startup. Startups have a great potential to expand their business fast. The findings manifest that developer cope with this growth by offering scalable business premises. Thirdly, in accordance with previous studies (e.g., Xu and Dobson, 2019), this study have demonstrated that one of the main issues that start- and scaleups usually face is the lack of finance.

They are often unable to afford too expensive operating costs. The results indicate that developers offer shared spaces and tools, which could be paid when utilized and succours the ventures in shaving costs.

Furthermore, and unexpectedly, the results demonstrate that developers exert their influence not only by means of shaping the physical built environment. Often in collaboration with other parties, such as investors and operators, they offer soft services. The findings also emphasises on the relevance of these soft services. Whereas developers develop meeting places to passively stimulate interactions, they organize events and gatherings to actively stimulate interactions. These gatherings does not only bring ventures together within the ecosystem. It also support interactions with potential clients beyond. Apart from stimulating interactions, soft services are also substantial in supporting the ventures in an ecosystem. The findings show that the implemented coaching programs and workshops at the reference cases, attracted companies to establish in the area and supported their start and growth.

With regard to the selection of the end-users, the findings indicate that developers select a mix of a cluster of start- and scaleups, education and research parties, and established companies in shaping an ecosystem. To begin with, the data as well as the existing theory (e.g., M. E. Porter, 1998) insinuated the relevance of clustering startups. This study suggests that especially startups substantially benefit from having other startups around them. Namely, they could expand their networks, learn, gain professional and personal advice, and encourage each other. Besides, the presence of a school or university in proximity has an added value in knowledge sharing and providing workforces. Next, established companies in the ecosystem provide money for the startups or act as a client and formulate an assignment for them. Furthermore, three approaches emerged from the data which developers adopted in selecting the end-users as part of the ecosystem. One approach is selecting complementary companies making small components for a large original equipment manufacturer, selecting a *'magnet'* company that attracts other ventures, and selecting the same branch companies. Overall, the data indicated that the key take-way in selecting the end-users are whether they contribute to each other and cooperate.

> SQ2. What role do, and could developers exercise, and which responsibilities could they take in shaping an EE?

Conjointly, this study set out to shed light on the role and responsibilities of a developer in shaping an EE. Particularly in shaping an ecosystem for startups, developers can be identified as *'the adapting facilitator'*. This study discovered that the developer has a facilitating role in shaping an EE. The emphasis is particularly on the word: facilitate. That is to say, the results demonstrate that an EE arises organically. Therefore, the data insinuates that developers adopt an adaptable development approach, in which monitor what is needed and prepare and commit for whatever is about to come. Meaning that they leave room for an organic development, with an ongoing process of changes in the built environment, so they can quickly respond to the changing needs of the start- and scaleups.

More than that, Adams and Tiesdell (2012) identified the developer as *'the orchestrator of the development process'*. The results of this study show that they usually adopt this role and transfer the developed estates after the completion of the development. However, they could exercise the role of *'the orchestrator of the EE'*, by participating and taking responsibility in the operations phase. The results in this study suggest that shaping an ecosystem surpasses only developing the physical environment, because the soft services during the operations phase are deemed to be of great importance as well. Moreover, the findings also show that an ecosystem arises especially in the operations phase. This gives developers the opportunity to shape and work on a proof of concept, in which they adopt an ownership form, and become part of the keystone organization of the EE in collaboration with a specialized partner. This points to a shift of their role, from being a real estate developer to becoming an ecosystem developer.

SQ3. What interactions of the developer between the municipality and university influences the shaping of an EE?

In this study, one of the objectives was to discover the envisioned collaboration between the developer, public authorities, and universities in shaping an ecosystem. First of all, the findings demonstrate that the municipality and academia in general, varying in universities, schools, and knowledge institutions, play a significant role in an ecosystem. The results point out that the municipality could financially support the businesses and the university support them in terms of knowledge provision and offering workforce. Moreover, the findings also show that both parties facilitate interactions with organizations, which might be out of the sphere of influence of a developer. Due to the identified relevance of these parties in shaping an EE, early and continuous engagement is highly important. Collaboratively shaping an ecosystem also provides the opportunity to deploy multiple steering measures. Overall, the findings suggest that the interactions in which each of these three parties pursue the shared interests, works to the advantage of shaping an ecosystem. This implies bearing a shared vision regarding decisions-making in mind, which involves making unpopular decisions in the interest of the ecosystem.

SQ4. What barriers and constraints do developers face while shaping an EE?

The remaining aim of this study was to identify the constraints and barriers developers face while shaping an ecosystem. This aim has arisen due to the philosophy that influencing always comes along with constraints and barriers. Videlicet, the influence developers could exert is not limitless. This study identified what influence developers exert in shaping an ecosystem. Yet, it is plausible that these approaches cannot be applied in every case due to the related constraints and barriers. While several barriers and constraints are addressed in this study, the two main barriers and constraints put forward are: 1) the amount of workload and 2) the unwillingness of real estate developers to get embarked. The core activity of a developer is to develop real estate. Nevertheless, shaping an ecosystem requires putting time and attention into supportive services for the community. The accumulation of these activities that comes with developing an area increases the workload. On top of that, the current study showed that real estate investors are usually uneagerly to invest in business premises for start- and scaleups due to the related risks. Developing an ecosystem for start- and scaleups involves uncertainties and unexpected outcomes. This ultimately brings us back to what the role of the developer could be. Simply put, commitment and a participating role in the operations phase, and swiftly adapting to whatever is about to come.

MQ. How can private developers tactically influence the shaping of an entrepreneurial ecosystem?

To conclude, private developers can exert their influence in shaping an EE by stimulating interactions, facilitating support, and offering flexibility. One of the key take-ways is that shaping an ecosystem for entrepreneurs not only consists of developing real estate. It consists of optimally facilitating an economic community in an area to grow. Therefore, if the private developer truly aims to shape an ecosystem, they should participate in the operations phase and become part of the keystone firm of the EE.

6.2. The research aim

The previous section in this chapter (6.1) provided the answers on the research questions in this study. This section will cover these answers in relation to the research aim. The purpose of the current study was to unravel the role of a private developer and explore the influence they employ and could employ in shaping an EE. This aim come forward out of the research gap, that the role and the influence of private developer is underexposed in literature. Previous studies evaluating EEs observed that governmental involvement is especially in the early stages of shaping an EE important. Public authorities can contribute by providing low-entry barriers for startups, stimulate interactions and collaborations,

and financing EEs. The findings in this study broadly supports the work of other studies about the inputs for an EE. In addition, it shed light on shaping an EE from another perspective. The developer contribute to shaping an EE by passively and actively stimulating interactions by developing meeting places and organizing gatherings, facilitating support by integrating a variety of contributing parties in the area, and finally by offering the flexibility ventures demand to grow. Furthermore, the distinction between strategic, tactical, and operational influence was also found useful in this study. In reviewing the literature, several researchers focused on strategically influencing the shaping an EE from a policy level. This study did address the tactical approaches practitioners applied. Lastly, developers could take the responsibility both over the development process and in creating a community. Ultimately, this is the private impulse a developer can exert in shaping an entrepreneurial ecosystem.

6.3. The contribution and implications of the study

Returning briefly to the issue of this study, there is a demand for entrepreneurs. As pointed out in the introduction, they play a significant role in activating economic growth (Cavallo et al., 2019) and bringing improved ethical and sustainable goods and services into the market (Pettinger, 2019). However, the cultivation of entrepreneurs is often depended on the EE in which they arise (Nair et al., 2022). Understanding these ecosystems and knowing what nurtures them, is therefore indirectly significant in translating new innovative ideas into valuable products and services and bringing it into our world. There are several parties playing a part in shaping an EE, whereas private developers play an important role. However, their role, responsibilities and influence have not been treated in much detail in literature. Therefore, this study filled this gap and provided a contribution to the field of knowledge.

This study revealed the actual experiences of private parties in creating an EE. Several other researchers provided relevant input about what an EE needs to flourish (e.g., Isenberg, 2011b, Panetti et al., 2021). However, actually bringing these inputs in practice comes along with complexities and situations, which cannot be predicted in advance. Overall, the findings does not necessarily contradict the existing literature, but it does address closer insights about *'the private playing field'* of development processes in a pragmatic way. For instance, whereas Rajakallio et al. (2018) mentioned the benefits from using a flexible modular design. This study built on this flexibility statement, by addressing that developers leave spaces within a building vacant to cope with the growth of the companies. In addition, another example is the clustering concept of M. E. Porter (1985) that startups can profoundly benefit from having other startups around them. Developers play a part in clustering, by developing meeting places and selecting and putting together multiple startups as end-user.

In sum, this study did not particularly challenge any studies. It did zoom in and unravelled the tactical implications in shaping an ecosystem. Moreover, the findings provided new insights about how an influential actor in the development process, i.e., the private developer, can contribute to the shaping of an EE. Hence, this study provides additional knowledge, which in the end contributed to the existing body of knowledge about EEs. This section has discussed the contribution and implications of the study. It is now time to address the recommendations.

6.4. Recommendations

6.4.1. Practical recommendations Kabeldistrict

This research focused particularly on the Kabeldistrict development in Delft, where 7 acres of business premises will be developed to accommodate startups, scaleups, SMEs, and established companies in the hi-tech manufacturing industry ("Ontwikkelplan Schieoevers Noord", 2019). This section discusses the practical recommendations for the private developers involved in this project.

The findings of this study suggest several courses of action in deploying physical design principles. The first recommendation is to develop a physical meeting place, where all the hi-tech companies gather. Since the area is relatively big, a pitfall might be that too many meeting places leads to a segregated community. Making sure there is one central meeting place for ventures, will avoid this from happening. This could both be a shared eat & meet and one entrance in the multi-tenant building. A meeting place like this, will likely passively stimulate interaction among the companies. Furthermore,

it is plausible that several future tenants at the Kabeldistrict outgrow and need more space to conduct their business. A reasonable approach to tackle this issue could be to develop hull business premises, with modular temporary units which can be flexibly (re)moved. Moreover, the developers could also keep some spaces purposefully vacant. In this way, the developers and the future owner can antici-pate on the growth of the tenants. In addition, shared (maker)spaces and machinery should be made available in the future multi-tenant building for hi-tech start- and scaleups. This could vary from 3D printers, cleanrooms, and meeting rooms, depending on the demand of the future tenants. These shared spaces supports companies in reducing their operating costs.

Figure 6.1: Kabeldistrict Delft (©Mei Architects and planners)

Another important practical implication is the end-user selection. A point of the departure and con-dition of the municipality of Delft is that the Kabeldistrict should offer room for startups, scaleups, and established companies who are looking for a place in Delft, but currently cannot find it ("Ontwikkelplan Schieoevers Noord", 2019). The shortest and easiest way for the developers is to sell or rent out a large share of business premises for an established company. Nevertheless, this might inhibit the growth of the start- and scaleups. Therefore, efforts are needed to assess the contribution of these established companies to the start- and scaleups, whether they could financially support them, or act as a client. Besides, offering those companies a modest place within the multi-tenant building along with the start- and scaleups will be highly recommended. The same goes for integrating, a school, a university, or a knowledge institution in the multi-tenant building. For example, an office and lab environment for *'the Haagse Hogeschool'* so that professors, researchers, and students can spontaneously bump into the tech companies. From this, collaborations can emerge, the provision of interns, and knowledge can be shared. Another point of attention is that selecting companies from the same branch, such as Quan-tum computing, is highly recommended. Yet, when selecting these tenants, it is important to assess whether the companies do not make competing products or provide competing services.

Furthermore, another recommendation is to keep the municipality of Delft and the TU Delft actively engaged during the development and operation of the Kabeldistrict. The municipality can offer support in offering subsidies for example, to keep the leases affordable. The university provides knowledge, interns, and employees for companies. Moreover, they can also weeks of interest at other companies and organizations. This can be done, among other things, by organizing events or workshop with the TU Delft involved. Organizing such events brings us to the following and probably most important rec-ommendation.

The above-mentioned approaches are strongly recommended, the following part discusses the worth trying recommendations. A key priority should be to plan for the long-term care of the Kabeldis-trict, in which in particular soft services are provided. Soft services are important in an ecosystem and have had a lot of impact on the success of the ecosystem at Delft campus, BIC, and Strijp-S. Obvi-ously, soft service provision is not the core business of a developer, however, they could transfer the responsibility to an investor in purchase agreement to offer the relevant services. Another approach that is worth trying is to form an operating organization together with a party who is specialized in soft service provision. Because when the development is really done, and then not just the real estate but

also the operations part, it can have significant impact on the appraisal of the real estate. Examples of some of the services that can be provided are, and actually applied in the reference cases of this study are:

- **Supportive services** such as a communal reception or a package distribution service which unburdens the ventures, depending on the demands of the future users.

- **Organizing events, gatherings, and promoting fairs**: Encourages interactions, introduces clients to the startups, and helps businesses grow. The more successful the businesses, the more valuable the real estate.

- **Workshops and programs**: Helps startups get started and grow and attracts new tenants.

- **Online platform**: Helps companies get employees and acquire venture investors.

All in all, the findings of this study have a number of practical implications. The practical recommendations addressed above are expressed in a guideline in appendix D.1, which sums up the actions private developers could undertake in shaping an ecosystem. Regarding the practical implications, this study provided valuable data for specifically developers. These steps apply for the case of this study, the Kabeldistrict and could also be applicable for other development projects focusing on housing start- and scaleups in the hi-tech sector. An important point of attention is that the described steps do not have to occur in sequence, some steps could also be undertaken simultaneously.

6.4.2. Scientific recommendations

Having touched upon the practical recommendations, this section includes the recommendations for future researchers. To begin with and as expressed in the previous chapter (see section 5.3), one of the weaknesses of this study was the fact that some statements occurred once throughout the dataset. Some interviewees made interesting statements about particular aspects but were not substantiated by others. This left some open doors, yet also raised attention about certain aspects which might not have been addressed in the first place. For example, a surprising finding is that one interviewee mentioned that creating a community by having a popular anchor tenant, which attracts other tenants, is not desirable. A further study could assess this matter, by evaluating the benefits and the disadvantages of this approach. Moreover, another future researcher could conduct a Delphi-method approach. The approach composes out of several interview rounds. The answers from the first round are fed back to the interviewees in the second round. This might result in more practitioners who faced or did not face the same situation. Another plausible approach would be to adopt a structured interview or survey approach with more closed questions.

In addition, one of the respondents brought up the benefits of a public private partnership. Similarly, the findings of this research also suggest that a collaborative attitude with public and private parties works to the advantage of shaping an ecosystem. Further research might explore the effect of a public private partnership in shaping an EE.

Finally, this study show the qualitative insights of shaping an ecosystem from a developers point of view. Several variables such as physical meeting places, flexible floorplans, soft service provision are highlighted as important. Yet, to truly prove its importance, further research is required to determine whether these variables actually correlates with the entrepreneurial output of an area. This could be done by conducting quantitative research to establish the effectiveness of these variables.

6.5. Concluding remarks

On the whole, this chapter presented that the key finding about the influence a developer could exert in shaping an EE, is to stimulate interactions, offer flexibility and engagement in the operations phase. This study helped plugging the research gap about the role and the influence of the private developer in shaping an entrepreneurial ecosystem. Future researcher might want to explore the effectiveness and validity of the addressed topics in this study.

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Appendices
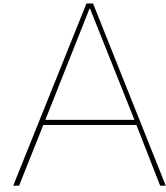
A
Interview questions with theoretical answers

Questions for developing parties, managing organizations and companies:

1. How can the built environment be designed in such a way that it facilitates entrepreneurship? & (a) What are your 'must-have' and 'nice to have' factors in terms of the space you rent? What is, for instance, the reason that you are specifically established here?

There are several ways in which the built environment could facilitate entrepreneurship. First, the significance of the built environment for the company operations are addressed, to describe how the built environment could facilitate these operations for a single company. Effective business operations lead to a competitive advantage (M. E. Porter, 1985), which hence results in facilitating entrepreneurship.

To begin with, the business operations in general of a company can be supported by aligning the built environment with the value chain activities of that company. Looking at satisfaction, the two-factor theory of Herzberg et al., 1959 can be applied. The hygiene factors should be affordable rent, accessibility, and a proper working environment (e.g., lunch facility, Wi-Fi, heating, AC, etc.). The value chain activities on the other hand, focuses more on working towards a competitive advantage instead of job satisfaction, and could be distinguished in primary and secondary activities. The primary activities are in- and outbound logistics, service and marketing/sales (M. E. Porter, 1985). An accessible location as well as an accessible and functional workplace contributes to the in- and outbound logistics of a company (Roulac, 1999). Besides, an accessible place also contributes to customer convenience (Roulac, 1999). Furthermore, the location and the building of a company could serve for advertising purposes and as a *'direct selling environment'* as noted by Roulac, 1999. The secondary activities, i.e., support activities, is the firm's infrastructure, human resource management, technology and procurement (M. E. Porter, 1985). The workspace and location of a company could positively affect the administrative support and innovation (Roulac, 1999). Besides, the ambience of a place beneficially influence the work experience and procurement activities (Roulac, 1999).

Secondly, to facilitate an entrepreneurial community at a particular place, there should be a 'porous' built environment to stimulate interactions and a stronger network among companies (Pancholi et al., 2018; Stam and Spigel, 2016; Audretsch et al., 2018; Ciaramella and Dall'Orso, 2021). This could be done by designing a visible (i.e., transparent) places, offering shared space, and making accessible connections between business premises. In addition, a flexible floor plan is also favourable so companies can easily scale-up or -down (Rajakallio et al., 2018). Unique aesthetics of a place could also contribute to entrepreneurship since it makes places amenable

and attracts businesses and talent (Ciaramella and Dall'Orso, 2021). Finally, accessible financial and complementary services are highly significantly to support the business operations (Xie et al., 2021; Feld, 2020). On the contrary, Isenberg, 2011a claims that EE should not be 'over-engineered' and states that entrepreneurship happens organically. According to him, Innovation and venture creation depends on the individuals and companies itself (Isenberg, 2011a). If the companies possess talented workers who frequently interact, changes are likely that innovation occurs. Nevertheless, the previous mentioned characteristics can to a certain extent still facilitate entrepreneurship

Moreover, it is relevant to consider the steering measures of a developer to effectively influence the shaping of an EE according to (De Leeuw, 2002) (see chapter). Usually, the opportunities to change to course of a development project become less when the built environment takes a more definite shape (Nozeman and Fokkema, 2008). This indicates that a developer could exert the most influence in making design adjustments in the initial phase of a development.

2. What should be the role and responsibilities of the developer and/or investing operator? &
   (b) What kind of parties do you need for your company in close proximity? And how can connections be facilitated by the built environment and the managing organization of the building/place? And which companies could hamper your business operations?

   Either the developer or/and investing operator should have an active role during the real estate operations. Their responsibility should be to support the entrepreneurs in their businesses. Since the presence of a talent pool is significantly important in an EE (Lee et al., 2004), they should try to attract talent by offering low entry barriers that creates an inclusive entrepreneurial community (Badgett et al., 2019). For instance. by offering flexible lease agreements with low rental prices. Another important point of attention is early and continuous engagement. Especially engagement with the entrepreneurs is significantly important to discover their aspirations, needs, deep motivations and behaviour (Feld, 2020). Such as bringing financial parties, professional services, universities (knowledge exchange) and a network of companies (customers/suppliers) together. Besides engagement, the formation of a strong business network supports the entrepreneurial community (Stam, 2015), so companies could benefit from knowledge spillover (M. E. Porter, 1998). This could be done during the operations, by organizing network events or equivalent activities. Furthermore, the presence of a leader/mentor is also important. The investor or developer could point out an organization that takes care of the tools, services and technologies within a place (Clarysse et al., 2014) that enhances the performance of the businesses. A key footnote is that this organization/person should be accessible and committed to the ecosystem (Feld, 2020).

3. What should be the role and responsibility of the municipality and the university? How do you envision working with the developer/investor to achieve 'this goal'?

   Aside from engagement with the entrepreneurs, developers and investors should also engage with the public authorities and the university during and after the development (Langenhuizen and Dusée, 2022). According to Zhao and Zou, 2021, a strong EE has tight links between the local authority, research institutes and universities in the area. Pan and Guo, 2021 even points out that a collaborative relationship between these fields are indispensable for building a successful EE. Whereas universities can play an important role in knowledge sharing and transferring graduate students to new ventures (World Economic Forum, 2013), local authorities could play a significant role in accommodation and acquisition strategies to attract talent, determining spatial conditions that stimulates interactions and providing support (e.g., public subsidies for startups). Private entities and public organizations could work together in collaborate governance forms to obtain *'small wins'*, which eventually leads to more commitment, shared understandings and trust (Ansell and Gash, 2008).

4. Which company mix contributes to entrepreneurship and the interaction between companies and what company mix doesn't? And what role should the manager/investor have to foster this?

Iansiti and Levien, 2004 claimed that the dominator could have a negative impact on the EE when gaining too much control. The term *'dominator'* here, refers to a big established company who aims for mergers and acquisitions of other companies. In addition, Rego, 2016 also pointed out that both complementary and competing businesses can benefit from 'network effects', which eventually stimulates entrepreneurship. The role of the operator should be, to be accessible and committed (Feld, 2020).

5. What barriers have you encountered in developing/operating an area with a similar purpose?

According to Feld, 2020, one of the main barriers in creating an EE, is the presence of a risk averse community, who have bias opposed to newcomers, and do not think on the long-term. Another barrier is the lack of talent and financial access for the entrepreneurs (Xu and Dobson, 2019). This often depends on the geographies and is therefore often location bound (Xu and Dobson, 2019). Furthermore, lacking public engagement and support can also be perceived as a barrier according to Zupic et al., 2018. With regard to the development related barriers and constraints, another constraint could be the maximum rent startups could afford. As pointed out by Al-Abri et al., 2018 one of the main challenges for startups is acquiring money. This could lead to a scenario in which the annual rent flow that startups could maximally afford, might be relatively lower than the investments cost of developing the business premises. In this scenario, a developer might be dependent on other parties, who could subsidize, to still house the start- and scaleups. This example shows that the influential capacity of a developer also depends upon the amount of revenue a development project could raise. In addition, the boundary condition of a development, which are set up by the municipality (Nozeman and Fokkema, 2008), could restrict the bandwidth of the deployable steering measures of a developer.
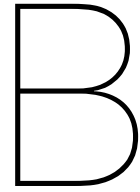
Initial coding

NO.	Code	NO.	Code	NO.	Code	NO.	Code
1	Abandoning companies	69	Creative solutions	137	Keeping plots vacant for flexibility	205	Residential function need amenities
2	Abundance of contracts	70	Cross pollination	138	Keeping up with the company's growth	206	Responsibility university
3	Abundance of meeting places	71	Custom made company mix	139	Knowing the target group	207	Rise of the making industry
4	Accelerator programs	72	Customers due to proximity	140	Knowledge exchange	208	Rising material costs
5	Accesible community	73	Customers in the region	141	Knowledge institute in close proximity	209	Risk averse
6	Accessibility	74	Customised maker-spaces	142	Knowledge valorization	210	Risk tolerance
7	Acquiring employees via the platform	75	Customized facilities	143	Lack in finance	211	Risky tenants
8	Active operator	76	Daylight	144	Lack of workforce	212	Safeguarding vision
9	Actively informed of present ventures	77	Developer's role	145	Lacking engagement investors	213	Same branche companies
10	Adaptive governance	78	Developing an ecosystem	146	Learning by doing	214	Same stage companies
11	Added value to the community	79	Difficulty acquiring tenants	147	Leisure	215	Same vision
12	Affordable lease	80	Disposal of developed estates	148	Like-minded companies	216	Scaleable premises
13	Aligning shrinking and growing companies	81	Diversity among tenants	149	Link university	217	Scaleups desires
14	Amenities	82	Diversity startups, scaleups and established companies	150	Listening, talking and facilitating	218	Scarcity is an opportunity
15	Anchor tenant	83	Dominating tech sector	151	Liveability	219	Scarcity of makerspaces
16	As little as possible restrictions	84	Dominator companies	152	Logistic advantage	220	Service costs
17	Attracting investors	85	Efficient usage of space	153	Long-term vision	221	Service provision
18	Attracting ventures	86	Empty business premises	154	Makerspaces	222	Shared machinery
19	Attracting young talent	87	Enabling an ecosystem	155	Making industry benefits from recession	223	Shared makerspaces
20	Availability of spaces	88	Ended up via the TU Delft	156	Meeting requirements of the investor	224	Shared spaces
21	Available information provision	89	Engagement entrepreneurs	157	Mix of high and practical educated workforce	225	Shared use
22	Background role	90	Ensuring social housing	158	Mix residential commercial	226	Sheltering
23	Balance between companies	91	Equal level playing field Qua Druple Helix	159	Modularity	227	Showcasing products
24	Bottom up	92	Established companies in close proximity	160	Multiple interests	228	Snowball effect
25	Boundary conditions	93	Established company as client	161	Municipal role	229	Sociable
26	Branding	94	Established company searching for talent	162	Municipality is leading in success	230	Soft ingredients
27	Breeding grounds	95	Established place to scale up	163	Network	231	Specialised companies
28	Bringing energy	96	Events to promote	164	Network building due to shared spaces/facilities	232	Spider in the web
29	Businessmodel fit	97	Expropriation	165	New economy	233	Startups desires
30	Campaigning	98	Facilitating external connections	166	No clear client	234	Sticking to the longterm vision
31	Campus development organisation	99	Facilitating interactions	167	Not only startups	235	Stimlate interactions
32	Chain company (keten)	100	Feasibility	168	Offered facilities	236	Strategic approach
33	Changing circumstances	101	Finance	169	Offering a platform	237	Subsidy higher authority
34	Changing national policies	102	Financial facilitator	170	Offering and bringing	238	Support operator
35	Choice consideration	103	Financial feasibility	171	Offering subsidies	239	Supporting entrepreneurs
36	City-level ecosystem	104	Financially encouraged	172	Offering workshops	240	Supporting facilities
37	City's identity	105	Finding shared interests	173	One entrance	241	Surrounding assets
38	Clean industry	106	flexibility of facilities	174	Operator's role	242	Synergy
39	Close proximity eases network building	107	Flexible and affordable lease contracts	175	Organically	243	Synergy living and working
40	Close proximity to customers	108	Flexible lease	176	Organising events	244	Temporary operations
41	Coaching programs	109	Flexibility	177	Own core values first	245	Tenant selection
42	Collaborating with other campus	110	Forecasted regional growth	178	Own space	246	Themes
43	Collaborating with service providers	111	Gaining advice	179	Pass along the same vision	247	Translating the end-users needs
44	Collaboration municipality and university	112	Gap between startup and scaleup	180	Passive investor	248	Transparency
45	Collaborative attitude	113	Geographical boundaries	181	Pedestrians prioritized	249	Triple Helix
46	Collaborative tenants	114	Goal	182	Personal connections	250	Turnover rent
47	Combination of office and workspace	115	Governance	183	Phasing	251	Type of entrepreneur
48	Comeback of the making industry	116	Governing the operations	184	Physical meeting places	252	Unburdens and arranged
49	Community creation	117	Green spaces	185	Pioneering company	253	Uncertain market circumstances
50	Community of startups	118	Growth model	186	Pleasant environment	254	Uncertainties
51	Community space	119	Growth need for separate space	187	Policies that allow to translate the company's needs	255	Unpopular decisions
52	Company mix	120	Hard ingredients	188	Policy-making based on higher authorities	256	Unversity labs
53	Company mix depends on scale	121	Having high quality products	189	Political pressure	257	Unwilling to pay service costs
54	Competitors	122	High market demand	190	Presentation places	258	Use as needed
55	Complement each other	123	High turnover rate	191	Preventing isolation	259	Validating technical and financial possibilities
56	Complimentary expertise	124	high turnover rate startups	192	Prioritizing	260	Validation lab
57	Conceptual approach	125	Honesty about lacking workforce	193	Production seperated	261	Validation lab program
58	Conducting conversations	126	Improving ecosystem, decreasing yield	194	Programming	262	Variety of meeting rooms
59	Conflicting interests	127	Individual (office)place	195	Proper residential/commercial-ratio	263	Variety of spaces
60	Conflicting regulations	128	Innovation manager	196	Public private partnership	264	Various entry-levels
61	Connecting parties	129	Innovation platform	197	Quantum computing	265	Venture grow
62	Connection between investor and end user	130	Integration education and industry	198	Reaching desired jobs/dwellings	266	Vertical integrated companies
63	Continuous effort	131	International acquisition	199	Real estate operations plan	267	Vocational education (HBO & MBO)
64	Contractual agreement	132	International connections	200	Realising hull business premises	268	Workforce
65	Contributing in reaching their vision	133	Inventorize company need	201	Refugees	269	Workplace
66	Contribution of the community	134	Inventorying housing plans university	202	Relationship with the community	270	Workplace and office close together
67	Controlling the ecosystem	135	Investing with a customer	203	Required market space	271	Workplace and office seperated
68	Convenient lease agreement	136	Investing without security	204	Research & Development	272	Workplace is a must
						273	Yield

Table B.1: Initial coding
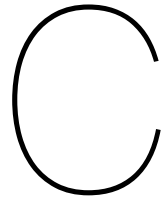
Final coding

NO.	Code				
1	Abundance of lease contracts	69	Offering a platform	137	Vertical integrated companies
2	Accelerator / Validation programs	70	Offering and bringing	138	Vocational education (HBO & MBO)
3	Accesible community	71	Offering subsidies	139	Workforce
4	Accessibility	72	Office space	140	Workplace
5	Active operator	73	Organizing events	141	Workplace and office close together
6	Affordable lease	74	Outsourcing to specialists	142	Workplace and office seperated
7	Aligning shrinking and growing companies	75	Own space	143	Workspace
8	Amenities	76	Partnership municipality	144	Yield
9	Background role operator	77	Passive investor		
10	Balance between companies	78	Passive lease agreement		
11	Barrier developer	79	Pedestrians prioritized		
12	Boundary conditions municipality	80	Personal connections		
13	Bringing parties together	81	Phasing		
14	Building costs	82	Physical meeting places		
15	Cautious housing competitors	83	Pioneering company		
16	Collaboration on a macrolevel	84	Place identity		
17	Collaborative attitude	85	Pleasant environment		
18	Community of startups	86	Policy-making based on higher authorities		
19	Complementary support	87	Presence of an Innovation manager		
20	Conceptual approach	88	Presentation places		
21	Conflicting regulations	89	Preventing vacancy		
22	Connection between investor and end user	90	Prioritizing		
23	Controlling role	91	Programming		
24	Creating a startup inventory	92	Quadruple helix		
25	Creative solutions	93	Quantum computing		
26	Current industries	94	Real estate operations plan		
27	Custom made company mix	95	Realizing hull business premises		
28	Customers in proximity	96	Required market space		
29	Customized space	97	Resiliency		
30	Daylight	98	Responsibility university		
31	Dealing with recessions	99	Risk averse developers		
32	Difficulty acquiring tenants	100	Risky investments		
33	Disposal of developed estates	101	Role of the developer		
34	Diversity among tenants	102	Safeguarding vision		
35	Efficient usage of space	103	Same branche companies		
36	Ended up via the TU Delft	104	Same stage companies		
37	Finance	105	Same vision		
38	Financially attractive	106	Scaleable premises		
39	Finding shared interests	107	Scarcity of makerspaces		
40	Flexibility in space and facilities	108	Segregating established companies		
41	Flexible lease	109	Service costs		
42	Gaining advice	110	Service provision		
43	Gap between startup and scaleup	111	Shared machinery		
44	Geographical boundaries	112	Shared makerspaces		
45	Goal of a developer	113	Shared spaces		
46	Green spaces	114	Shared use		
47	Hard services	115	Showcasing products		
48	High market demand	116	Soft services		
49	Individual (office)place	117	Startups desires		
50	Integrating established companies	118	Stimlate interactions		
51	Integrating leisure	119	Support operator		
52	Integration academia and industry	120	Supporting facilities		
53	Inventorize company need	121	Supporting vulnerable entrepreneurs		
54	Isolated companies	122	Sweet and sour		
55	Knowledge exchange	123	Synergy living and working		
56	Knowledge valorization	124	Taking rein of things		
57	Lack of finance for startups	125	Temporary operations		
58	Lack of workforce at the municipality	126	Tenant selection		
59	Lacking of engagement from investors	127	The industry must fit into the neighbourhood		
60	Let things happen organically	128	Themes		
61	Level with eachother (open kaart spelen)	129	Turnover rent		
62	Like-minded companies and individuals	130	Unburdens and arranged		
63	Linger in operations	131	Uncertain market circumstances		
64	Liveability	132	underestimated amount of work		
65	Makerspaces	133	Unversity labs		
66	Meeting rooms	134	Unwilling to pay service costs		
67	Multiple interests	135	Utilizing eachother's expertise		
68	Offered facilities	136	Variety of spaces		

Table C.1: Final coding

D

A tactical guideline

Step 1.
Inventorize the needs of the companies

Hard ingredients

Meeting places

Flexibility in usage

Shared spaces and facilities

Soft ingredients

Supporting services

Organizing gatherings

Online platform

Step 2.
Facilitating the needs

Adaptive development

Step 4.
Engaging in the operations phase

Safeguarding longterm (shared) vision

Participation in the operations phase

Formation of collaborative agreements with the university, schools, and/or knowledge instiutions and public parties.

Step 3.
Getting an investor on board

Offering the sweet in return for the sour

Multi tenant building for start- and scaleups (the sour)

Single tenant building (the sweet)

Step 5.
Selection procedure

A mix of:

Knowledge instiutions & education

Start- and scaleup community

Established companies

Contribution to the community

Step 6.
Community creation

Stimulating interactions

Organizing & promoting events

Organizing workshops

Organizing social activities

Step 8.
Facilitating connections beyond

In collaboration with the university and municipality

Involving (inter)national universities and knowledge institutes

Involving established companies from beyond

Announcing and promoting fairs

Step 7.
Aligning the built environment

Aligning the spaces based on the growth of the companies

Step 8

Step 5

Ongoing process of active engagement

Step 7

Step 6

Step 9.Dispose when proven to be succesful

Figure D.1: Guideline