# Physical conditions for the development of startups within urban innovation districts

## Facilitating or stimulating?

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# Preface

While writing this preface, there has come literally an end to both the writing of my thesis and my time as a (master) student at the Delft University of Technology.

Looking back at the moment I started at the Faculty of Architecture I had no idea I would be going to finish my studies with the master Management in the Built Environment. On the other hand, I was not convinced to become an architect either. It somehow worked out this way. And I am happy it did.

To be honest, the writing of this thesis has not been a straight line from the start. In fact, as metaphor, one might consider the work as that of a painter. One cannot see the process of making it, but only the end result of the picture. During this process ups and downs were sure apparent, but so were the essential moments for progress. Those moments of taking a distance, bringing in focus, not being too self-critical or just having a talk with someone else. This subsequently resulted in most enjoyable moments that I repeatedly experienced: the continuous building of (new) perspectives and knowledge that led to new insights or perspectives and gave me new energy and motivation. I am thankful that I had the chance to experience these moments and thereby have been able to finish my master.

This I could not have done without the absolute trust and support of a number of people. I would like to take this opportunity to thank them. First of all I want to thank my former mentors Yawei and Flavia for all supportive meetings and essential feedback that every time pushed me to a higher level and gave me new energy. In particular I want to thank Wouter Jan for his effort to guide me through the last months and help me to find the needed focus and bring back motivation and pleasure in writing. Furthermore I want to thank my family and friends for the unconditional trust, patience and support. Lastly, I like to thank my interviewees for their time and input.

Enjoy the reading and hopefully it may bring you new insights as well!

Arthur Verwayen
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# Management summary

## Management summary

### Introduction and problem statement

Innovation districts are more and more seen as the answer of cities to the ever changing economy. They can as well be described as urban strategies for economic development and urban competitiveness. Around the world innovation districts pop up and seem to provide the perfect and required environment for an innovation ecosystem to which talent and businesses are attracted. Katz and Wagner define these districts as "geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators and accelerators" (2014, p.1). In theory, the success of urban innovation districts relies on the balance of three types of assets: physical (buildings, parks, plazas), networking (events, workshops) and economical (start-ups, businesses, shops) assets (Katz and Wagner, 2014). Physical assets are believed to facilitate economic assets and enable networking assets in this respect. Together the assets can form an innovation ecosystem. Research also shows that dense, inner-city locations combine a critical mass of human capital, vital physical conditions, the right amenities and different sorts of proximity for knowledge exchange that enable businesses to innovate and grow (Morrison, 2014).
It is in these districts that working, living and recreating fade off and that horizontal networking between a diversity of people is becoming increasingly important for innovation. Entrepreneurs and start-ups are considered economical assets in this respect and are crucial players in such districts as they tend to increase economic and job growth. Although they often lack the skills and experience, lack of finance, resources and means needed to do the job, they inhibit a great potential to drive and sustain innovation (Nguyen, 2016). To open up the benefits startups can provide, it is essential to understand how urban innovation districts, and in particular the physical environment, can facilitate or even stimulate their development. Therefor the main research question that has been asked is: ***how can the physical environment facilitate and stimulate startups in their development within urban innovation districts?***

To provide an answer to this main research question, first three subquestions have been formulated:

1: What are urban innovation districts and innovation ecosystems?
2: What are startups and what is their place in the innovation district?
3: What are the physical conditions to facilitate and stimulate startups in their development within urban innovation districts?

These questions provide understanding of the essential topics that the main research question contains and will first be answered by a literature study that forms the theoretical framework.

At the end of the theoretical framework two subquestions have been added to identify what physical conditions are present in practice (on the basis of case studies) and how they facilitate and stimulate startups in their

development. Thus basically the developed theory of the theoretical framework is tested in practice to better understand how the physical environment facilitates and stimulates startups. The questions asked to the cases were formulated as follows:

4: To what extent are the physical conditions present in these cases?
5: How do the apparent physical conditions facilitate and stimulate startups in their development?

Also a more prescriptive question has been asked for the case and for the general enhancement of urban innovation districts:

6: How can area and building managers further stimulate startups in urban innovation districts and enhance innovation ecosystems?

## Methodology

As shown in the research design ***figure A*** below, this research first develops a theoretical framework based on literature study (see **A**). Based on this framework semi-structured interviews, a survey and observation is done in two cases within the Central Innovation District The Hague: multi-tenant buildings The Hague Tech within the Beatrixkwartier and Bink36 in the Binckhorst (see **B**). Information is gathered from both startups and managers to answer the subquestions asked to the cases. The case results are then compared to each other and confronted with the theories of the theoretical framework in the synthesis (see **C**). Based on the findings and interpretation of the differences and similarities conclusions are drawn and perspectives for future action created (see **D**).

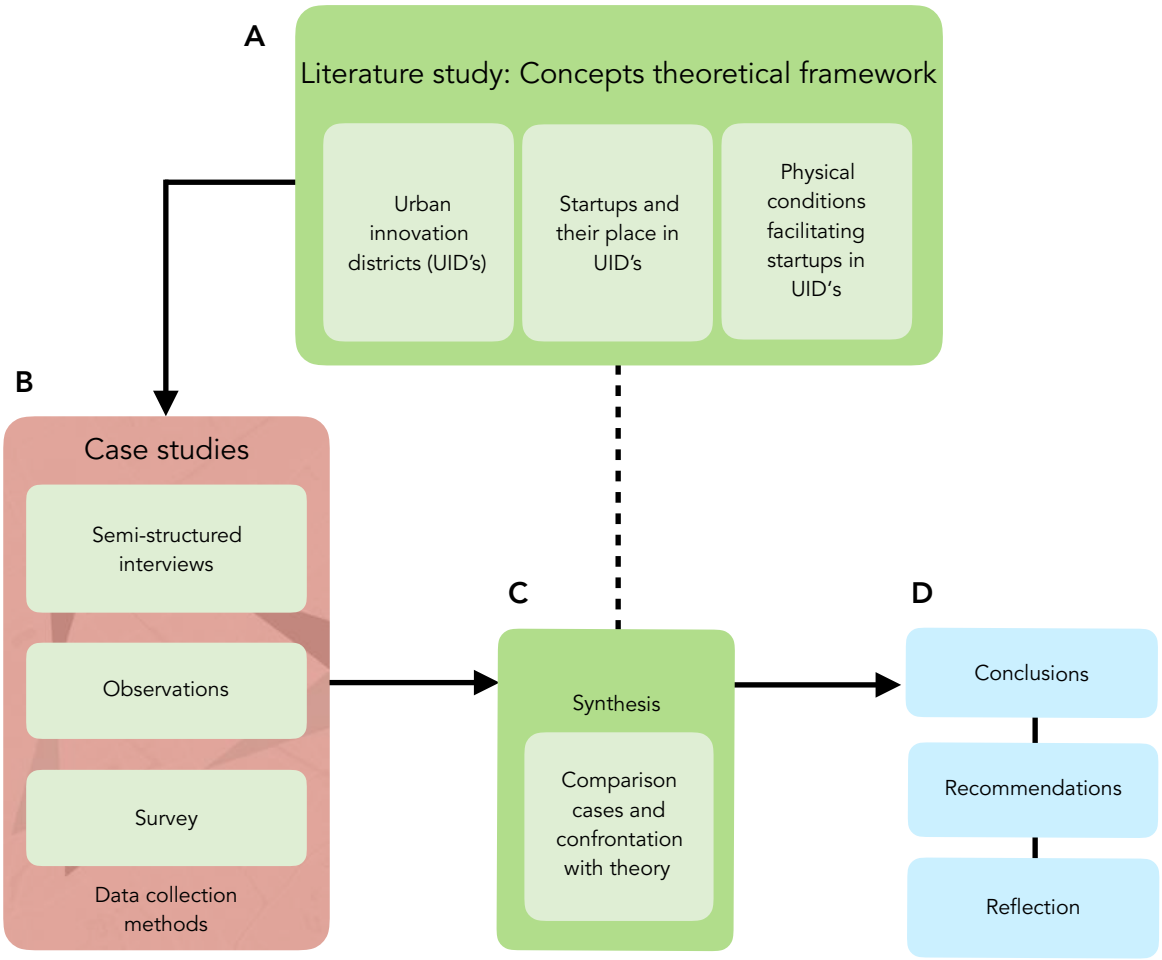


Figure A: Research design (own illustration)

## Conclusions

The particular theoretical and empirical answers to the sub and main question are concluded below.

***What are urban innovation districts and innovation ecosystems?***

Urban innovation districts have evolved over time from a growing economic need to innovate constantly. Changing mega trends and globalisation have shifted the industrial economy towards a knowledge economy. Hence, location decision making of companies have altered and clusters have formed increasingly in the vicinity of dense urban areas, in an attempt to enjoy the economic benefits. These places have become more and more a hotbed for innovation; innovation districts as they are then called. They are defined as "geographic areas where leading edge anchor institutions and companies cluster and connect with startups, incubators and accelerators". Cities promote these urban innovation districts both as tool for economic development, enhancing their competitive position and as a strategy for urban regeneration.

Three models have been identified that typify these districts on location, context and function. They are called: the anchor plus model, the re-imagined urban area model and the urbanised science-park model. These models tend to attract different users as to their knowledge base. The models all consist of certain assets, which are physical (buildings/spaces), economic (firms/startups/institutions/organisations) and networking (weak and strong ties events) assets. One can consider the assets in the form of a pyramid in which the physical assets are basically facilitating the economical and networking assets to get to innovation. These assets all-together can form an innovation ecosystem capable of stimulating innovation and catalysing commercialisation. Ofcourse, other elements, drivers and factors may as well play a role in this ecosystem, but the focus is in this research mainly set on physical/spatial dimension and does not go into other factors. This ecosystem is furthermore characterised by the synergies formed between these three assets. For this synergy several strategies are proposed such as design for interaction, sharing facilities and spaces, promotion of networking and managing the tenant mix. Especially the last strategy touches also on the proximity theory which explains that certain levels of proximity are needed for interaction. Managing this synergy between the assets enables an innovation ecosystem which can function as the engine towards economic development.

With this background the second subquestion has been asked to understand the main economic asset that has the focus in this research: the startup. Furthermore it is investigated what their place is within the innovation district, where do they develop?

***What are startups and what is their place in the innovation district?***

As posed several times before, among the actors that have a driving function in innovation districts are startups. They are considered essential in the process of generating and commercialising innovation, but are often also seen as weak and in lack of resources to do the job. Startups are somewhat ill defined but will be understood as new, active and independent temporary organisations that are often in search for a (repeatable and scalable) business model. Various types of startups can be identified here mainly based on their goal and scalability which in essence comes down to micro-business startups, scalable startups and social startups and their business activity which come down to asset builders (build and sell physical products), service providers (use people to offer services), technology creators (often intellectual property of software and data) and network orchestrators (facilitate transactions and interactions). Lastly, they can be distinguished on their knowledge base. These knowledge bases are symbolic,

synthetic and analytical. These knowledge bases say something about the type of activity but also about the environment they often cherish to work in. However, the latter says more about where they might end up, but regarding their start location, startups rather locate in places where they used to work, live, have affinity with the industry they work in or have built social/business relationships.

There is also a pattern observed regarding their life course that most startups can relate to. They all go through a set of roughly three life phases. These are defined as the startup phase (ideating and concepting of idea), transition phase (committing and validating of business model) and scaling phase (scaling/ growing and establishing of business). During these phases several challenges are met, mainly regarding finance, business support and network. These challenges also come down to a set of (mostly) universal needs. These needs can be summarised to be a physical infrastructure (accessibility office, workspace, amenities, facilities etc), business support (funding, trainings, coaches, talent) and networking (interactions strong/weak ties, peer networking). Because of these needs, several organisations are found that provide the support needed and give startups a place in the innovation district with the potential being part of an innovation ecosystem as was told; relations with other actors formed by events and facilitated with space. The best known organisations that support startups (so called innovation habitats) are incubators and accelerators offering various services in the different phases of startups. Startups thus are given a place in the innovation district, often at several support organisations.

This understanding of startups within urban innovation districts helps to conclude the theoretical framework by questioning and summarising the conditions that the physical environment should meet in order to facilitate and stimulate startups business support and networking for their development. In other words, what are the physical conditions to facilitate and enable the economic and networking assets to innovate? As discussed, there is thus both an area level (the district level) in which the startups locate and a building level (often the organisation that support the startup) in which startups work on their product or service.

***What are the physical conditions to facilitate and stimulate startups in their development within urban innovation districts?***

Innovation districts are seen as a breeding ground for startups during their development. Considering the needs of startups, physical conditions can be subtracted on an area and building level. These conditions are categorised as the physical infrastructure at area level providing the workspaces for the development of startups, generating accessibility and connectivity for the startup and between other relevant actors that may connect in the ecosystem, provides and facilitates in proximity to amenities and public spaces. At building level the conditions come down to providing different types of flexible and affordable workspace that facilitate physical needs, business support and provide shared spaces and facilities that stimulate networking.

These conditions are assessed in two casestudies within the planned Central Innovation District The Hague. Hereby the first subquestion has been asked to consider what conditions occur in the two cases.

***To what extent are the physical conditions present in the cases?***

As observed in the casestudies the physical conditions are not (yet) a normal situation within the planned CID of The Hague. Both cases differ significantly in the providence of the physical conditions, especially at building level.

At The Hague Tech area level most conditions occur, although public spaces around the building are rather limited, but amenities and a number of large corporations, university-and knowledge institutions are in close proximity. At building level all conditions seem to occur. In contrast, at Bink36 conditions at area level are rather different. Accessibility is sufficiently present, connectivity less. Proximity to public spaces and amenities is almost none and similarly this counts for potential relevant organisations/corporations/knowledge institutions etc. At building level, basically regarding office space conditions more or less suffice, but regarding shared spaces and facilities they are scarcely present.

Knowing this, the second subquestion was to ask how these conditions actually facilitate and stimulate startups' development and how these conditions thus facilitate and enable business support and networking for innovation, as supposed with the pyramid in the theoretical framework. Also it was aimed to understand whether conditions differ per type of startup and also how these conditions were managed per case.

***How do the apparent physical conditions facilitate and stimulate startups in their development?***

As obtained from the casestudies the physical conditions were not all present at both cases. However, the need for them has been investigated. As obtained from both cases regarding the area level, mainly accessibility and connectivity is considered in both cases as facilitating in business support. Furthermore, good connectivity (as present at The Hague Tech) leads to higher chances of people joining events which thus facilitate and stimulates networking. Proximity to amenities, public spaces and other business network are seen as convenient in both cases, but not necessary for their business support. Startups are often inside their office building and do seldom make use of the amenities offered outside. However, inside the building the basic amenities should then be present (coffee/lunch). Also a supermarket nearby was in both cases a welcome asset.

At the building level the cases show a few important results regarding the physical conditions. First of all, affordable and flexible office space is facilitating in basic business support. Especially flexible in the type of contract (one month notice period and flex use gives startups low threshold to start) and office space (private large and small and co-working space types) give different startup activities the space they need or let startups use no more space then needed which lowers their costs as well.

When looking at the provided shared spaces and facilities at The Hague Tech it is obtained that it facilitates both in business support of startups (need of the facilities and spaces offered) and enables and stimulates networking (social interaction, both weak and strong ties). Startups appreciate the providence of shared facilities and spaces as it enhances a welcome and open atmosphere. The facilities regard mainly relaxation opportunities and stimulate the needed social interaction between other startups and tenants. This social interaction also contributes to the open atmosphere and enables easy access to business support from others which sometimes leads to new innovations. Furthermore design for interaction such as transparent walls that enable visibility, short walking distances with the open and mixed layout of private and co-working spaces, social space and shared facilities are important herein as well.

Considering Bink36 facilities and social spaces are not shared in the building, but are provided by the tenants themselves within their units. There are some basic facilities, but these do not facilitate in business support nor networking perse. Due to a lack of shared social spaces and facilities and no design for interaction, the atmosphere in Bink36 is

considered more gloomy. This resulted in no or hardly networking between startups and tenants in the building.

However, as understood from both cases, a certain proximity and tenant mix is needed for actual interaction that can lead to business support and innovation. A common ground and similar workfield, or shared goal/objective or theme to work on together is a precondition for the physical conditions to facilitate and enable and stimulate networking. Also the startups openness and willingness to share knowledge and innovate seemed important.

With these answers the main research question can be answered:
***How can the physical environment facilitate and stimulate startups in their development within urban innovation districts?***
Urban innovation districts are more and more considered as places where innovations come off. In this research the focus has been put on the physical dimension and in particular on the physical conditions that can help startups to thrive in urban innovation districts. These conditions refer to the physical assets that are considered one of the pillars of the innovation district. As startups have needs and challenges to overcome ranging from the basic physical infrastructure to do their work to finding and connecting with investors, human resources and other support to develop their product or service, the physical environment of multi-tenant buildings is investigated on how it may facilitate startups in this.

This physical environment that can facilitate startups in their development is downsized to a number of conditions at area level and building level to which this conclusion holds. At an area level it can be concluded that mainly good accessibility and connectivity can facilitate all types of startups in their basic needs and enables easier access to business support and networking outside. Proximity to neighbourhood amenities and public spaces are not that relevant, as the amenity rich city is closeby.
At the building level different types of workspaces (flex and private, small and large mixed up) can facilitate in accommodating different needs of startups (activities) and in the changing demand of startups development (grow/shrink). Contract flexibility and flexible use of space in time is herein considered an important factor that lowers threshold to start.
The condition of providing shared facilities only facilitates startups that do not have these in their own unit. Shared (social) spaces provide in the needed relaxation and contribute to a welcome and open atmosphere which enhances and even stimulates building both weak ties and strong ties interaction. Design for interaction by transparent walls, short walking distances, visibility and mixing co-working with private offices is considered an extra stimulant for interaction. Together these conditions (design for interaction with shared social spaces) facilitate building social ties and enable innovation to be accelerated if startups and other tenants have the needed common ground (proximity levels), shared goals/ objective and willingness to innovate.

For the latter it can be concluded that management and objective of these multi-tenant buildings is thus determinative whether the latter can be achieved. Having the right spaces and facilities on the right location does not necessarily lead to innovation. Managing the tenant mix, promotion of networking with a goal and constantly managing synergy is therefore needed as well.

Thus, the physical environment can facilitate and stimulate the development of startups by providing in basic needs of accessibility and connectivity in the district, flexible and affordable office spaces and private spaces and in extra needs of providing an open and welcome atmosphere with shared social spaces and facilities mixed with workspace,

designed to stimulate interaction with a tenant mix that is well balanced (e.g. with shared goals/ambition/mutual understanding, trust and openness).

## Recommendations for practice

Based on results of the research and the comparison of cases with theory some recommendations can be made regarding the physical conditions to facilitate and stimulate development of startups and enhance an innovation ecosystem within Dutch innovation districts.

## To area managers

- In general, focus on generating communities of innovation where officecomplexes facilitate place for not only startups but also medium sized firms and entrepreneurs and people that have affinity or may have a relevant contribution to the community challenges/field of innovation.
- Enhance, when needed, accessibility to these places and between relevant institutions and businesses for optimal connection.
- Invest in ecosystem community management at area level to stimulate interconnections between people, businesses and institutions that are working on similar challenges and the joining of events at these communities of innovation.

## To multi-tenant building managers

- Provide in affordable and flexible contracts for both flex/coworking office spaces and private spaces, but provide them mixed up surrounding common space, so-that common space is always lively.
- Design for interaction and shared entertainment/relaxation facilities throughout the building: thus good visibility and transparency, but moreover, work to a welcome and lively atmosphere for the specific tenants.
- Provide in shared multipurpose rooms/ presentation/workshops etc where weak and strong ties building events can be hosted and attract and invite startups/ people from various institutions or firms to make use of this spaces.
- Manage the tenant mix to be complementary (service providers that can facilitate in startups development) to each other and condition/select them to be open to share knowledge, or have the same goal/ ambition or common ground to contribute to community building.
- Provide in a community manager that can facilitate and when needed be adaptive to the needs and opportunities for interaction and knowledge exchange to create synergy and let these be connected with community managers at area level.

To come back to the main title of this research and basically the underlying question: do we need to facilitate or stimulate the development of startups in urban innovation districts, enhancing the innovation ecosystem and accelerate innovation? And if we do not? Do we then miss out opportunities? Well, based on the findings in this research probably yes. Facilitating and stimulating startups that are open and want to innovate together can lead to valuable opportunities. Facilitating is essential, stimulating can enhance an innovation ecosystem and lead to new opportunities. What this research in essence concluded is that putting effort and time in developing aforementioned places, especially within accessible multi-tenant buildings, where people are on the 'same level' regarding knowledge sharing and open innovation, interaction and thereby innovation can be accelerated. As thus repeatedly became clear, the physical conditions can function as a basis and stimulant, creating a welcome and open atmosphere, but actual meaning and reason for innovating should be further stimulated by people such as connectors, community managers, experienced business owners, but also meetups and events that can keep the fire running.

# Introduction

## Introduction

**In this first chapter the starting point for this research is made clear and a short introduction to the topics, concepts and problem in this research is given, furthermore the research goal and the relevance is discussed.**

## 1.1 Subject introduction

Urbanisation and the movement of people and businesses towards cities is a phenomenon that is currently present all over the world. It is most likely that it started by the change of cities due to the 'New Economy' in which communication and information technologies emerged in almost exponential speed (Hutton, 2004, p.89). This change implied, among other things, differing preferences of companies on location choice, which meant that new as well as older firms, new industries and services, head to the inner city (Hutton, 2004).
Another aspect that is typical for the New Economy is the change in how value is generated, which is not only produced by physical labour anymore but rather by the creative and (technical) innovative solutions and ideas of the human brains (Florida & Kenney, 1993 in Morrison, 2014, p.17). In other words, there is a shift visible towards a more knowledge and innovation driven economy, which is changing the socio-economic urban structures (Morrison, 2014, p.17).

The geography of innovation has for the last couple of decades been dominated by isolated suburban campuses such as silicon valley, characterised by the limited accessibility or the low quality of life in the sense of integrating working, living and recreation (Katz and Wagner, 2014, p.1). Now, an increasing number of innovative firms and workers are preferring co-locating in the amenity rich and compact cores of central cities, in vicinity of other firms, research labs and universities to benefit from "open innovation". Moreover, a growing number of entrepreneurs and startups is looking for collaborative spaces with the potential to engage with others and have access to advice or practical facilities, to start their companies. (Katz and Wagner, 2014, p.1)

It seems that cities are proving to be very attractive for both people and businesses. Morrison (2014) believes this is due to the combination of an increased focus on creativity, knowledge sharing, (open) innovation and the apparent global trends as sustainability, media technologies, communications and globalisation. Besides, these inner cities offer the amenities needed, vital environmental conditions, different sorts of proximity for knowledge exchange, networks and a critical mass of human capital, that provide together the essential ingredients for enabling businesses to innovate (Morrison, 2014).

Exactly the latter is what Katz and Wagner (2014) recalled as (urban) 'innovation districts', also defined as ***"geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators"*** (p.1). In other words, by emergence of mega trends, location preferences of people and companies have

changed, which has led to a new way of conceiving place-making, social networking and economy shaping. Katz and Wagner (2014) then characterise these innovation districts to be physically compact, with a mixed use of retail, offices and housing, technically wired and transit accessible. They consist of physical, economical and networking assets forming, if well balanced, an innovation ecosystem.

Morrison and Bevilacqua (2018) outline these innovation districts as local economic development strategies used as increasing their competitiveness and as a response to the urban and spatial dimensions of the knowledge economy that are rapidly increasing.

Although the emergence of innovation districts started abroad, currently Dutch examples of (planned) innovation districts can also be found. These comprise For instance the Rotterdam innovation district, Strijp-S in Eindhoven and the planned The Hague Central Innovation District (CID). Clearly, innovation districts seem to become a city's 'must have' when it comes to the need for knowledge exchange, creativity and innovation to provide in the differing and changing needs of people. On the other hand, it can be discussed to what extent innovation districts are a mere ambition of cities or a way of framing, rather than an actual reality?

## 1.2 Problem analysis

While the need of urban innovation districts prove their relevance in today's economy, still an clear understanding of certain aspects of the mechanisms behind them is lacking. Especially when considering the definition of urban innovation districts (an area where companies and institutions cluster with business incubators, start-ups and accelerators) Magdaniel (2016) strongly underlines the importance of people that make the district productive and prosperous. The presence of people in urban innovation districts is also considered as crucial for innovation (Florida, Adler & Mellander, 2017). Entrepreneurs and start-ups in this regard are even considered to be a driving force in an innovation district (Katz and Wagner, 2014). Although they often lack the finance, resources, experience or skills and struggle to do the job they inhibit great potential for driving and sustaining innovation (Nguyen, 2016). Moreover, start-ups prove to provide in job growth on the longer term (Kane, 2010).

In other words, the presence and growth of startups in urban innovation districts is seen as crucial, but the understanding of the mechanisms that facilitate and stimulate them to grow in such areas is still limited. By focusing within this research mainly on the physical aspects of innovation districts, the question that can be posed is what physical basis startups need to thrive in urban innovation districts and how this physical environment then facilitates and stimulates their development to ensure new innovations, job growth and enhancing the competitive position of the city. With this question also the interrelation between the three assets can be examined and how an innovation ecosystem may evolve from them. An answer on these questions may furthermore shed light on what role innovation districts actually play in the development of startups and whether the physical conditions are specifically representative for an innovation district or perhaps more for cities in general. This research tends to reflect on these questions as well.

## 1.3 Research aim & question

The aim of this research is thus basically to understand the development of urban innovation district and its ecosystem relative to the development of startups and investigate what physical conditions are needed and how these facilitate and stimulate startups to thrive in urban innovation districts.

Following the aim of the research the main research question is formulated: ***How can the physical environment facilitate and stimulate startups in their development within urban innovation districts?*** The physical environment is in this research related to the physical aspects of a place (that can be a place in a building and its direct neighbourhood) that contribute to facilitating and stimulating startups' development through time.

## 1.4 Research scope

This research will focus specifically on one innovation district in practice: the Dutch planned Central Innovation District The Hague, which is currently being developed and not yet extensively researched. The district is interesting due to the different areas within the district that were identified by Pluijmen (2017), which all of them possess startup hubs. The research will be limited to the neighbourhood level as well as the building level in two of these areas, regarding two multi company offices with startups.

## 1.5 Relevance

### Scientific relevance

The relevance of this research lies in the fact that with this research a scientific contribution can be made to the understanding of how specifically the physical aspects of urban innovation districts contribute to a place that accelerates the development of startups. Furthermore it adds on the academic discussion of the value of urban innovation district to startups development.

### Societal relevance

The research is of societal relevance since with this research a better understanding is delivered on how start-ups, that are often seen as vulnerable group regarding their financial situation and growth pattern, can be supported in their development in an urban innovation district. Achieving a supportive environment, startups are hence able to contribute to job growth, economic development and the solving of our societal issues.

## 1.6 Readers' guide

### Theoretical framework

The theoretical framework positions and describes the three main concepts (urban innovation districts, startups and the physical conditions) of this research based on a literature study. This knowledge is subsequently used in the development of the empirical study.

### Research design and methods

In this part the research aims and questions are elaborated on and is the research design explained. Furthermore the selected cases and methods used are described.

### Case descriptions

Two cases have been studied: The Hague Tech in the Beatrixkwartier and Bink36 in the Binckhorst area. Both cases are part of the planned Central Innovation District The Hague (CID). The findings of both cases are separately described and go into area level, building level from both startups and managers perspective and are both concluded answering the subquestions asked to the cases.

### Synthesis

Within this part of the research the results of the casestudies are compared and confronted with theory of the theoretical framework and findings interpreted.

### Conclusions and perspectives

In this final part of the research all subquestions and main question are answered and limitations and recommendations for future reserach are described. The research closes with a reflection and perspectives for further development of urban innovation districts.

# Theoretical framework

## Theoretical framework

**In this part of the research the theory on the main concepts urban innovation districts and startups is elaborated and a theoretical framework is developed based on a literature study. In order to guide the literature review three questions have been asked that come down to: What are urban innovation districts and innovation ecosystems? What are startups and what is their place in the innovation district? And what physical conditions can facilitate and stimulate startups in their development within urban innovation districts? These questions make up the theoretical framework which consists of respectively three chapters: the evolution the urban innovation district; the evolution of the startup and; physical conditions facilitating and stimulating startups. In the last chapter of the theoretical framework these questions are concluded.**

# Evolution of the urban innovation district

## 2.1 It all started with innovation

The central question that guides the literature review in this first section is:

***"What are urban innovation districts, what is an innovation ecosystem?"***

In this part the urban innovation district phenomenon is described and discussed how an innovation ecosystem could evolve from it.

Instead of diving into the urban innovation district concept immediately, its evolution and the very concept of innovation, for which these districts basically are built, is as important to understand the relationships in this thesis.

***Innovation is the multi-stage process whereby entities transform ideas into new/ improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace*** -by Bareghe, Rowley and Sambrook (2009, p. 1334) and influenced on the ideas of Schumpeter (1939) in the economic theory. Following the definition of Baregheh, et al. (2009), innovation is here explained as a process, whereas innovations are also related to outcomes such as new products and services. Although the definition above seems to give a holistic view of what innovation means, the concept is often perceived as vague, complex and uneasy to operationalise (Curvelo Magdaniel, 2016). Innovation has been debated in theory as a driver of economic growth (Curvelo Magdaniel, 2016). However, this growth is not always equally distributed among people within and across organisations, hence innovation can be a great divider as well (Bogers et al., 2018). It is actually the lack of diffusion from top to bottom across different sectors that feeds this inequality, which can be seen as a waste of talent, potential and resources and thus a loss for everyone (Bogers et al., 2018). Therefore, Bogers et al. (2018) stress the need for 'open innovation', as there is still such an uneven growth in productivity and prosperity in today's economy.

### Open innovation

Open innovation is actually seen as the new paradigm for organising innovation. It was originally introduced by Chesbrough (2003). Later on it became defined as ***"a distributed innovation process based on purposively managed knowledge flows across organisational boundaries"*** (Bogers, Chesbrough and Moedas, 2018, p. 5). It means that an entity opens up its innovation processes to external inputs and contributions, called 'outside in'. In fact, the idea that Bogers et al. (2018) pose is basically the ability to create an innovation ecosystem. In this ecosystem, co-creation is fostered by different people and organisations working in different sectors, which lies at the very heart of open innovation. Drawing further on this concept, another type of innovation process should mentioned as well. This regards the concept of 'social innovation'.

### Social innovation

In the last decades, since Schumpeter (1934), the concept of innovation has been mainly related to new technological and/or

economical breakthroughs. But recently the importance of the social science aspect within innovation has become more into speak as it were. The need for the so called social innovation is increasingly being used for addressing challenges with an environmental, social, political and/or economic nature (Howaldt, Domanski and Kaletka, 2016). Howaldt et al. (2016) describe the change from an industrial society to the knowledge and service economy that 'we' now have become as a social shift which entails also a fundamental shift in the innovation paradigm. Basically they argue that the traditional ways, in which markets, civil society and states (the university-industry-governments relationship referred to as the Triple Helix by Etzkowitz & Leydesdorff, (2000)) respond to the social challenges they face, do no longer suffice. Therefore new innovation practices are needed. In this search for solutions, not only the research institutes, technical schools and/or companies are the most relevant parties within the process of innovation, but citizens and customers are also important to become a contributing part of this process instead of only providing information about their needs (Howaldt et al. 2016). This process is related Quadruple Helix Model (Carayannis & Campbell, 2009), whereby the open innovation concept is enriched with the civil society as fourth actor. Organising these processes is however easier said then done.

### Organising innovation

Adopting (open) innovation processes within an organisation has been found to be not that natural. Open innovation as said seeks involvement of users, customers and thinkers outside organisations to complement for instance perspectives inside organisations (Seltzer & Mahmoudi, 2012, p.5). It is thus seen as dependent on users outside an organisation and their willingness to participate (Chesbrough & Appleyard, 2007 in Seltzer & Mahmoudi, 2012, p.6). Furthermore, to effectively manage these open innovation processes they also identified different challenges. Among them is the attraction of a diverse group of people to participate, but more importantly: setting expectations on the means of involvement (Chesbrough & Appleyard, 2007 in Seltzer & Mahmoudi, 2012, p.6). This is similar with the barriers Steninger (2014) identified when implementing open innovation in organisations. Steninger (2014, p.17) observed several dimensions within organisations from which barriers evolve. These dimensions come down to: context, culture, motivation, procedures, skills, trust, perceived risk and strategy. Thus several aspects are needed to take into account when adopting open innovation within an organisation. But how is innovation organised in general and what is its relation with the built environment?

## 2.2 Innovation within the built environment

At the front of the evolution of the innovation district, several developments played a role and respective theories explain the latter. These theories and developments help getting an understanding of the urban innovation district as it now has become and also help to reflect on the elements that now seem to affect how entities compete, collaborate and share knowledge (Read, 2016, p.5).

First of all, as already mentioned in the introduction, creativity and innovation has become increasingly important for the creation of value. The built environment in this sense seems to influence a great deal on where, when and how this innovation takes place (Florida, Adler and Mellander, 2017). Florida et al. (2017, p.2) argue that innovation may vary greatly over space, but is clustered geographically. Following the insights of Jacobs (1969) Florida et al. (2017) put the city and urban regions at the very centre of innovation, because it is the city that drives the processes of innovation, entrepreneurship and creative activities, since it is the city that

brings together the diversity of talent, individuals, firms and institutions and a diversity of services and amenities that are essential for driving innovation (Florida et al., 2017, p.14).

But it is no coincidence that innovation is geographically concentrated in space (Florida, et al., 2017). Nor is bringing different elements such as companies together in close proximity of each other (clustering) in the act of stimulating innovation not new (Read, 2016). Clustering is defined as "***a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities***" (Porter, 2008, in Magdaniel, 2016, p.83). In literature clustering advantages are described as twofold: advantages emerge either by concentration of similar industries in a region (Marshall, 1890; Porter, 1990 in Magdaniel, 2016) or by a variety of industries within a region (Jacobs, 1969). These advantages are for instance translated by the knowledge spill-over externalities that are created. Glaeser (1992, in Magdaniel, 2016, p.82) has categorised these clustering externalities as either specialisation (Marshall, 1890) diversity (1969) or competition (Porter, 1990). This is shown and explained in ***table 1*** (based on Beaudry and Schiffauerova, 2009, in Magdaniel, 2016, p.83)

Adler, Florida, King & Mellander (2019) observe that at the macro level (Jacobsian), the large city region exhibits a wider range of inputs (ideas, suppliers, talent base) for innovation breakthroughs than will be found at the micro level. At the micro geographical level, or the neighbourhood/district level the Marshallian benefits are at hand. The latter mechanism encompasses the potential to have regular face-to-face meetings with collaborators which can lower costs for inputs such as search for labor and suppliers. They conclude that there can be a mutually reinforcement of the two mechanisms when they are both apparent, for instance in urban innovation districts (Adler et al., 2019).

These agglomeration economies explain the economic vitality and growth in and of large cities (Read, 2016). Also a number of other economic development practices and theoretical paradigms seem to support this. Already in the 60s and 70s the development of science, research and technology parks accelerated whereby interrelations between universities, firms, startups and public sector were sought and connections made that offered various benefits (Read, 2016). Furthermore, globalisation and the shift to a 'knowledge economy' led to neoliberal urban policies that transformed cities (Hutton, 2004; McGuirk, 2005, in Read, 2016). All in the hope to attract and sustain financial and human capital, as the free flow of these kind of resources can not be prevented anymore. Cities therefore attempt to create environments that offer high walkability, high-end amenities and a mix of residential, offices

Table 1. Advantages of clustering theories based on (Beaudry and Schiffauerova, 2009, in Magdaniel, 2016, p.83; Frenken & van Oort, 2007).

| | **Marshall (1890) Specialisation** | **Jacobs (1969) Diversity** | **Porter (1990) Competitive advantage** |
|---|---|---|---|
| **Theoretical advantage** | The knowledge transmission between specialised industries within one segment favours costs of inputs and outputs and generates beneficial labour market efficiencies: results mainly in productivity growth | The greater the variety in the economic industries, the more and diverse goods and services may evolve from inter industrial breakthroughs: results mainly in new markets creation and employment growth | In specialised and complementary industries that geographically cluster, it is competition that favours growth and knowledge transmission |

and recreational area, which on the side enhance and stimulate tacit knowledge exchange, diffusion and innovation (Read, 2016). Lastly, theories on economic development suggest the attention that should be given to the tenant mix with regard to environments that want to stimulate knowledge diffusion and innovation. Hereby a balance should be sought in the number of large versus small firms or startups (Clark, Huang & Walsh, 2010, in Read, 2016), as well as in the extent of the diversity (Van de Klundert & Van Winden, 2008, in Read, 2016).

In other words, on the one hand companies, firms, entrepreneurs and individuals have clustered with universities and institutions for various reasons that led to agglomeration benefits. On the other hand cities searched for strategies to cope with the competition in the 'new economy' that helped developing areas to become attractive districts. These attractive districts have several physical/spatial attributes that apparently appeal this innovation. It is also increasingly recognised that the built environment can act as a catalyst for innovation. Magdaniel (2016, p.18) has identified five propositions for the built environment that are appealing to innovation. (***table 2).*** Although these interventions mainly relate to the neighbourhood level, they may also apply at the building level.

## 2.3 Evolution of the urban innovation district

As becomes clear, the strong relation between innovation and the built environment, mega trends that are altering the preferences of people and businesses towards cities and the urban regions, has thus led cities re-conceive their economy shaping, place making but also the social networking (Katz and Wagner, 2014). As Florida et al. (2017, p.14) put it, it is the city that nowadays contains the enabling infrastructure where networks are built, the needed proximity is present for interactions to take place and hence innovations are being generated. In other words: the evolution of the so called innovation district seems apparent (Katz and Wagner, 2014). They define them as **"geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators"** (2014, p1)**.** Innovation districts are believed to help address some of the main challenges that societies face: the rising social inequality, environmental degradation and sluggish growth of cities (Wagner, 2019). Read (2016, p.5) put it differently and sees urban innovation districts basically as a lens to illustrate the process of bringing different elements in close proximity of each other, ultimately to stimulate innovation.

Table 2. Spatial features that appeal to innovation (Magdaniel, 2016, p.18 and p.364).

| | Interventions | Effects appealing to innovation |
|---|---|---|
| 1 | Location decisions and area development facilitating the long-term concentration of innovative organisations in cities/region | Long term concentration of innovative organisations |
| 2 | Interventions enabling the transformation of the built environment at area and building levels, facilitating the climate for innovation over time | Innovation climate for adaptation along changing technological trajectories over time |
| 3 | Large scale real estate interventions facilitating the synergy among organisational spheres | Synergy among organisational spheres |
| 4 | Location decisions and interventions supporting image and accessibility, defining the innovation area by emphasising its distinct identity, scale and connectivity features | Identity of the innovation area |
| 5 | Real estate interventions enabling the access to amenities, increasing the diversity of people and density of social interaction regardless the distinct geographical settings in which the concentration of innovative activities takes place | Diversity of people & density of social interaction |

Anyhow, cities see the benefits of developing innovation districts. Morisson (2014, p.105) argues that innovation districts can be seen as top-down approaches, an urban strategy as it were, to ultimately enhance competitiveness. Although it is also argued that these areas may evolve organically over time, without a major top down planning (Read, 2016). Nonetheless, Morrison sees three reasons for cities to develop them, which are: (1) To (re)develop parts of the city that are unproductive, (2) retain, attract and or create innovative companies or new talent and (3) remain or become an innovation hub (Morisson, 2014, p.105). Also other practitioners acknowledge that retaining, attracting and growing talent are one of the main drivers of innovation districts (van Winden & Carvalho, 2016).

Regardless the approach, innovation districts are often illustrated as a mash up of startups, schools, housing, retail, institutions, entrepreneurs, companies, bankable investments, medical innovations and more. All connected by transit and technically wired, fuelled by caffeine (Katz & Wagner, 2014, p.2). This is, however, still not a very concrete description and will definitely not be representing each particular innovation district. Whats more, innovation districts can actually differ significantly from each other (Katz and Wagner, 2014). Following the reasoning of van der Zandt (2018) and Pluijmen (2018) based on van Winden and Carvalho (2016), innovation processes are taking place differently per industry, but therefore also differently within a type of urban innovation district, as innovation districts differ in their housed entities. Furthermore, they also develop from different backgrounds and contexts. Still, some broad characteristics can help identify innovation district models.

## 2.4 Innovation district models

Katz and Wagner (2014, pp. 2-3) distinguish three urban innovation district models which are shown in the ***table 3*** below based on the visualisation of van der Zandt (2018, p.52). Most districts can be assigned to one of these models. The models represent different types of districts regarding their location, users, form and context.

Van Winden and Carvalho (2016) call the shifts to innovation districts an "urban turn", but distinguish herein not three (as the models above indicate) but two manifestations. On the one hand the city that develops as the above mentioned urban innovation district, becoming a hotbed for knowledge activities. On the other hand the being urbanised but secluded science parks and suburban regions that are added with residential, leisure and facilities (Van Winden & Carvalho, 2016, p.67). The observation they stress is that both types seem to serve different knowledge bases (see paragraph 3.2). The types of companies that are mostly located within the urban

Table 3: UID models based on Katz and Wagner (2014) and visualisation based on van der Zandt (2018, p.52)

| UID model | Re-imagined urban area model | Anchor plus model | Urbanized science park model |
|---|---|---|---|
| **Characteristics** | Industrial/warehouse districts undergoing physical and economic transformation to chart a new path of innovative growth<br>Change powered by: transit access, historic building stock, proximity to downtowns of high rent cities<br>Supplemented with research institutes/anchors | Mixed-use development centred around anchor institutes and a rich base of related firms, entrepreneurs and spin-off companies involved in commercialisation of innovation | Traditionally isolated sprawling areas of innovation are urbanising through increased density and infusion of new activities that are mixed |
| **Situation** | Along or near historic waterfronts | Midtown or downtown central cities | Exurban or suburban areas |
| **Example** | 22@ Barcelona | Kendell Square, Cambridge | High Tech Campus, Eindhoven |

atmosphere are analysed to be the types of companies that rely on symbolic knowledge. The type of companies based on the other two types of knowledge creation modes (synthetic and analytical knowledge base) are not necessarily located within the dense and lively urban areas, but more often in the suburban greenfield locations (Van Winden & Carvalho, 2016). Herein are synthetic knowledge based companies apparent in both the urban core as the more suburban locations. Nonetheless, these models all three inhibit common features or components that characterise and drive the district to be an innovation district. Katz and Wagner (2014) call these features assets.

## 2.5 Assets of an urban innovation district

Katz And Wagner (2014) distinguish three kinds of assets that build up these districts; physical assets (public/private infrastructure), economical assets (innovative entities) and networking assets (strong and weak ties interaction). Katz and Wagner (2014, p. 2) argue that if these assets are in the right balance, a true innovation ecosystem could evolve. What this means and how that works will be discussed in the subsequent paragraph. First the three assets will be briefly introduced accordingly.

### Economical assets

Economical assets can be categorised in three sub-assets, which are defined to be innovation drivers, innovation cultivators and neighbourhood building amenities (Katz and Wagner, 2014, p.11). These are meant to include people, firms and services and drive, cultivate and support innovation-rich environments to develop new products and services (Katz and Wagner, 2014, in Van der Zandt, 2018, p.50). See ***table 4*** below.

### Networking assets

The network assets can also be subdivided in two other assets; those that build weak ties and those that build strong ties (Katz and Wagner, 2014, p.13). Network assets are meant to enable an infrastructure to build networks so relevant connections can take place between economical assets to generate innovative results (Katz and Wagner, 2014, in Van der Zandt, 2018, p.49). The distinction of

Table 4: UID's economical assets based on Katz and Wagner (2014) and visualisation of van der Zandt (2018, p.50

| Economic assets | Innovation drivers | Innovation cultivators | Neighbourhood building amenities |
|---|---|---|---|
| **Content** | Research institutions, university, large firms, SME's startups, entrepreneurs | Incubators, accelerators, proof of concept centers, co-working spaces | Grocery stores, restaurants, cofee bars, hotels, local retail, facilities/amenities |
| **Function** | Develop technologies, products and services | Support growth of individuals, firms and their ideas | Provide products and services to satisfy residents and workers in district |

Table 5: UID's networking assets based on Katz and Wagner (2014) and visualisation of van der Zandt (2018, p.50)

| Networking assets | That build strong ties | That build weak ties |
|---|---|---|
| **Content** | Workshops and training sessions for specific fields, cluster specific meetings, programs | Networking breakfasts, innovation centers, tech jam, start-up classes |
| **Function** | Strengthen relationships within similar fields | Build new, often cross sector, relationships |

Table 6 UID's physical assets based on Katz and Wagner (2014) and visualisation of van der Zandt (2018, p.49)

| Physical assets | For the private realm | For the public realm | That knit the district together |
|---|---|---|---|
| **Content** | Privately owned buildings and spaces such as flex-offices, meeting space, micro housing, office complexes, lab space | Spaces accessible to public: parks, plazas, streets in UIDs, common areas, digitally accessible with platforms, | Specific investments in infrastructure, public transportation, such as the replacement of fences/ walls with connecting elements |
| **Function** | Support innovation driven demographic | Facilitates and encourages networking | Eliminate barriers that hinder relationship building and connectivity |

weak versus strong ties, lies in the kind of networks that can be created. Where weak ties can generate the ideas, strong ties can commercialise it into innovations. See ***table 5*** for a summary of the assets.

## Physical assets

The last and actually most relevant asset in this research are the physical assets. Katz and Wagner (2014, p.12) distinguish three categories of physical assets, where every asset is unique within its context. These are the physical assets in the private realm, the public realm and the those assets that stitch the district together and match it to the broader area(s). As shown in the ***table 6*** the respective assets are summarised.

## A pyramid of assets towards innovation

As can be understood, the physical assets tend to enable greater connectivity, collaboration and this way also innovation. Besides they can encourage networking. Basically the economical and networking assets need the physical assets to work in and take place. Or said differently, there is a physical/spatial component attached to the economical and networking assets. The assets are thus thought to be interrelated, especially for innovation. Looking at the assets as a whole, one could visualise the assets together in a pyramid (***see figure 1***). On bottom the physical assets (the physical aspects of areas

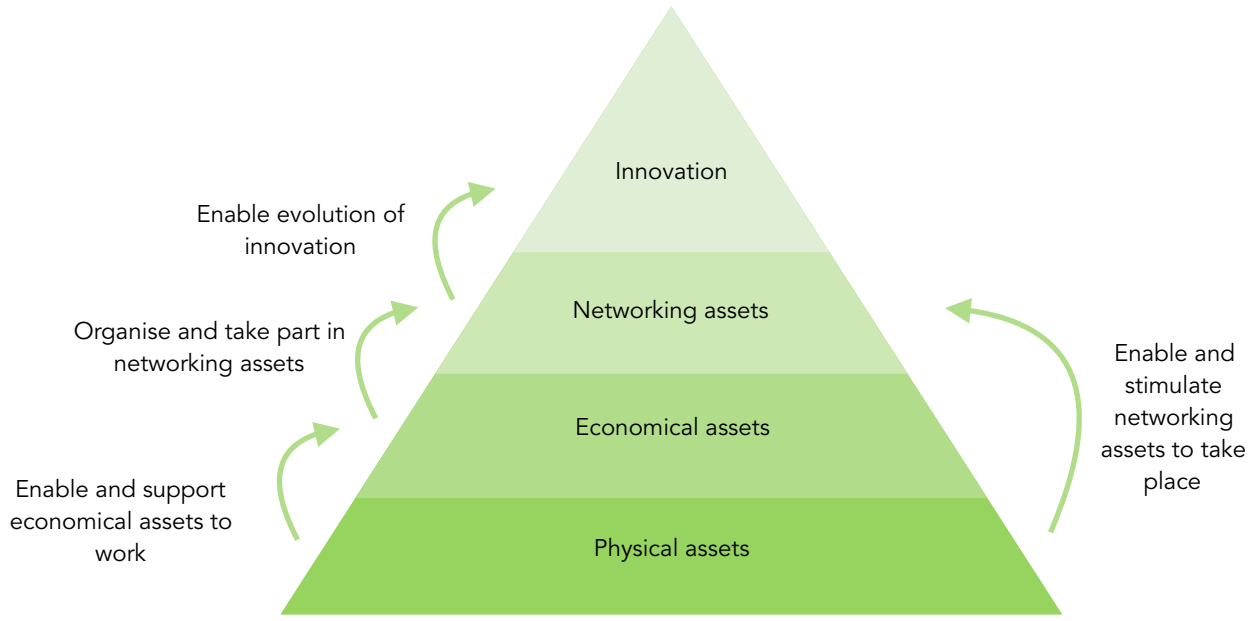


Figure 1. Pyramid of assets visualising the order of assets and their relations. (Own ill.)

and buildings) as a basis for the other assets. On the top is the innovation situated that is enabled and generated by the combination of all assets. This combination and interrelation of assets links already to the innovation ecosystem that Katz and Wagner mentioned, which will be discussed accordingly.

## 2.6 The innovation ecosystem

Katz and Wagner (2014) thus believe that by developing innovation districts, with the aforementioned assets in the right balance combined with a supportive risk-taking culture, an innovation ecosystem can evolve. They defined this as ***"a synergistic relationship between people, firms, and place (the physical geography of the district) that facilitates idea generation and accelerates commercialisation"*** (Katz and Wagner, 2014, p.2). The people, firms and place are herein the synonyms for the assets. The synergy is considered the interaction, (networking) of the different elements in the ecosystem, that together may produce an effect that is greater than the sum of the individual effects (Van Winden & Carvalho, 2015, p.62). By definition, the innovation ecosystem can be expected to be dynamic and varying in space and time. The idea is that an innovation ecosystem creates a natural environment for knowledge exchange, collaboration and (knowledge) spill-overs that accelerate the process of innovation, foster the productivity and hence create economic advantages that improve the urban competitiveness (Morisson, 2015, in van der Zandt, 2018). This innovation ecosystem can thus be illustrated as the synergistic relationship between several elements as shown in ***figure 2***.

Jackson (2011, p.2) defined this innovation ecosystem similarly but illustrates it to consist of both material resources (such as funds, equipment and facilities etc.) and human resources (such as students, faculty staff, industry representatives etc) that together form the participating institutional entities within the innovation ecosystem (such as universities, firms, assistance organisations etc.).

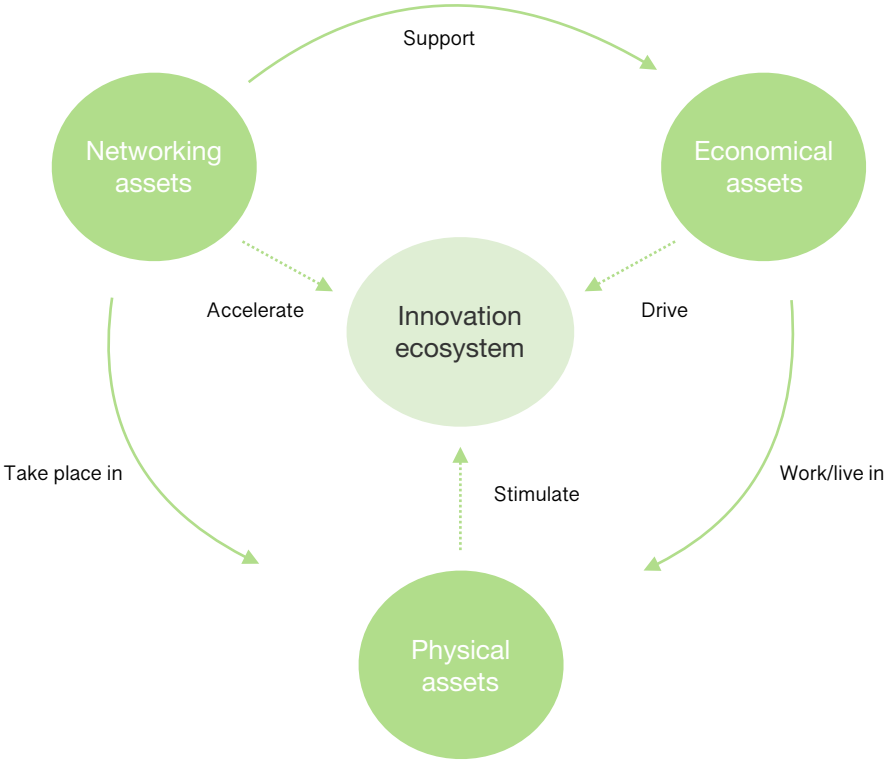


Figure 2: UID's assets relations in an ecosystem based on Katz and Wagner (2014) and visualisation of van der Zandt (2018, p.51)

O'gorman and Donelly (2016, p.8) add on that by considering it as a system which requires on the one hand a number of so called species (the entities) and on the other hand a range of ingredients and nutrients (among others, material resources, and human capital) that can regulate and develop an equilibrium in the ecosystem (***table 7***). The cooperation, collaboration, co-evolution and trust are critical in maintaining the ecosystem and characterise the successful operation between the species. Regarding their explanation, the species and nutrients could be considered as the assets from Katz and Wagner (2014) and the successful operation of cooperation, collaboration etc. can be interpreted as the synergistic relationship between them. Furthermore, O'Gorman & Donelly (2016) propose five essential ingredients for developing this innovation ecosystem. They believe that these ingredients include: connectedness between individuals, organisations and support institutions; a local and regional infrastructure; an environment conducive to economic development and growth; a culture that supports innovation; and a governance that offers mechanisms for economic and social development.

There has, however, also been some critical notes regarding the concept innovation ecosystem. Oh, Phillips, Park and Lee (2016) examined the use of the word 'eco-' that has been added to the innovation system, which has in their view no substantial added value. They stress that the concept innovation ecosystem can considered to be rather a theory that to date remains somewhat ill defined. Nonetheless, in this research, the innovation ecosystem as defined above will be used and is assumed to be a good explanation for describing synergies between entities within an urban innovation district that have the potential to generate innovation, its commercialisation and the subsequent economic benefits.

## Managing synergy in innovation ecosystems

Managing synergy is actually one of the most essential aspects in the functioning of the innovation ecosystem, as defined earlier. It is believed that providing only buildings and co-locating companies (and other organisations), according to the clustering theory, does not suffice in creating synergy to enhance the working of an innovation ecosystem (Van Winden & Carvalho, 2015, p.63). Moreover, active management strategies and tools seem to be needed to make the difference. By increasing the efficiency in the utilisation of resources (such as skills, infrastructure, specialised services), creating a reputation and image and stimulating knowledge exchange and networks that generate innovations, a positive synergy can be achieved (Van Winden & Carvalho, 2015, p.62). Van Winden and Carvalho (2015, p.63) propose hereby four concrete strategies and tools that can be considered conditions for synergy: (1) designing for interaction; (2) managing the tenant mix; (3) sharing facilities; and (4) promoting networks and communities. This are more elaborated in ***table 8***. Next to these conditions for synergy, it is already argued

Table 7. Species and nutrients of the innovation ecosystem based on O'gorman and Donelly (2016)

| Species | Nutrients | Synergy |
|---|---|---|
| Suppliers, startups, firms, consumers, R&D centres, supporting institutions etc. | Business acumen, risk capital, human capital, entrepreneurial capacity, technological commercialisation, physical infrastructure, gloabal linkages, supportive government policies, balanced quality of life, professional services, industrial base, networking opportunities, innovation culture, community mindset etc. | Cooperation, collaboration, co-evolution and trust |

several times that there is proximity needed between actors in the innovation district to enhance the innovation ecosystem, as without it, interactions that generate innovation will be hampered.

## Relevance of proximity in innovation ecosystems

Boschma (2005) argues that for innovation the actual level of proximity between actors or organisations is most important. As with too much or too little proximity (on a cognitive (sharing common vocabulary), organisational (capacity to enable knowledge exchange), social (trust and friendliness for interaction), institutional (regulation and rules) or geographical level), innovation or interactive learning will presumably be less present. In other words, for startups to be supported by interaction with other entities in the ecosystem, proximity plays a role. In ***table 9*** a summary of the five dimensions of proximity compared to each other based on Boschma (2005, in Magdaniel, 2016, p.85) is given. Boschma (2005, in Magdaniel, 2016, p. 85) also concludes that the sole proximity of either one of the five is neither seen as a prerequisite nor sufficient condition for learning/innovation to take place, however each one does have a facilitating role. However, actual measures of the right proximity are not easily extracted and seem to vary per situation.

## Concluding

Indeed, there are thus various critical entities and conditions to drive the innovation district and are essential for achieving the economic benefits. Startups and entrepreneurs, as economic assets described by Katz & Wagner (2014) stand in this regard at the very basis of the innovation district and are seen as the necessary assets that can function as the key vehicle for the economic advantages these districts tend to generate; economic growth and job creation (Katz and Wagner, 2014, p.

Table 8. Strategies for synergy management (Van Winden and Carvalho, 2015)

| Strategies | Description |
|---|---|
| **Designing for interaction** | Designing for interaction suggests that the design of (public and private) space (physical assets) can enhance planned and unplanned interactions increasing the chance of knowledge spillovers and innovation. (Van Winden & Carvalho, 2015, p.66). Heerwagen et al., (2004 in Van Winden & Carvalho, 2015, p.66) showed that improving the layout of an office (for instance better visibility, accessibility and short walking distances) positively affect the (face to face) interaction. |
| **Managing the tenant mix** | Managing the tenant mix, regards mainly the economic assets within a location and could promote synergy (Van Winden & Carvalho, 2015, p.66). Herein it is found that sector homogeneity (cognitive proximity) for instance is related to the increasing sharing of knowledge, in other words carefully managing the tenant mix of a building or even location can support the benefit and collaboration of the tenants. Moreover, the sharing of common services, infrastructure or facilities is easier feasible. Lastly, it is argued that also identity and reputation of the specific knowledge location is enhanced as a location with firms in a specific sector gets a 'place to be' character. (Van Winden & Carvalho, 2015, p.67). |
| **Sharing facilities** | Sharing facilities (Supporting assets) is about co-locating several activities that are in the advance of the tenants. Especially when it concerns investing in cluster specific infrastructure, services and facilities, costs may be reduced and enables also small tenants to afford certain (expensive) facilities such as labs which brings together diversity of tenants by sharing the same facilities and therefore encourages knowledge exchange (Van Winden & Carcalho, 2015, p.67). |
| **Promoting networks** | Promoting networks and communities (Networking assets) regards the actively promotion of relations, communities and building of networks, as innovation is seen as above all a social phenomenon that is in need of trust, and mutual understanding (Amin and Roberts, 2008 in Van Winden & Carvalho, 2015, p.67). Also, it is stressed that the constant building of new networks decreases the chance of closed and locked-in knowledge clubs (Carvalho, 2013, in Van Winden & Carvalho, 2015, p.67). |

4). Moreover, startups are believed to grow better and more accessible jobs through their, often disrupting, innovations (Katz and Wagner, 2014, p.4). Research from Florida (2014, in Katz and Wagner, 2014, p. 6) showed that startup activity, and especially high tech development startup activity, seems to be increasingly apparent in mixed use, transit oriented and walkable urban centres, which are currently developed into innovation districts. Also the new innovation paradigm open innovation is contributing to a more porous boundary between the startups and the larger firms and institutions within the ecosystem. Thus enabling more innovations to be shared and commercialised (Katz and Wagner, 2014, p. 8). Indeed, the relation between startups and the innovation district is apparent, but to understand their place and dependency within the innovation district and its ecosystem better a further exploration on the concept of startups is needed.

Table 9. The five dimensions of proximity compared own ill based on Boschma (2005, in Magdaniel, 2016, p.85)

| Dimension of proximity | Cognitive | Organisational | Social | Institutional | Geographical |
|---|---|---|---|---|---|
| **Definition** | Actors sharing the same knowledge base and expertise | Actors sharing relations in an organisational arrangement. | Actors sharing relations in a social context based on embeddedness, trust and commitment. | Actors sharing relations in an institutional framework based on collective norms and values. | The spatial or physical distance between actors. |
| **Advantages for learning** | Facilitates the capacity to absorb new knowledge | Facilitate control mechanisms to ensure ownership rights and returns on new knowledge. | Facilitates the exchange of tacit knowledge and effective interactive learning. | Enables stable conditions for effective interactive learning. | Enhances interactive learning by stimulating other forms of proximity. |
| **Associated problems for learning** | Too much leads to lock-in masking the view on new technologies or market possibilities. Too little leads to ineffective communication. | Too much can create dependency and lack of flexibility limiting the exploration of new knowledge. Too little leads to lack of control increasing the threat of opportunism. | Too much can lead to closeness and missed opportunities in a changing market because of excess of trust. Too little can lead to lack of trust and commitment. | Too much can lead to institutional inertia (impeding re-adjustments for change) and lock-in (blocking exploration). Too little leads to lack of social cohesion and common values and language. | Too much leads to local closeness blocking the learning ability of (highly specialised) networks |
| **Potential solutions** | Complementary capabilities in a common knowledge base | Network-like organisation of the firm with relative decentralised units but well-coordinated. | Networks consisting of both market- and embedded relationships. | Checks and balances between institutional stability, openness and flexibility. | Balance mix of local and non-local relation and linkages. |

# Evolution of the startup within the innovation district

The central question that guides the literature review in this section is:

***What are startups and what is their place in the innovation district?***

Startups are commonly known as an important means to bring new ideas to life and are thought to be core to the process of innovation, economic -and employment growth (Dee et al., 2015). In this part the startup will be defined, discussing their relation to economic growth and elaborating on the startup types, their life course, their needs and their place in the innovation district to better understand the physical conditions that may facilitate them.

## 3.1 Defining the concept startup

In the introduction of this research both concepts startups and entrepreneurs have been used. Although they may seem different from each other, they should be considered more interrelated than separate. Looking at how they have been defined in theory can help to better understand the two concepts. Before defining the 'start-up' it is reasonable to start with defining the 'entrepreneur'. Becoming a startup actually starts with becoming an entrepreneur. So what is an entrepreneur? Ahmad and Seymour (2008) have done a thorough analysis on the definition of entrepreneurs. Herein Schumpeters (1934) definition of an entrepreneur is by many seen as the one and only modern interpretation of the concept (Ahmad and Seymour, 2008, p.8). Following Schumpeter, entrepreneurs could be seen as innovators in which they could make an innovation by either: (1) introducing a new product or new species of an already known product; (2) new methods of production or sales of a product; (3) new market; (4) new sources of supply; (5) new industry structure or management processes (Schumpeter, 1934). With his definition, entrepreneurship is seen as innovation in a business sense. Ahmad and Seymour (2008) hereby describe the entrepreneur as someone who is on the one hand looking back at and using in innovative ways already existing resources and on the other hand look forward to fill the gap of new perceived market opportunities. In conclusion, Ahmad and Seymour basically see three themes that relate to the entrepreneur and its activity that explain entrepreneurship, these are: (1)the enterprising human activity; (2) the use of resources, identification of market opportunities, use of innovative capabilities; (3) and the creation of value. Based on these three themes they make an omnibus definition for the entrepreneur (2008, p.8-9): ***"Entrepreneurs are those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets."*** In essence, they are the persons that can be the innovators.

Now a definition of an entrepreneur has been given, the step to defining a startup is easier made. Start-ups are commonly associated with temporary small teams or even one person that work(s) on new and innovative ideas, products or services that seek market introduction. So basically the startup is the entrepreneur that starts/creates its enterprise.

Luger and Koo (2005, p.19) have defined a systematic and omnibus way of classifying enterprises as startups and apply three criteria: active, new and independent. This is shown in ***table 10***.

Table 10. Criteria to classify enterprises as a startup based on Luger & Koo, 2005, p.19)

| Startup criteria | Explanation |
|---|---|
| Active | During a given time to sell for instance products or services |
| New | Not existing before a given time |
| Independent | Not legally, financially or functionally related to larger companies, although exceptions can be made |

In addition, startup guru Steve Blank considers the startup more as a process and defines them as a ***"temporary organisation designed to search for a repeatable and scalable business model"*** (Blank, 2010). Repeatable and scalable businesses are found to be the most promising to be successful (Blank, 2010), however, looking for a repeatable and scalable business is not to say that every startup will or should end up with one. Apart from Blank, a similar view on startups is given by Joseph Picken (2017). He sees the startup as the starting phase the entrepreneur with its new venture goes through, which thus links to time.

Concluding: there does not seem to be one clear definition of what a startup is. However, what the above-mentioned boils down to can be used to end up with a useful definition. As it can be understood, the startup thus generally consists of a temporary organisation of one or more founding entrepreneur(s) that go through a phase of creating a new, active and independent enterprise for which they are in search of a repeatable and scalable business model. Once they have found a (scalable) business model in the startup phase, they are yet to become a company where they will execute the business model. So this leads to the following used definition: ***"a startup is a temporary, active, new and independent organisation that is in search for a (repeatable and scalable) business model".*** With this definition, most literature on entrepreneurs can also be considered to concern startups. Thus in this research both definitions of entrepreneurs (as they go through the startup phase) as well as startups will therefor be researched and used interchangeably.

## 3.2 Type of startups

Within the definition of startups different types can be distinguished. Different types may infer also a different 'place' within the innovation ecosystem as to the geography of the district as well as to their interaction with or dependency on the other entities in the system. Furthermore, the conditions needed for startups to give them a place to grow may also be different. The bases to distinguish startup types are often size and turnover, goal and scalability, business activity and type of knowledge base.

### Size and turnover

First of all it should thus be noted that startups are often distinguished by their size and turnover (European Commission, 2014). The European Commission distinguishes hereby companies based on the number of employees and their annual turnover. It turned out that smaller (one man and micro) enterprises (to which startups pertain as well) have suffered the most during the last financial crisis, compared to the larger enterprises (European Commission, 2014, p.14). It may thus be concluded, that startups tend to be vulnerable enterprises. As can be seen from the table, startups are in general enterprises that still have a small amount of employees and have not yet reached a turnover of 2 million (and many may not ever reach this). However, this should be nuanced and may not be true for every startup. That is

to say that for instance some startups may start small and stay that way. Considering this, the size of a startup in terms of employees will be taken into account, as a difference can be observed between a one man startup (no employees) and a micro company startup (employees) for instance the need of more space.

## Goal and scalability

The type of startup can also be distinguished on the basis of the founders goal and scalability of the startup. Blank (2018) identified six types of startups. In this research the lifestyle startup, micro business startup, scalable startup, buyable startup and the social startup will be taken into account. The large company startup is not taken into account as it contradicts with the former definition of independent business. The buyable startup is considered a subtype of the scalable startup. The lifestyle startup is also considered a sub type of the micro to small business startup. The descriptions of the different types are listed in ***table 11.***

It can be observed from the table that the objective of a founder, together with the potential scalability of the startup, are important measures to understand what type of startup they have. Moreover, it is even argued that the type of startup regarding the goal can be an indicator whether economic growth is related or not. Acs (2006) notes a clear distinction that should be made between opportunity entrepreneurship and necessity entrepreneurship, as with the latter there is none or almost no economic growth related. The reason for this is that with opportunity entrepreneurship an un(der)exploited business opportunity may exist, but with necessity entrepreneurship, one has no better option then to become an entrepreneur (Acs, 2006, p. 97). One could argue that within the micro to small business startup types, necessity entrepreneurship can be more apparent.

## Business activity

Companies in general can be distinguished based on their business activities. And business activities can imply very different needs as to location, environment, space etc. Companies can therefor be classified into sectors and industries. In essence, firms provide services and products to customers (central unit), and these firms on their turn depend on other firms such as suppliers (complementary unit) to provide inputs Parnas (1972 in Dalziel, 2007, p.1562). In general terms four sectors can be distinguished in the

Table 11. Startup types based on goal and scalability

| Startup type names | Goal and scalability | Example |
|---|---|---|
| Micro to small business startup and Lifestyle startup | The micro business startups are not perse designed to be scalable but can be. Often the owners just want to have their own business and feed their family.<br><br>Lifestyle entrepreneurs work for no one but themselves and pursue personal passion. | Examples are: grocery stores, hairdresser, consultants, travel agents, carpenters, plumbers, electricians etc.<br><br>Examples are: surf teachers, coder, web designer etc |
| Scalable and buyable startup | Scalable startups are the silicon valley like entrepreneurs that want to grow fast and create equity in their company to become eventually a multi-million dollar one that may be acquired or publicly traded. Sometimes, the startup is purchased by a lager company already in an early stage, then it regards a buyable startup. | Examples are: google, facebook, skype, twitter etc. |
| Social startup | Social startups often are evenly ambitious as the other startups but have a different goal. This goal is often not financially triggered but more driven to make a social impact. | Examples are: the oceans clean up |

Table 12. Type of startup activities

| Type | Activities |
|---|---|
| **Asset builder** | make and sell physical things |
| **service providers** | use people to offer services |
| **technology creators** | generate and deliver intellectual property (software and data) |
| **network orchestrators** | facilitate transactions and interactions within a network |

economy that these firms can relate their business activity to: the primary sector (material extraction and harvesting); secondary sector (manufacturing, construction and processing of raw materials to finished goods); tertiary sector (services providers of products and services); and the quaternary sector (knowledge services and products). However, with this classification it still can be hard to assign startups to. Besides, startups are often in the search of a business model and do not yet perform a very specific activity or do not (all) yet have a clear service or product, it may be difficult to assign firms to either one of the sectors. Furthermore, these days standards and measures do not reflect the new forms of organisations and products or services Libert, Beck and Wind (2016). Therefore Libert et al. (2016) argue to look at business models instead of vertical industries. Hereby they suggest four ways to assign companies (***table 12***). Next to these business models, one can look at the knowledge creation modes to which these activities are created or based on.

## Knowledge creation modes

Knowledge creation modes refer to the type of knowledge that companies in the knowledge economy use to develop their product or service. Asheim et al. (2007 in Van Winden & Carvalho, 2016) conceptualised three types of knowledge creation modes, or knowledge bases. These are: symbolic (aesthetic and artistic based), analytical (science-based) and synthetic knowledge (engineering and problem solving based) (Van Winden & Carvalho, 2016, p. 3). The types of companies or startups that are mostly located within the urban atmospheres are analysed to be the types of companies that rely on symbolic knowledge. However, companies based on the other two types of knowledge creation modes are not necessarily located

Table 13. Knowledge creation modes based on (Asheim, 2007 in Van Winden & Carvalho, 2016, p.58) table constitution based on Van der Zandt (2018, p.53)

| Type of knowledge | Symbolic | Synthetic | Analytical |
|---|---|---|---|
| **Source of knowledge** | Aesthetic and artistic based | Engineering and problem-solving based | Science based |
| **Knowledge creation** | Access to know-who, external stimuli | Relying on know-how<br>Customisation and problem solving skills<br>Face-to-face contacts | Relying on know-why<br>And scientific laws application<br>Use of formalised processes |
| **Outcome** | creation of cultural meaning through transmission in an affecting sensuous medium<br>Creation of designs/images/ cultural artifacts | designing or constructing technological (functional) systems<br>Manifested in product or process or service development | understanding and explaining features of the (natural) world<br>Manifested in often codified knowledge |
| **Preferred location characteristics** | Distinct, lively, diverse urban identity<br>Urban facilities for meeting | Social and physical proximity<br>Mutual understanding<br>Value business climate more than people climate | Proximity to state of the art laboratories and other scientists<br>Safety and confidentiality |
| **Type of location** | Dense urban, core city environment | Functional urban region | Large urban region |

within the dense and lively urban areas, but more often in the suburban greenfield locations (Van Winden & Carvalho, 2016). In ***table 13*** the differences between the three types are shown. Another type of knowledge mode that cannot be related to the aforementioned three will be called 'other'. As Pina and Tether (2016) argue, businesses often not base their product or service on only one knowledge mode, but may combine multiple, sometimes even all three. Of course, this makes it then hard to generate clear types of startups.

## 3.3 Location-choice of startups

Location choices of startups also touch location choices of companies in general, as startups are temporary organisations in the process of becoming a company. In theory location choices can be merely explained by four location choice paradigms. Brouwer, Mariotti, Van Ommeren (2004) distinguish three approaches of location theories based on other theorists (Machlup 1976; Hayter 1997): neoclassical theory, behavioural theory and institutional theory. These are shown and explained in ***table 14***.

In the neo-classical theory firms location choices relate also to the knowledge bases as discussed above, as in that sense companies are attracted by pull factors regarding location (Van Winden and Carvalho, 2016). In contrast to the aforementioned, it is believed that behavioural theory is thus determining the location choice of firms. This theory also refers to the behaviour of people. Herein Sorenson (2018) mentions that especially the young and inexperienced start-ups that do not have the resources, the time nor information to make optimal location decisions like for instance large developed companies do, cannot make optimal location choices (according to the neoclassical theory). Sorenson (2018) stresses the importance of social relationships in the clustering of entrepreneurs. What he found was not only the influence social networks have on entrepreneurs for aspects such as the gathering of funds, partners, employees but as well as for their choice of location. He

Table 14. Location theories (Brouwer, Mariotti, Van Ommeren, 2004, p.336-338; and Boschma, Frenken, 2006)

| Theory | Description | Sources |
|---|---|---|
| **Neoclassical location theory** | Focuses on the maximising profits and choosing the optimal location. Choices are based on full information and rational. Often focus is on market situation and key factors lie in the location (such as transportation cost, labour cost, market size and other pull factors) | Von Thunen 1826; Weber 1929; Losch 1954; Moses 1958 |
| **Behavioural location theory** | Firms are according to this theory interpreted as having limited information, boundedly rational, take suboptimal outcomes for granted. Firms herein base more on internal factors and relies on questionnaires and empirical work. | Simon 1955; Cyert and March 1963; Pred 1967; Townroe 1972 |
| **Institutional location theory** | In contrast to the neoclassical theory, this theory sees the firm as an agent in a dynamic environment. The theory assumes that economic activity is rather institutionally and socially situated then by a firms behaviour. Economic activities are embedded in ongoing networks and social relations. Firms herein thus base more on external factors, however, this applies mostly to large firms. | Thrift and Olds, 1996; Pike et al. 1990; Brusco and Paba 1997; Becattini 1990; 2002; Amin 2000 |
| **Evolutionary location theory** | Is interpreted as a more dynamic approach in the sense that it interfaces all theories above but is based on the idea that location decisions evolve rather on the basis of organisational routines and path dependency. It is | Boschma, Frenken (2006) |

showed that entrepreneurs tend to found their firms in places/industries they have experience and/or where they live (have social ties) or used to live for a long time. Although the evolutionary theory would be best to take as leading theory, startups can be considered very dynamic and dealing with much uncertainty and cannot have full information. Therefor startups would rather make location choices according to the behavioural theory in the start of life- courses. This may implicate that startups are attracted to locations either close their home, this can be thus everywhere, or at spaces where they have or build social ties. Thus before startups actually choose a location, building a connections between startups at first may influence their location decision. Later on their choices may change having a more evolutionary approach that interfaces with neoclassical or institutional theory in later and more mature stages.

## 3.4 Life courses of startups

As above already suggested, a startup walks a development path in becoming a company. This development path, life courses or phases, may thus relate to their location choice behaviour but can also give more understanding of the needs regarding their (physical) environment and the challenges a startup may encounter. Each enterprise normally goes through a set of universal life courses/phases (Churchill & Lewis, 1983; Stam, 2003; McAdam & McAdam, 2008; Wissema, 2009; Salamzadeh & Kesim, 2015; Picken, 2017, Startup Commons, 2018). Stam (2003) has identified five phases and given these phases the name of respectively the 'start-up.', 'initial survival', 'early growth', 'growth syndrome', 'accumulation', (Stam, 2003, p.60). Picken (2017, p.588) identifies a similar path. He sees the entrepreneurial life cycle as going through four phases, respectively the 'startup', 'transition', 'scaling; and 'exit'. Startup Commons (2018) describe three main phases and note herein six milestones as it were. They describe the process as going from an idea towards a business and from a talent towards an organisation (Startup Commons, 2018). The three views and descriptions are shown together in ***appendix 5***. Basically, the different views on the phases match with each other in their essence. Therefore, a merge of the three views can be considered. As this research mainly focuses on how startups can be supported in their development, the research will mainly focus on the transition from the first to the second and may also consider the second to the third phase, which are by many considered the most critical phases. The life courses or phases of the startups development are summarised in ***figure 3.***

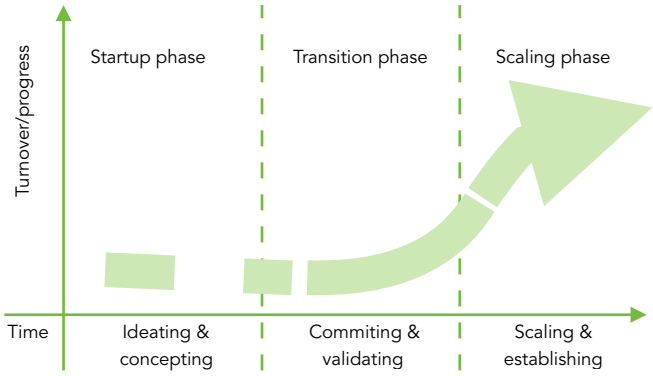


Figure 3. Development phases of a startup based on Startup Commons, (2018) and Picken (2017)

As can be observed one can imagine that startups go through these phases iteratively and not perse sequentially. Also, there seem no hard borders between the different stages. The graph shows basically the phases a startup goes through to become a company. Also, progress or turnover is not per definition following the curve as shown. Although the scaling phase can refer both a normal growth of a small business type of startup or a large scaling of a scalable startup. Lately the term 'scale-up' has also been used increasingly (Startup Commons, 2018). As can be understood, this term thus refers to the scaling phase of the startup. However, it may also refer to older established companies that have started the scaling of a new service/ product or business model (Startup Commons, 2018). Now there is an

understanding of the phases startups go through. However, during their development startups struggle a lot as mentioned in the introduction.Therefore a better understanding of these challenges during these phases can be obtained.

## Challenges and needs of startups

Startups struggle for their existence, especially in the early stages, on average two third of startups do not turn into companies over a time span of about 10 years. (Vesper, 1990 in Salamzadeh, Kawamorita Kesim, 2015, p.2; Picken, 2017). There are several reasons for the high rate of failure of startups. Among them are a lack of finance, management problems, lack of business knowledge or technology lag etc. (Nunez, 2007 in Salamzadeh, Kawamorita Kesim, 2015, p.2). Although challenges of startups on the one hand are often similar, the specific extent of a challenge may differ per startup significantly. Still some common challenges can be given. Salamzadeh, Kawamorita Kesim (2015, p.8) describe challenges clustered in four types: financial challenges, human resources, support mechanisms and environmental elements. These are briefly described in ***table 15***. Regarding the needs of startups during their development, a close relation can be observed with the aforementioned challenges. Some of the needs they have, evolve basically from the challenges they need to overcome. Other needs can be considered more basic. Lyu (2019) has researched the factors of attraction and retention of startups. These factors also relate to the needs of startups, as startups can be attracted to places that serve their needs (Lyu, 2019). ***Table 16*** shows a list of needs that can be considered important to startups during the three phases of their life courses. The needs are categorised on their relation to the three assets from Katz and Wagner.

During the phases startups have thus to cope with several challenges and have in general several needs. However, startups are often not going through these phases individually. Although described above as a challenge, startups often seek support at support organisations. It is therefore no surprise that in the last decades the number of support organisations is growing. These organisations are considered part of the innovation ecosystem as described earlier (startup Commons, n.d.). In the next paragraph these organisations will be introduced in which basically the place of the startup within the innovation district is discussed.

Table 15. Challenges that startups face (Salamzadeh, Kawamorita Kesim, 2015, p.8)

| Type of challenges | Description |
|---|---|
| **Financial** | Each startup faces financial issues for several reasons at different moments. Financial challenges come in essence down to finding investors or finance opportunities in almost every phase. |
| **Human resources** | As startups normally consist of one or some (co) founders. Sooner or later, often, more hands or knowledge from experts is needed. Human resources challenges are about finding the right experts and employees for development of the product or service, this is crucial for further development, especially in the transition phase. |
| **Access to support mechanisms (organisations)** | Many startups require support form mechanisms in the form of space (physical infrastructure), finance and network. incubators, accelerators, development centers, venture capitals etc are such mechanisms. That help develop their product or service. If access to these mechanisms is difficult, the risk of failure increases. |
| **Environmental** | Environmental elements are, among others, trends, market limitations and legal issues etc. that might impact the value of an existing idea. When a startups environment is not supportive, chances of failure increase. |

Table 16. Needs of startups per phase based on Lyu (2019, p 33-36)

| Dimension | Needs from startup to scale-up | Needs from end transition to scale-up |
|---|---|---|
| **Infrastructure (physical)** | - Natural/social amenities (proximity to nature, cafe, bar, restaurant, public space)<br>- Transport/accessibility<br>- Workspace/shared space (temporary/flex)<br>- Digital infra<br>- Openness and tolerance/image/identity | - Housing<br>- Workspace (permanent) |
| **Business support (economical)** | - Funding<br>- Rental price<br>- Subsidies<br>- Trainings<br>- Talents | - Services (business, legal, financial)<br>- Skilled workforce<br>- Access to market |
| **Networking** | - Interaction in similar fields (strong ties)<br>- Peer networking<br>- Cross-sector networking (weak ties) | - International networking<br>- Networking with other entities in ecosystem |

## 3.5 The startup within the innovation district

The innovation district as explained before is a constitution of the three assets as described by Katz & Wagner (2014). It has the potential of stimulating and enabling innovation and economic development. As has been discussed several times already, the startup, or entrepreneurship in general, play herein a major role. How does this work? In essence: startups or entrepreneurs are considered to be pioneers of innovation as they identify and exploit new products, services etc. Furthermore, when therefore new businesses are created, new jobs may evolve which intensify competition and promote economic growth (Acs, 2006, p. 97). However, as discussed earlier, some startups evolve out of a necessity and will probably not be able to contribute to economic benefits. In other words, some startups may thus have a greater stake in generating innovations and economic growth than others and therefor, the innovation district and its potential ecosystem may be more related to supporting the latter startups than others.

As starting a business is not something that occurs by accident, although its innovation itself can, it often are entrepreneurs that dare to take the risks that existing companies would not take (Florida, Adler & Mellander, 2017). As noted earlier, it is most likely that it results from a concurrence of opportunities (often knowledge based, research -or technology-driven) and individuals (more frequently academic educated or technical) and the available and accessible resources (such as, stakeholders, networks, finance etc.) at hand that have influence on the breeding of innovative enterprises (Block, Fish & van Praag, 2016). Obviously, a lack of access to these resources forms a crucial barrier to creating a startup. Still, a combination of the right conditions can influence, encourage and enable potential entrepreneurs to start and succeed with their business (Acs, 2006, p.97). The innovation district and its innovation ecosystem could therefore be the ultimate place that inhibits these elements. Regarding the needs of startups above, it is already apparent that innovation districts seem to may inhibit various elements that serve these needs. Most of them often offered through the aforementioned organisations that are settled within the district.

The innovation district and the elements for its ecosystem basically consist of actors, organisations and their resources, and the interactions between them generate the synergy. But where in this system is the startup positioned? Startups and the organisations that support them form basically a sub ecosystem, called the startup ecosystem

Table 17. Organisations with relevant functions for the purpose of startups based on Startup Commons (n.d.) and Lyu (2019, p.26-27)

| Organisation type | Function |
|---|---|
| **Funding organisations** | Provide various funding |
| **Universities and research institutes** | Provide trainings, knowledge, funding and talent |
| **Service provider organisations** | Provide service as legal, financial etc, apart from core business |
| **Large corporations** | Offer business training, technology support, networking and funding |
| **Support organisations** | Guidance from idea to business |

(Startup Commons, n.d.). This startup ecosystem is in essence designed to create new startups (Startup Commons, n.d.). However, in this research the startup ecosystem is viewed as (part of) the innovation ecosystem of the district, with the aim of contributing towards the settle and growth of the startup to generating innovations. The main organisations that Startup Commons (n.d.) mention to be important for startups are universities and research institutions, funding organisations, support organisations, service provider organisations and large corporations. See ***table 17*** for the related functions.

Support organisations take for a large part a direct relation with startups during their development and often connect with the other organisations in the district. Already it can be noted that they provide partly in the needs as described previously. These organisations (the innovation cultivators according to Katz & Wagner, 2014) are in literature also framed as startup 'innovation habitats', as they specifically address a supportive startup environment, or literally 'a home', that is able to nurture innovation, and connect them to the wider innovation ecosystem (Figliolo, Rush & Sapsed., 2017).

## Innovation habitats supporting the startup

Figlio et al., (2017) describe these innovation habitats as spaces that offer various services to support startups. They thus act as service providers to support startups but also often as managers of interaction between startups and other actors in the district, thereby contributing the ecosystem. Best known innovation habitats include, among other, incubators, accelerators and co-working spaces. These organisations have the resources that aim to lower the risk and increase the survival chances of start-ups (Tasic, Montoro-Sanches & Cano, 2015). Dee, Gill, Weinberg & McTavish (2015) have examined several startup organisations that pertain to the innovation habitats. Hereby they explored the similarities and differences to who and when they target, and how they

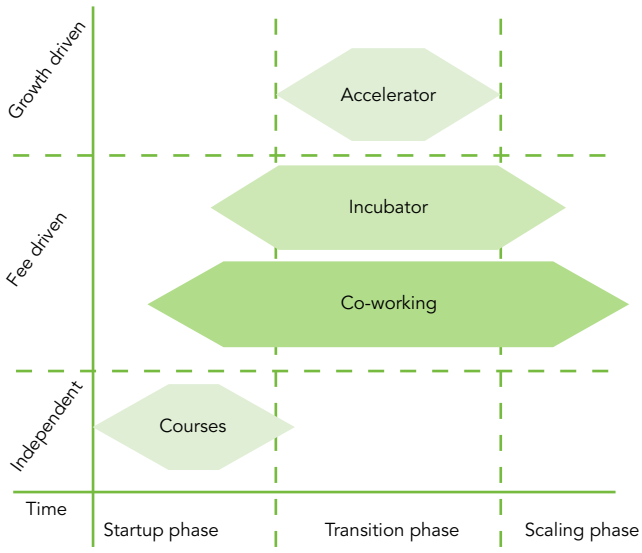


Figure 4. Startup habitats relative to startup phases (Dee et al., 2015, p.22)

make money. In ***figure 4*** a few organisation types that act as an innovation habitat during (part of) the development of startups are shown. As can be seen from the figure, the different habitats have different focus regarding the startup development phases. They also differ in the type of resources and services they offer and may also therefor attract different type of startups. Figlioli et al. (2017) noted an evolution in the type of services offered. Hereby they describe three generations of offered services. The first generation of innovation habitats offered only the physical infrastructure: office space and shared resources; the second generation provided also business support: coaching and training support; and the third generation added access to technological, professional and financial networks to the services. A more elaborated description of these three service generations is shown in ***table 18***. Today, most innovation habitats offer almost all three sorts of services, although varying in their extent.

## Incubators and accelerators

Best known and most distinguished support organisations are accelerators and incubators. They both provide startups with mentoring, education, technical assistance and seed funding. Accelerators are mostly related to contribute to startups success rates. They provide a selected group of (often winning) startups with startup bootcamp, mentoring, resources and network/investor connections (Dempwolf, Auer & D'Ippolito, 2014). An incubator on the other hand distinguishes itself from an accelerator in that it targets local start-ups and offers office space at reduced rents whereas the accelerator is cohort based, culminates in demo-day and has a fixed (short) term to help start-ups (Dempwolf et al., 2014).

Although there is thus a distinction present between types of startup support organisations, they also inhibit some overlapping or shared characteristics. Because of this overlap in offered services there appears lack of consistency and vagueness regarding the denomination of innovation habitats in theory (Figlioli et al., 2017).

Dempwolf, et al (2014, p.20) furthermore distinguished several (not exhaustive) similar types of the incubator/accelerator habitats. These types mainly differ based on the initiators and their initial objectives. These are respectively incubators, venture development organisations, university accelerators, proof of concept centres, corporate accelerators and innovation accelerators (Dempwolf et al., 2014, pp.20-23). The objective is characterised by the economic structure, which can be non-profit/for the public good or for profit/with private interest. Their framework however does not classify organisations that are for instance for profit

Table 18. Services that can be offered by innovation habitats (Figlioli et al., 2017, p. 13-14)

| 1st: infrastructure | 2nd: business support | 3rd: access to networks |
|---|---|---|
| - Shared working space<br>- Individual units (private/ closed offices)<br>- Equipment for fabrication and prototyping<br>- Social space (cafetaria/ coffee shop)<br>- Shared resources (reception/meeting rooms) | - Coaching<br>- Mentoring<br>- Consultancy on accounting, finance, law, marketing and business<br>- Seminars/workshops<br>- Medium term training programs<br>- IP protecting services<br>- Product development through user centric design methodology | - Seed capital<br>- Venture capital<br>- Finance institutions<br>- Customers<br>- Suppliers<br>- Partners groups of experts<br>- Talented people |

but offer services similar to incubators (such as co-working spaces).

Considering the above, several habitats exist that can be initiated by a diverse range of people/organisations, both private and public. As mentioned, they can function as a sort of supportive home for startups. In other words, they provide startups a place within the district and may be a connecting actor in the innovation ecosystem, as they can connect startups to a wider array of organisations that may enhance their development and new innovations. Motoyama & Watkins (2014) investigated the connections that exist in such ecosystems with the focus on startups. They deduced some findings from observing a case study in St. Louis. Within their observations, the apparent economical assets were entrepreneurs, universities and the aforementioned innovation habitats which use physical assets such as buildings to facilitate startups and networking assets such as entrepreneurial events to help connect them to other entities in the ecosystem. The support organisations proved to catalyse interactions between the observed assets (Motoyama & Watkins, 2014).

## Concluding

Regarding the place of the startup within the innovation district and its ecosystem, it can be concluded that startups development seems partly dependent on the presence and access to the several organisations that help them cope with the challenges and can provide the resources needed. Moreover, innovation habitats are in this sense the connectors in the system, that support startups during major parts of their development phases and offer the services that facilitate the connection with other entities that can help them grow.

Now a better understanding of innovation districts and startups as part of it has been obtained. In summary, startups are not easy to define. They can be categorised by different types based on their size, goal and scalability, business activity, or knowledge base. Furthermore, they all follow a kind of common life course, in this research defined as three phases, the startup, the transition and the scaling. During these phases they have to cope with several challenges and have several needs relating to infrastructure, business support and networks. Several organisations and entities in an urban innovation district exist to support startups, serve their needs and connect them with other entities to enhance the ecosystem. As the main aim of this research is understanding how the physical environment of the district is able to facilitate in the development of startups, the question remains what physical/spatial conditions in the innovation district are needed to enable the latter. In the next section these conditions will be summarised and a conclusion on the theoretical notions will be given in which a provisional theoretical answer to the main research question is given.

# Physical conditions facilitating startups

The central question that guides the literature review in this section is:

***What are the physical/spatial conditions for the innovation ecosystem to facilitate and stimulate the development of startups?***

In this last part of the theoretical framework, the physical conditions that can facilitate and stimulate in the development of startups within urban innovation districts will be concluded and a concluding note on the theoretical framework is provided.

Basically the question is: what is needed from the physical 'place' as well from the neighbourhood as building where the startup locates, within innovation districts to feel comfortable to settle, grow and thrive. In order to come up with physical conditions, a figural physical/spatial lens will be used with respect to the needs of startups and the other conditions in the district that are believed to stimulate innovation. In the first section a pyramid of assets has been used to describes how the physical assets can be seen as a basis to facilitate and enable economic and networking assets. As understood from the second chapter, startups needs basically relate to these assets. Herein both the area and building level are taken into account. When talking about the area level, the district or a part of the district is meant. When talking about the building level, the buildings, in which organisations act, are meant.

## 4.1 Conditions facilitating in the development of startups

When looking purely to the needs of startups in their development phases as identified in the previous section it is quite easy to subtract several physical/spatial conditions from it. Basically the physical conditions should be able to facilitate the space, business support and networking needs of the startups during their development in general. The physical infrastructure of the ecosystem (Katz & Wagner, 2014) can be taken into account as one important condition, facilitating on an area level other conditions such as various support organisations. Hereby it should thus facilitate the transport and accessibility to office spaces, public spaces, amenities and institutions that support startups hereby enhancing overall connectivity and it determines the image and identity of the area. At the building level, for instance at the incubator, the physical infrastructure should provide the various office -and workspaces, shared facilities, facilitating a managed tenant mix in which business support can take place and interaction (weak ties and strong ties) between startups and other entities is facilitated. As became clear from the aforementioned theory several aspects regarding the physical space are also required to facilitate the latter. Especially for the needed interaction, the design of the innovation habitats (for instance incubator) or various spaces in and outside should generate the synergy and certain levels of proximity between the tenants is therefore necessary in order to let them collide into each other. As the latter is in fact the part whereby the synergy has the potential to catalyse the

development of startups. Summarising, the innovation district and ecosystem should provide a physical infrastructure that facilitates business support and networking. This is further elaborated in the ***table 19***. From top to bottom on both area and building level the conditions of the innovation ecosystem for startup development are shown. Hereby the physical infrastructure thus should be provided and hence facilitate on business support and networking.

Now no distinction has yet been made between the different types of startups. As there is not yet much information found to discriminate the conditions as such. However, several assumptions can be made regarding the startup types. For instance on goal and scalability, scalable startups are more likely to end up at an accelerator or incubator and make a fast growth, therefore have probably more needs regarding funding, trainings, human resources and networking. In contrast to the lifestyle/micro business startups that do not perse need to grow fast or (depending on their business activity) have less needs regarding trainings, investors or not perse need an incubator at all.

Table 19. Physical/spatial conditions facilitating startups in the innovation ecosystem based on (Van der Zandt, 2018; Pluijmen, 2017; Iamnak, 2015; Katz and Wagner, 2014; Magdaniel, 2016; Van Winden & Carvalho, 2015)

| | **Physical/spatial conditions facilitating and stimulating startup development** | | |
|---|---|---|---|
| **Elements** | **Area level** | **Building level** | **Elements** |
| Transport options/digital infrastructure/physical infrastructure/ walkability/bikeability etc | Provide physical infrastructure Accessibility and connectivity | Provide physical infrastructure Access to workspace | (Affordable and flexible and permanent) Private spaces/open spaces/ shared spaces /co-working spaces |
| Public spaces/plazas/streets with energy and activity/concerts/living labs/expositions etc/shared space for working/Affordable housing/co-living spaces/meeting spaces common eating spaces/ entertainment spaces/and restaurants/bars/cafes/supermarkets/ retail/services and facilities | Provide physical infrastructure Access to shared spaces and neighbourhood building amenities | Provide physical infrastructure Access to shared facilities | Meeting rooms/lab space/creative space/lobby/outdoor space/silent space/phone space/relax space/ entertainment space/multipurpose space/eventspace /coffee space/social space/lunch space Bar space etc. |
| Facilitating presence and functioning of a tenant mix of Service providers/ other entities/organisations/human resources/job training firms/legal/ accounting etc | Facilitate business support | Facilitate business support | Space. Facilitating Training/mentoring/ coaching/human resources/etc. entities/skilled workforce, access to market, services (business, legal, financial etc) |
| Design for interaction both weak and strong/planned and unplanned/ (proximity)/ tenant mix/ identity/ image and atmosphere | Facilitate to networking | Facilitate networking | Design for interaction (programming of space) for both weak and strong ties/ planned and unplanned interaction/ designed for optimising tenant mix and proximity/ identity/image and atmosphere/ access to international network |

## 4.2 Concluding notes on the theoretical framework

Concluding the theoretical framework a provisional answer can be given towards the main research question that was posed in the introduction. But before answering this question, first a brief summary of the answers on the subquestions will be given. This will be done accordingly.

***What are urban innovation districts and innovation ecosystems?***

Urban innovation districts have evolved over time from a growing economic need to innovate constantly. Changing mega trends and globalisation have shifted the industrial economy towards a knowledge economy. Hence, location decision making of companies have altered and clusters have formed increasingly in the vicinity of dense urban areas, in an attempt to enjoy the economic benefits. These places have become more and more a hotbed for innovation; innovation districts as they are then called. They are defined as "geographic areas where leading edge anchor institutions and companies cluster and connect with startups, incubators and accelerators". Cities promote these urban innovation districts both as tool for economic development, enhancing their competitive position and as a strategy for urban regeneration.

Three models have been identified that typify these districts on location, context and function. They are called: the anchor plus model, the re-imagined urban area model and the urbanised science-park model. These models tend to attract different users as to their knowledge base. The models all consist of certain assets, which are physical (buildings/spaces), economic (firms/startups/institutions/organisations) and networking (weak and strong ties events) assets. One can consider the assets in the form of a pyramid in which the physical assets are basically facilitating the economical and networking assets to get to innovation. These assets all-together can form an innovation ecosystem capable of stimulating innovation and catalysing commercialisation. Ofcourse, other elements, drivers and factors may as well play a role in this ecosystem, but the focus is in this research mainly set on physical/spatial dimension and does not go into other factors. This ecosystem is furthermore characterised by the synergies formed between these three assets. For this synergy several strategies are proposed such as design for interaction, sharing facilities and spaces, promotion of networking and managing the tenant mix. Especially the last strategy touches also on the proximity theory which explains that certain levels of proximity are needed for interaction. Managing this synergy between the assets enables an innovation ecosystem which can function as the engine towards economic development.

With this background the second subquestion has been asked to understand the main economic asset that has the focus in this research: the startup. Furthermore it is investigated what their place is within the innovation district, where do they develop?

***What are startups and what is their place in the innovation district?***

As posed several times before, among the actors that have a driving function in innovation districts are startups. They are considered essential in the process of generating and commercialising innovation, but are often also seen as weak and in lack of resources to do the job. Startups are somewhat ill defined but will be understood as new, active and independent temporary organisations that are often in search for a (repeatable and scalable) business model. Various types of startups can be identified here mainly based on their goal and scalability which in essence comes down to small-business startups, scalable startups and social startups and their business activity which come down to asset builders (build and sell physical products), service providers (use

people to offer services), technology creators (often intellectual property of software and data) and network orchestrators (facilitate transactions and interactions). Lastly, they can be distinguished on their knowledge base. These knowledge bases are symbolic, synthetic and analytical. These knowledge bases say something about the type of activity but also about the environment they often cherish to work in. However, the latter says more about where they might end up, but regarding their start location, startups rather locate in places where they used to work, live, have affinity with the industry they work in or have built social/business relationships.

There is also a pattern observed regarding their life course that most startups can relate to. They all go through a set of roughly three life phases. These are defined as the startup phase (ideating and concepting of idea), transition phase (committing and validating of business model) and scaling phase (scaling/ growing and establishing of business). During these phases several challenges are met, mainly regarding finance, business support and network. These challenges also come down to a set of (mostly) universal needs. These needs can be summarised to be a physical infrastructure (accessibility office, workspace, amenities, facilities etc), business support (funding, trainings, coaches, talent) and networking (interactions strong/weak ties, peer networking). Because of these needs, several organisations are found that provide the support needed and give startups a place in the innovation district with the potential being part of an innovation ecosystem as was told; relations with other actors formed by events and facilitated with space. The best known organisations that support startups (so called innovation habitats) are incubators and accelerators offering various services in the different phases of startups. Startups thus are given a place in the innovation district, often at several support organisations.

This understanding of startups within urban innovation districts helps to conclude the theoretical framework by questioning and summarising the conditions that the physical environment should meet in order to facilitate startups business support and networking in their development. In other words, what are the physical conditions to facilitate and enable the economic and networking assets to innovate. As discussed, there is thus both an area level (the district level) in which the startups locate and a building level (often the organisation that support the startup) in which startups work on their product or service.

***What are the physical conditions to facilitate and stimulate startups in their development within urban innovation districts?***

Innovation districts are seen as a breeding ground for startups during their development. Considering the needs of startups, physical conditions can be subtracted on an area and building level. These conditions are categorised as the physical infrastructure at area level providing the workspaces for the development of startups, generating accessibility and connectivity for the startup and between other relevant actors that may connect in the ecosystem, provides and facilitates in proximity to amenities and public spaces. At building level the conditions come down to providing different types of flexible and affordable work space that facilitate physical business support and provide shared spaces and facilities that are designed for interaction facilitating business support and networking.

***Main Question: How can the physical environment facilitate and stimulate startups in their development?***

Regarding the answers given to the subquestions above, a provisional theoretical answer can be discussed considering the main question. As already has been proven in literature, a growing number of startups are

nowadays established and developing in so called urban innovation districts. These districts provide various elements such as organisations and a physical infrastructure that seem to support startups during their life course and help them grow. Startups are this way given a place in the district and may hence become an active part of an innovation ecosystem. As supposed, it is the synergy that generates new interactions between the entities and are this way able to connect startups with the necessary or desired organisations, companies, institutions and people that may help startups in a positive way, leading to innovations. The better this synergy is created, the sooner a startup will connect with the needed entities that help them grow, the sooner innovation are commercialised, jobs are generated and economic benefits are evolving. In other words, as synergy can be stimulated by physical space, the physical environment may be facilitating therefor in the development of startups.

Still, this is a theoretical statement. Moreover, information on the exact 'how' is still lacking. Also startups seem to appear in various forms (types) and sofar research does not clearly differentiate on what type of startups are better supported in these districts, or even at all. Further empirical research may therefore test and enrich the aforementioned answers. Hereby questions could be asked on what types of startups are present in practice. Also it could be questioned to what extent the physical conditions are present in practice of selected cases and whether these conditions are regarded necessary and supporting per startup type. Furthermore it can be observed whether certain conditions are missing or whether the conditions are resulting in synergies and actually facilitate startups or not.

# Research design and methodology

## Research design and methodology

**In this fifth chapter the research design and methodology is explained. Hereby the research (sub)questions that are used are explained based on the research objectives that are aimed at. Furthermore the research design of this study is shown and thereafter the methods used to execute the research are described. Also the case selection is elaborated on in this chapter.**

## 5.1 Research objectives

The main aim of this research is to (1) understand how urban innovation districts are developed, (2) investigate what startups are and how they develop within these urban innovation districts and (3) identify what physical conditions can facilitate and stimulate startups in their development within urban innovation districts in order to (4) advice (area) managers and real estate developers how to contribute to developing innovation districts that foster startups to grow and accelerate innovation.

## 5.2 Research question and subquestions

The main research question as formulated in the introduction is: ***How can the physical environment facilitate and stimulate startups in their development within urban innovation districts?***

This question has been divided into several subquestions which comprise partly the concepts within the research question: urban innovation districts, startups and the facilitating physical environment. In the theoretical framework these concepts have been explained and discussed based on a literature study. The subquestions that have been asked and answered were:

1: What are urban innovation districts and innovation ecosystems?
2: What are startups and what is their place in the innovation district?
3: What are the physical conditions to facilitate and stimulate startups in their development within urban innovation districts?

At the end of the theoretical framework two extra subquestions have been asked for the empirical part to identify what physical conditions are present in practice and how these facilitate and stimulate startups in their development. Thus basically the developed theory of the theoretical framework is tested in practice to better understand how the physical environment facilitates and stimulates startups. Furthermore a prescriptive question has also been added to think about the case specific or general enhancement of innovation districts. These subquestions are respectively formulated as follows:

4: To what extent are the physical conditions present in the cases?
5: How do the apparent physical conditions facilitate and stimulate startups in their development?
6: How can area and building managers further stimulate startups in urban innovation districts and enhance innovation ecosystems?

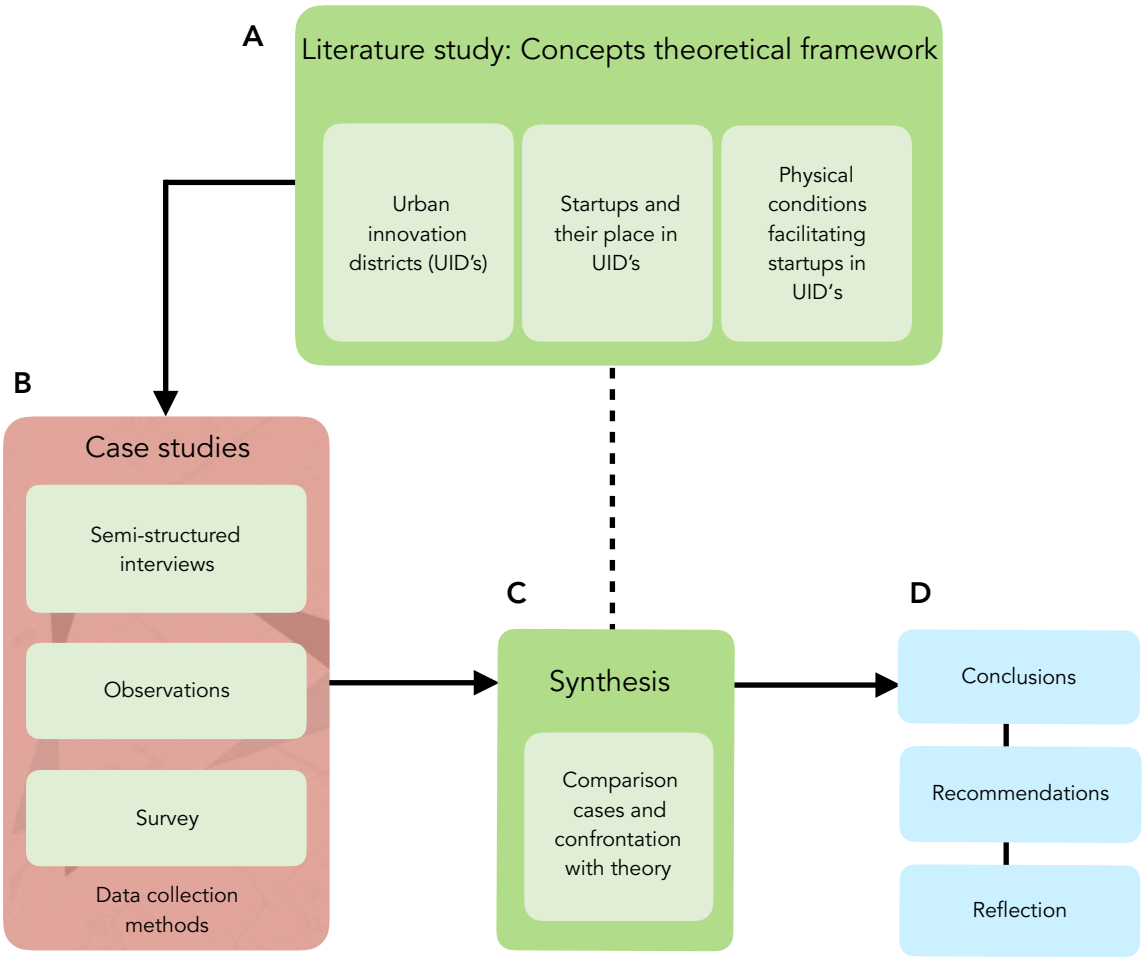


Figure 5. Research design (own illustration)

## 5.3 Research strategy and design

With the research strategy the "**general orientation to the conduct of social research**" is being described (Bryman, 2012, p.35). The common types of research strategy are quantitative and qualitative research. As this research will mainly focus on people (startups) and their demands and behaviour within the context of urban innovation districts, the research may be considered qualitative. Qualitative research is also commonly described as concerning the generation of theories (inductive) rather than the testing of theories (deductive) (Bryman, 2012, p.36). However, as also may be apparent in this research, qualitative research has also by other researchers been employed to test theories as well.

The research design (see ***figure 5***) will provide a framework in which the research methods for the collection of data are summarised and how the research will be conducted (Bryman, 2012, p.45). This research design comprises a comparative case-study, which entails "**studying two contrasting cases using more or less identical methods**" (Bryman, 2012, p. 72). The cases that are selected for this research will be elaborated on in the following paragraph.

As can be understood by the design (***Figure 5***), the first three subquestions are answered by a literature study (see **A**) and form a basis for doing the casestudies (see **B**). Two case studies will provide the qualitative findings. Herein are different research methods used (see **B**). The findings are synthesised (see **C**) by comparing the two cases most remarkable results and confronting these with the theory from the theoretical framework. Thereafter, the

main question will be answered and discussion and reflection on these results is given (see **D**).

## 5.4 Research methods

By using data collecting techniques (Bryman, 2012) the research can be conducted. The techniques that will be most appropriate in this research are for the theoretical part a literature review and for the empirical part observation, survey and semi-structured interviews.

### Theoretical framework: literature review

To get an understanding of the concepts and topics that are important in the research, a literature review is normally used. It is basically useful for gathering already established knowledge about certain concepts and to develop a theoretical framework that functions as a background and as a way to justify the research investigation (Bryman, 2012, p. 90). In this research the literature review has been used for developing knowledge about the concepts mentioned earlier. From the theory can also be new theory deduced and by comparison with the empirical results may afterwards new contributions be made to the literature, either by testing the existing literature or by inducing new theory.

### Case studies

This method is chosen to answer subquestions 4 and 5 and helps answering the main research question. Two cases are studied as multiple cases may lead to a more complete understanding of how physical conditions facilitate startups instead of only one. It can also strengthen the external validity of the findings. By use of several data collection methods, triangulation is better assured and can prevent biases (Bryman, 2012). The data collection methods are described below.

### Observations

Observation is used in this research to on the one hand take note of the presence of the physical conditions as described in the literature, but on the other hand observe the possible interrelations between startups and the physical environment. It is also used to complement the semi structured interviews, described in the next paragraph. Furthermore, observation is used to introduce and describe the particular case-studies. Bryman (2012, p.12) describes observation as a method used by the researcher to keep an open mind about the general contours of the research, in order to let theories emerge from the data.

### Semi structured interview

Semi-structured interviews is an appropriate technique when doing qualitative research (Bryman, 2012). Semi-structured interviews allow more room for the researcher to broaden the context regarding questions when needed (Bryman, 2012). The theoretical framework is used as the basis for structuring the interviews.

These semi-structured interviews are used for interviewing two types of actors in this research; startups and the managers of the multi-company buildings in which the startups are located. The interviews with startups are mainly focused on their development path, location decision and how physical conditions facilitate them in the latter. The interviews with the managers were mainly focused on the organisation and management strategies used to understand their role in facilitating startups.

The semi-structured interview protocol (see ***Appendix 2 and 3***) holds a list of topics (interview guide) that can be discussed, although the interviewee can have room for deviation in his reply, it results in a more flexible interview process (Bryman, 2012, p.471). The startup respondents are selected by directly asking present people at each case whether they consider themselves a startup.

Afterwards they have been tried to assign to one of the types as identified in the theoretical framework. As the research mainly focuses on the young people as they are considered more vulnerable and related to the challenges described in the theory, an age range of 15-35 is used. They are valuable for this research as they can best inform and explain how they are facilitated or stimulated by physical conditions. Also managers of the cases are asked to take part in an interview. They are valuable to inform about the multi-tenant building organisation in which the startups are developing. Hereby relevant information about how they influence at building level the physical conditions and how they play a role in the startup development. Their onformation also helps understanding the information gathered from the startups.

The gathered data of the startups have been analysed per case, in which answers given are put next to each other to find similarities and differences. Accordingly, the cases are described based on the physical conditions and the feedback given by the startups.

A total of ten semi-structured interviews are conducted in this research, of which eight of them are conducted with startups in both multi-company buildings. Besides, one manager per building has been interviewed.

### Survey

In this research also a (digital) self administered questionnaire (see ***Appendix 4***) is used to have a more broader view on certain topics asked in the semistructured interviews, especially on their location decision. In the questionnaire basically the start of entrepreneurs' business within the CID is asked about. The questions consist of both open and closed questions, in which also questions with quantitative nature were included, using a five point scale. The survey is mainly used to complement and reflect findings of interviews. The questionnaire is sent or given to the different types of users (startups/entrepreneurs) spread out over the CID The Hague. The mailing addresses of the respondents are found via impactcity.nl.

The questionnaire was sent to over 80 entrepreneurs working at different (multi-company) hubs of the CID. A total of 21 (26%) of them has responded on the survey.

## 5.5 Case selection

Cases, mostly associated with "a location, such as a community or organisation", (Bryman, 2012, p.67) of a comparative case study are ought to be selected by a number of criteria that are relevant to the research. Likewise are the individuals (bound to the case study) sampled by means of criteria. (Bryman, 2012). As outlined before, this research will mainly be qualitative research on the understanding of how physical environment facilitate and stimulate startups in their development.

The selection of the cases relevant to this research have been chosen using the following criteria:

- Within central innovation district The Hague, to have the same provincial and municipal context
- Contrasting types of areas, being not in same neighbourhood
- Presence of (clusters of) startups with other types of companies in one building

The first decision to focus on the central innovation district, as main area to select cases in, has to do with my own interest in The Hague and the motivation for the graduation lab of which the central innovation district was one of the topics. Furthermore, the research is done in the context of urban innovation districts developments, in which The Hague is currently in the middle of because only recently the case has been entitled as a CID to be developed. This makes it interesting to see what can be done to best develop the district in favour of startups development.

Secondly, the choice to research two distinctive areas is made to understand also the effect of context and different neighbourhood features. As in this research the focus is on the physical environment both area and building level is taken into account. However, as will be noticed, the area level is not very deeply analysed but only more generally analysed, as based on the needs of startups described in the theoretical framework. The decision for the two areas has been based on work of Pluijmen (2017) who has identified 6 areas within the CID. As identified by Pluijmen (2017) the users within each of the six areas appear to be different. The actual areas are chosen based on the presence of multi-company buildings with startups.

Thirdly, to be able to find startups within the CID, via impactcity.nl a number of so-called hubs (often multi-company buildings) could be found spread over the CID and The Hague. In these hubs startups, among other type of companies, can be found. More randomly the actual choice for the casestudies developed from the survey results, where the most startups reacted.

The cases selected are two multi-tenant buildings in which also startups are established in two distinct neighbourhoods within the Central Innovation District The Hague. These are The Hague Tech in the Beatrixkwartier and Bink36 in the Binckhorst.

## 5.6 Validity and generalisability

Doing research, especially during qualitative empirical research, biases may influence the validity of data collected by for instance interviews. With this research semi-structured interviews are conducted. Herein the interviewer may affect the answers given by the interviewees (Bryman, 2012). In order to avoid this the before discussed interview protocol has been established (see ***Appendix 2 and 3***) that gives a basic structure and framework for the interviews to take place and to keep the questions as consistent as possible. Also, the reader should acknowledge the fact that in the theoretical framework of this research theories may have been misinterpreted and thus may not be both internally and externally valid.

Concerning validity of doing research, different types are distinguished as previously mentioned. When looking at internal validity it is questioned whether a causal relationship between two or more variables is valid. Regarding external validity, the generalisability of the results beyond a certain context is questioned. (Bryman, 2012, p.47). The internal validity in this research concerns mainly the relationship between the physical conditions and the development of startups. Since only two cases are studied in a specific context, one should be cautious taking the found relationships for granted. Regarding the external validity, Bryman (2012, p. 406) justly mentions that external validity of this research is questionable, because how could these two cases at all be representative of all other cases? They are not. However, still from the theoretical inferences some thoughts and notions may act as points of attention for further research.

# Case descriptions

## Case descriptions

**In this empirical part of the research are the two cases (The Hague Tech and Bink36) assessed on the presence of physical conditions from the theoretical framework. Then is described, with the feedback from startups and building managers, how these conditions facilitate in the business support and networking of startups. The chapter will start with an introduction on the planned central innovation district The Hague in which the two cases are situated. After which each case description starts with an introduction and follows with a more detailed description of the case with a focus on the physical aspects at an area level and building level. The two subquestions that this part aims to answer are: To what extent are the physical conditions present in the cases? And how do the present physical conditions facilitate and stimulate startups' development?**

**Both case descriptions are based on observations, semi-structured interviews and a survey. The interviewees are referred to with either interviewee-X for The Hague Tech and interviewee-X for Bink36. In table 20 and *Appendix 1*, an overview of the interviewees is given.**

Table 20. List of interviewees referred to in cases

| Organisation | Function | Interviewee |
|---|---|---|
| **The Hague Tech** | Community manager | Interviewee 1 |
| **The Hague Tech** | Startup founder | Interviewee 2 |
| **The Hague Tech** | Startup founder | Interviewee 3 |
| **The Hague Tech** | Startup founder | Interviewee 4 |
| **The Hague Tech** | Startup founder | Interviewee 5 |
| **The Hague Tech** | Startup founder | Interviewee 6 |
| **Bink36** | Real estate manager and owner | Interviewee 7 |
| **Bink36** | Startup founder | Interviewee 8 |
| **Bink36** | Startup founder representative | Interviewee 9 |
| **Bink36** | Startup founder | Interviewee 10 |

In order to test the developed theory regarding physical conditions in the context of urban innovation districts in practice, two cases in the planned The Hague Central Innovation District (multi-tenant buildings Bink36 in the Binckhorst and The Hague Tech in Beatrixkwartier) have been selected for fieldwork. The conceptual framework as previously presented will be used as a basis to conduct the fieldwork in these cases. The aim is to uncover the extent to which the physical conditions are present and providing in the physical needs and facilitating business support and networking needs of startups. This will be discussed based on the observations, interviews with startups and managers and survey within the two cases. After an introduction on the background and context of The Hague Central Innovation District, the cases will be introduced and described on the presence and facilitating effect of the conditions in which the feedback of the interviewees is used. The list of interviewees that is referred to is shown in ***table 20***.

## 6.1 Introduction

Before diving into the focus areas, this introduction will briefly take into account the context and thus the city in which these areas are located. Why is The Hague planning an innovation district? What features does it have to enable an innovation ecosystem that is talked about? To explain this it is best to position The Hague on a map (***figure 6***).

The Hague is the third largest city in The Netherlands. It is located in the province South Holland and houses the Dutch


Figure 6. The Hague CID situated and connected relative to other innovation hubs in The Netherlands (Central Innovation District, 2019)

parliament, many governmental institutions, the most foreign embassies and the Supreme Court of the Netherlands. The city is also recognised as International City of Peace and Justice for over a century since the establishment of the Peace Palace in 1913 for the International Court of Justice and International Criminal Court. As it seems, the larger region of The Hague, within province Zuid-Holland, is mainly representing a large amount of traditional mature business sectors, but still under-representing innovative sectors. Also, knowledge services and industrial logistic sectors are limited to meet their potential growth and lack flexibility in the current environment. (Provincie Zuid-Holland, 2012, in Pluijmen, 2017). Forces, from higher

hand are therefore indicating shifts to more innovation in the current sectors present in The Hague and region. The Hague region could improve its competitiveness within its current potential by focusing on a knowledge economy (Pluijmen, 2017). Initiatives, regarding IT/Tech, data, policy and security of smart city are already popping up and complement the already established organisations and industries (Central Innovation District, 2019). The ambition of The Hague government is to create a central innovation district, to enhance its position and become an international competitive economic top location and contribute to a better, safer and fairer world in the complex and digital age. (Central Innovation District, 2019). Several features that The Hague inhibits that invigorate this ambition.

## 6.2 The Hague as Innovation District

Now considering the general conditions for an innovation ecosystem that were spoken of in theory, it could be understood why The Hague has the potential for attracting startups and innovative businesses and becoming a strong innovation district.

### Triple helix

First of all, the planned area that is to become the central innovation district is formed by the three stations The Hague Central Station, The


Figure 7. Map of The Hague, highlighting the neighbourhoods and three stations and several institutions and organisations (adapted figure of Google, n.d.)

Hague Hollands Spoor, The Hague Laan Van Nieuw Oost Indië. This area accommodates, next to be connected with the rest of the netherlands also the three main actors of the Triple Helix; the government, the industry business district and university/knowledge institutions that together may form interconnections and may lead to breakthrough innovations. In ***figure 7*** a map of some of the relevant businesses, firms, institutions and other organisations that may have impact in the evolving innovation district are shown. In de ***appendix 6*** a list with several organisations is shown as well.

## Innovation climate

So why do these companies and organisation settle in The hague? One of the reasons is the proximity and ability to connect with and influence governmental policies and make an impact on both national as international level. There are also evolving several initiatives, institutional frameworks and activities that incentivises interconnection between organisations and businesses. An example of incentives that The Hague is currently generating is the program Impact-City, whereby the focus is on innovation that can have a social impact the The Hague economy as a whole. The Hague acts as a facilitator for organising events and mapping office spaces for startups and mapping the important firms or institutions that may have influence and create impact on certain topics (Pluijmen,2017, p.43). Next to this is the Innovation Quarter, a regional development corporation that supports (financially) and advises firms with a focus on Cleantech, High tech & smart industry, safety & security, life sciences & Health, water & Marine that want to settle in the Metropole Rotterdam The Hague (MRDH) (Pluijmen,2017, p.43). Another incentive for innovation is The Hague Security Delta, providing an economic network and office space for firms that operate in the security sector, linking them to an extensive network of partners. (Pluijmen,2017, p.43). Furthermore, The Hague has invested in a collaboration of Leiden University and Delft University of Technology to create a community of knowledge and practice for enhancing the potential of the innovation district. Leiden even created a platform for assisting students in starting their own business, called centre4innovation (Pluijmen,2017, p.43). Also The Hague sets up accelerator programmes for startups, called the 'startup in residence', that creates incentives to come up with ideas and solutions to problems The Hague society faces. (Pluijmen,2017, p.43)

## Innovation area

Besides the presence of potential innovators, The Hague has also physical features regarding scale and connectivity that can be highlighted as a basis for innovation district. As mentioned, The Hague provides three railway stations which connect not only different parts of The Hague (innovation district) and the larger region, but also cities on national and indirect international level. All tracks are located on (and/or above) ground level which therefore does divide some parts of the city, decreasing the connectivity in terms of other mobility. Furthermore, The Hague disposes of a metro line that connects different parts of the city (centre) with the central station and Laan van NOI. This track is lifted off the ground in the advantage of other traffic to go under it. Furthermore the area contains a diverse mix of people of 20% young people, 70% labor force and 10% elderly is present, of which 30% is native dutch and 50% has a non-western background and 20% a western background. Besides, 36% is highly educated, 35% professional educated and 29% has a practical education. Daily, a number of 90.000 people works within the CID. Furthermore, the city wants to attract and retain the higher educated people with an urban lifestyle. Currently a number of 30.000 students is studying in The Hague. (Central Innovation District, 2019) As The Hague is growing it is expected that its current population of 534.000 (CBS, 2019) may even

exceed the 600.000 by 2040 (Central Innovation District, 2019). This growth directly implies the need and demand for the annual development of both residential as offices. A total of 18.500 dwellings is planned within the CID, enhancing the work-living environment contributing to a vibrant CID (Central Innovation District, 2019). Hereby the needed density of functions and amenities is also being gradually increased.

## Case selection

Regarding this information it is understood that The Hague CID clearly is becoming an attractive location for businesses small and large to innovate and make an impact. Various subareas (Pluijmen, 2017) within the planned CID involve different clusters of seemingly different types of companies. In order to conduct research to the physical conditions needed for startups to develop, a focus on two distinct areas of the CID will be used. As seen from the map in ***figure 7*** this focus will be on the Beatrixkwartier with its business district features which has the multi-tenant startup building The Hague Tech and the more contrasting Binckhorst that inhibits several multi-tenant buildings of which Bink36 is focused on due to its diversity of housed businesses. As said, the research will focus on two areas: the Beatrixkwartier and the Binckhorst. Both represent characteristics of two innovation district models respectively the re-imagined urban area model and the anchor plus model that were described in the theory part by (Katz & Wagner, 2014). Besides, they both serve room for a clustering of companies among with startups in multi-tenant buildings. Two multi-tenant buildings that on a building level will be analysed are respectively The Hague Tech in the Beatrixkwartier and Bink36 in the Binckhorst. The two cases main features are listed in ***table 21***.

Table 21. Main features of the two cases

| Characteristics | Beatrixkwartier The Hague Tech | Binckhorst Bink36 |
|---|---|---|
| **Innovation district model** | Anchor plus model | Re-imagined urban area model |
| **Type of area** | Business district | Industrial area |
| **Diversity and presence of functions and amenities** | Medium | Low |
| **Level of residential dwellings** | Medium | Low |
| **Dominance of type of industries in area** | Technology creators/service providers | Service providers, asset builders, technology creators cluster of sustainability |
| **Cluster of companies in building** | Tech/IT security sector | Diverse |

# The Hague Tech

## 6.3 The Hague Tech in Beatrixkwartier

### 6.3.1 Introduction

In 2017, an unoccupied piece of real estate belonging to the Rijksvastgoedbedrijf was chosen by a collaboration of Storm Delta a technical investment and participation company and AnnaVastgoed, a real estate manager for vacant office buildings, to start The Hague Tech. The Hague Tech is basically a community that provides a multi-tenant office and connects startups, entrepreneurs, businesses, government and research institutions with a spirit of changing the world, by accelerating the adoption of technology. There was no such community in The Hague at that time (Interviewee 1, 2019). Considering the previous notion of the presence of companies and organisation with a focus on tech, IT and security are clustering in the Business District of the Beatrixkwartier, explains partly this move and this location. The location choice was mainly based on the purpose of being located centrally, being within the heart of The Hague CID, being easily accessible and have the potential to grow within the building (add more floor levels to lease contract). Also being close to the embassies, ministries and other large potentially relevant firms and corporations was part of the strategy. The current building that previously accommodated Nationale Nederlanden was vacant and the real estate market was not as heated as it is now, The Hague Tech could enter this building (***figure 8***). The current location is however only temporary and will soon be left for another office location, also within the Beatrixkwartier,

Figure 8. The Hague Tech building (CID, 2019)

next to train-station Laan van NOI in the former Sociale Zaken (SoZa). This has to do with both financial and strategic reasons, as the future location is also more connected to the security and tech cluster that is envisioned by the municipality. (interviewee 1, 2019). Already connections and collaboration between co-located and related organisations such as the Hague Security Delta are established.

### 6.3.2 Who are the startups of The Hague Tech?

Before describing the physical conditions present in and around The Hague Tech and its functioning in the development of startups, first a brief overview of the interviewed startups is presented. What's more, reasons and motivations of startups how this location and The Hague Tech organisation attracts and facilitates startups to build up their business are described. As shown in ***table 22*** the startups that were interviewed all differ in background, however all have one thing in common: contributing to the adoption of

technology or accelerating this process at The Hague Tech. Classifying them on their business activity, they seem diverse but all share their common ground in Tech or IT. Also their objectives regarding their business goal differ a bit. Though most startups are scalable, some startups can be more considered a lifestyle or small business startup, at which innovativeness may also be found somewhat questionable. Furthermore it is noted that all startups had their startup phase at home or at a coffee place and ended up a for different reasons at The Hague Tech. In summary, reasons to locate in The Hague Beatrixkwartier at The Hague Tech are mostly based on closeness to their home, the nice environment or their social connection with the people already there. Others from the Beatrixkwartier, derived from a survey (***appendix 5***) spread out over entrepreneurs in The Hague, also mentioned the potential for tech and business growth in that area and the proximity to lawmakers etc.

Table 22. Characteristics of startups at The Hague Tech

| | The Hague Tech | The Hague Tech | The Hague Tech | The Hague Tech | The Hague Tech |
|---|---|---|---|---|---|
| **Enterprise name** | (2) | (3) | (4) | (5) | (6) |
| **Age/origin/home/ study/experience** | 33/Aruba/Leiden/MBA/ consultant | 24/Spain/The Hague/ computer science/ security software engineer KPN | 29/Petersburg (south Africa)/The Hague/ data-science/software engineer startup | 22/Florida (US)/The Hague/Business administration/real estate company | 25/Hilversum/ Hilversum/master applied science/ mapgate startup |
| **Type of startup** | Scalable startup | (Scalable) social startup | Lifestyle startup | Buyable/Scalable startup | Scalable startup |
| **Business activity** | (Knowledge) Service provider | Network orchestrator | (Knowledge) service provider | Asset builder/ technology creator | Technology creator |
| **Knowledge base** | Synthetic | Synthetic | Synthetic/ symbolic | Synthetic | Synthetic |
| **Start enterprise** | Mid 2017 | Mid 2018 | Mid 2018 | End 2017 | Begin 2018 |
| **Activities** | Putting new management formula into organisations | Social network alternative based on privacy and security | Digital design and engineering company in front/back-end development | Lock hardware to lock everything build with a nut/bolt/screw | Enabling the use of sensors for smart cities with a dashboard |
| **Started as** | Founder | Founder | Founder | Founder + two other founders | Founder + Founder |
| **Employees/ freelancers** | 2 freelancers from other cities | 1 fulltime employee + 6 freelancers from other cities | Partners | None yet, employees joining soon | few freelancers |
| **Stage** | Startup | Transition | Transition | Transition | Startup |
| **Vision long term** | Going global scaling, no sell/exit, grow gradually within The Hague Tech | Grow not as fast as facebook, selffunded, no sell/exit, likes growing within The Hague Tech gradually | (Re)configure, not clear but definitely growing within The Hague Tech gradually | Probably selling (IPO/ private sale) not clear where to grow after accelerator | Still defining, not clear whether to stay in The Hague Tech after accelerator |
| **Workplace at start** | Home (costless, rest, fine for start) | Home and coffeeplaces in city centre | Home | Home | Rotterdam accelerator and home |
| **Reasons location choice** | The hague, city of government | Living there | Equal distance to other cities, living there | Via accelerator program | Via accelerator program, now contacts with municipality important |
| **Reasons building choice** | Via meet-up The Hague Tech, nice working environment, need of contacts, flexibility to grow | Looking for office space, to meet with employees, via international office The Hague Tech was with other techies best and closets to home | Via meet-ups, other tech minded people | Via accelerator program located in The Hague Tech | Via accelerator program located in The Hague Tech |

## 6.3.3 A startup perspective description of The Hague Tech physical conditions as basis for business support and networking of startups

In the latter part it is substantiated why startups choose The Hague Tech location. This helps to understand how physical conditions may have a play in this regard as well. For the description of conditions both area as building level are taken into account. Hereby the conditions as posed in the theoretical framework such as area level accessibility, proximity to public spaces, amenities, businesses and institutions and building level work spaces, shared facilities and spaces and design for interaction are assessed on how they facilitate and stimulate business support and networking of startups. In ***appendix 7*** pictures of The Hague Tech and environment are shown as an impression.

### Area level: neighbourhood

The Beatrixkwartier, a business district, situated in the neighbourhood 'Bezuidenhout' provides, among residential dwellings, also a relatively dense district of several large corporations, business offices, governmental institutions, schools, library and the like. Some of the large office buildings that are situated within the business district are, among others, the CentreCourt (Palace of Justice), Siemens Building, Prinsenhofcomplex, KPN Building, The Haagse Poort, The Silver Tower, The Green Tower, The Monarch. Moreover, the 'Palace of Justice' is situated directly next to The Hague Tech and across the street is the Royal Conservatory located. During the day the district is lively and busy. With the planned and currently operated developments of adding more residential dwellings, hotels, retail and other amenities in the business district, also the evening hours will get more exciting. The housing options and residential density in the direct vicinity is present but are not considered important by startups. Most of them already live nearby before they started at The Hague Tech. Still, it is mentioned that short stay housing such as WeLive could benefit the district as it enables to bring employees or people from elsewhere over to temporarily work on a project (interviewee 4, 2019).

### Area level: accessibility and transport

The area around The Hague Tech is thus mainly marked by the modern private office-buildings that are situated alongside the highway 'UtrechtseBaan' and its metroline/ Randstadrail that provides a close connection to both central station and Laan van NOI and other parts of the city. The metroline goes right through this business district and connects the two stations. It has its lifted track parallel to The Hague Tech and a stop 50 meters away from their entrance. Coming from the central station therefor only takes a few minutes. Besides, from the central station it is only a maximum of 5 minutes walking distance to the entrance of The Hague Tech. Furthermore a cycling and pedestrian track facilitates the walk -and bikeability in area. This overall good accessibility is also by many startups positively underlined and seen as important (interviewees 2-6) and is enhancing the connectivity of the larger region (such as Delft, Rotterdam and Leiden) significantly. This accessibility through its central location and transport options alos seems to pay off in the attraction of startups and (relevant) people from institutions nearby joining events at The Hague Tech (interviewee 2, 2019). Thus the transport infrastructure around The Hague Tech facilitates and enables the easy movement of people from both within and outside the district to easily get at The Hague Tech. The quote below is an example of this appreciation.

> *"Vooral de bereikbaarheid erbinnen waardeer ik zeer. Dat is in rotterdam*

*toch anders, daar ben ik vanaf centraal toch nog 20 minuten extra kwijt met metros."* (interviewee 6, 2019)

Coming from outside the city and having to do multiple transfers is consuming valuable time. Especially people that travel from far are supported in this sense and that way makes it easier to get employees also from outside the region (interviewee 3, 2019). Only the limited amount of parking spots provided by The Hague Tech are seen a miss as they are already reserved for other companies (interviewee 6, 2019). Other parking spots along the streets are provided in the area, hiowever very expensive, like 28 euro for a day (interviewee 6, 2019). In conclusion: accessibility by public transport is perfect, transport by car as well but parking within such a dense district is expensive which is not facilitating startups that have or are dependent on car transport.

## Area level: proximity to amenities, public spaces and business network

A five minutes walk from The Hague Tech is the Theresiastraat situated. This street gives access to a number and diversity of neighbourhood building amenities such as a supermarket, lunchcafes, pubs and restaurants, but also several other retailshops such as cloth stores, conveniency stores etc. In the direction of the beatrixlaan (and the larger offices), few amenities can be found (cafe, albert heijn to go, lunchrooms), more are being planned or under construction. Furthermore, the central station area offers also a bunch of amenities. Also, the city centre with its lively outgoing opportunities is a five minutes ride per metro or bicycle away. However, from several startups the impression is gained that the liveliness and amenities offered directly outside are not very important (yet) (interviewees 2-6). Undermentioned quote illustrates this. Most startups work whole day long inside, often make use of the offered lunch at The Hague Tech and if they go out for a drink or whatsoever, the city centre offers more and is close-by (interviewees 2-6).

> *"ik kom niet zo vaak buiten, ik ga soms lunchen en uit maar ik voel nog niet dat ik helemaal gevestigd ben, maar dat gaat wellicht veranderen als ik eenmaal mn plek hier heb"* (interviewee 2, 2019)

As the quote tends to implicate, there may also be other factors, such as a social embedding that is needed in a neighbourhood, that may affect startups to check in with places outside.

Remarkable is the observed need and appreciation for a nearby supermarket as an important asset (interviewee 2, 3, 5, 6, 2019). Nonetheless, this is such an amenity that may not be representing a specific startup need, but more a common need of workers in general. Regarding public spaces to sit and relax outside are on ground level next to their building some couches designed in front of the Palace of Justice but seem to mainly function and being used by the employees and people that work in 'Palace of Justice'. In front of the entrance of The Hague Tech building people can smoke a cigaret, but is no specific public space designed. Again, understanding from the feedback the public space is not seen as relevant as they do not intend or take time to use it.

As became clear from basically all startups, the proximity to the various organisations, large corporations, governmental institutions seem not to be that relevant. Although one mentioned it as one of the reasons to join The Hague Tech (interviewee 2, 2019). Others say the physical proximity of potentially relevant organisations and institutions is convenient but not necessary perse (interviewee 4, 2019).

## Building level: the building

The Hague Tech is located at the Juliana van Stolberglaan 10, in an office building belonging to the Rijksvastgoedbedrijf. This building is elevated from the ground and bridges the Utrechtse Baan. The entrance of The Hague Tech is located on the ground floor and accessible to the public by a rotating door, which leads to a reception/lobby. Next to this entrance, there are two more similar ground lobby entrances to be found spread evenly over the length of the building, however, (currently) not open for entry. The building is 24/7 available for members, increasing flexibility. Some startups mention this as one of the best features of The Hague Tech (interviewee 3, and 5, 2019). The staircase area, behind the lobby, provides access to postboxes/lockers and some room for storage. Also a large information screen provides up to date info on the startups and firms that are settled in the building and information on upcoming events and other promotional issues. Three elevators can be used to get to all levels available in the building. The building consists of 5 levels over the full length of the building and 4 top levels over the length of a quarter of the building.

The 3rd level gives access to the main area of The Hague Tech including office space, common areas and shared spaces. Currently they expanded to the 4th level as well. Furthermore, the 2nd level and part of the 5th level are sublet by The Hague Tech to larger firms/organisations. In ***table 23*** the various provided services by The Hague Tech regarding physical infrastructure, business support and networking based on Figlioli et al. (2017) are listed and are in the coming paragraphs mainly assessed on the physical aspects and how it facilitate and stimulates business support and networking for startups.

## Building level: work spaces, shared spaces and facilities, design for interaction

The 3rd level floorplan has been graphically visualised in ***figure 9***. Herein are the various type of spaces and areas marked. As can be observed from ***figure 9***, the overall floorplan of The Hague Tech is quite open but also compact. Because of the fully transparent walls, natural light income from both sides is increased and enhances the atmosphere and the layout to be relatively clear (sight-lines).

Table 23. Services offered at The Hague tech

| Service dimension | Services | Types | Characteristics |
|---|---|---|---|
| **Infrastructure** | - office space<br>- Social space<br>- Shared facilities | - Private/open/flex/co-working<br>- Shared kitchen/coffee spaces/entertainment areas/ relax areas/<br>- Multipurpose/meeting/ presentation/common rooms/ reception/lockers/parking | - Flex sizes (from 10 m2 +) Transparent walls, flexible contract (1 month), 24/7<br>- Fully equipped kitchen, free coffee, massage chair, table tennis, football table, gaming etc.<br>- Equipment and facilities available |
| **Business support & networking** | - Presence of supporting businesses<br>- Planned Events<br>- Unplanned | - same field (IT/Tech)/various expertise/startup-company/ service providers/ accelerator /(online) tech community etc.<br>- Meetups (s) /presentations/ workshops (s) /seminars/co-working fridays (s)/ Tech events / community events (s)/ networking lunches (s)/ fourth friday drinks (s)<br>- spontaneous interaction | - diverse background (age/ethnicity/education etc)<br>- Hosted at THT, both weak (w) and strong (s) ties interaction and connecting to investors, human capital etc.<br>- through shared facilities, layout, community building etc. |

Almost all private offices (ranging from around 12 sqm to a whole floor level) have transparent walls, some partly coated for increasing privacy. All offices show on the outside a poster or small explanation of what each company does. The office units are designed to be enlarged easily with standard sizes and to be deconstructed easily. The smallest office consists of three workplaces. One is limitedly able to furniture its interior to their needs, since there are transparent walls, painting and similar changes are not possible. Over the whole floor there are two quite open areas that provide in flex workplaces, co-working spaces, kitchen, game area and meeting/relaxing space. These are the common areas where members can gather and are able to interact and relax.

Most startups seem content with flex/co-working space in The Hague Tech, as long as they do not have any permanent employees, it provides flexibility (interviewees 2, 4-6, 2019). Furthermore, also other shared facilities such as meeting rooms that can be booked or used when no one else is using it, are indispensable, especially for those without a private office (interviewees 2, 4-6). Most flex startups use these meeting rooms to meet with their freelancers or clients (interviewees 2, 4-6). On Fridays these meeting spaces are used for meetups.

The two common areas that The Hague Tech provides are demarcated by the interspaces with staircases-well, elevator shafts and the toilets on both ends. One area consist, among the office units, of a mini kitchen/bar with access to water tapping. The bar is sometimes used from both sides for standing meeting or drinks. There are several types of flex/co/private workspaces. In the middle a game area is created, for two persons to play games, and is sometimes used for having phone-calls. Startups see the gaming area as a perfect way to relax and have small talks. This is well illustrated with the quote below.

> *"...at KPN we also had this thing, so when we came here to see the office it was like 'oke fifa, check!' ... you do need to take a break (during the day)"* (interviewee 3, 2019)

As may be inferred from this, startups have no strict work-hours like most traditional companies do (9-5 mentality). They are very flexible in their use of time, thus their physical

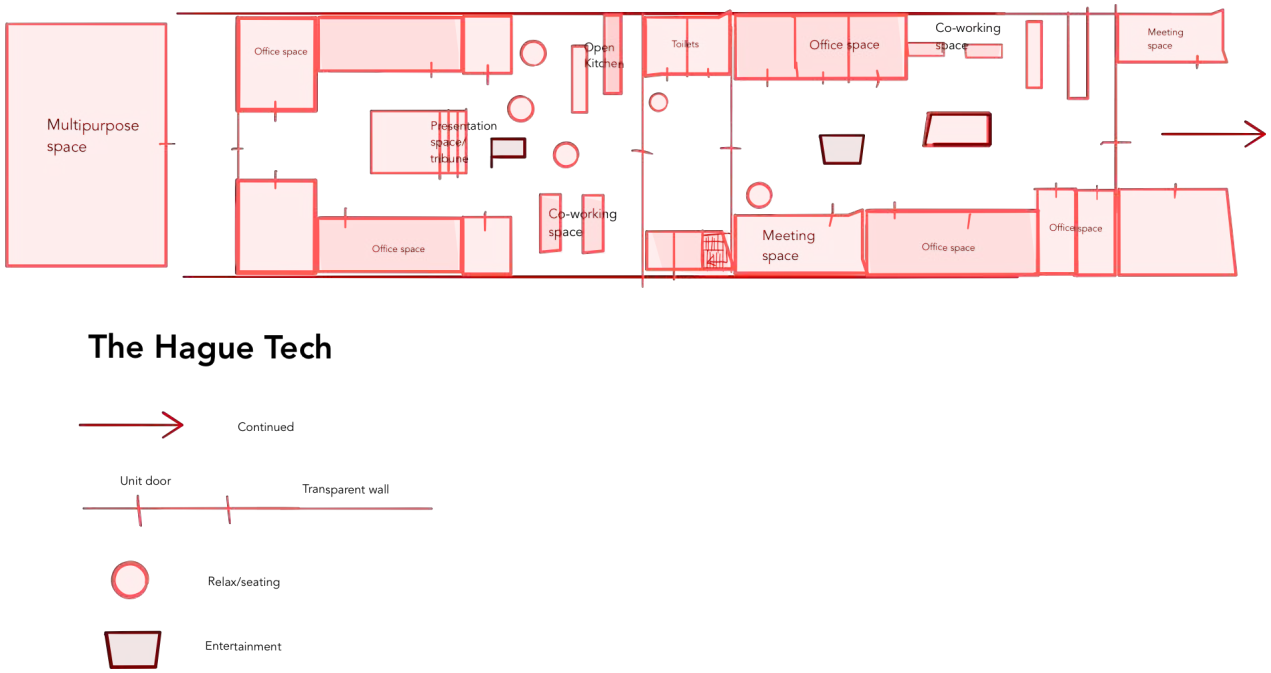


Figure 9. The Hague Tech floor level conceptual (own ill.)

environment seems to facilitate in this by providing space to take a step back from their business. Relaxing seems important to come further. Also various sofas, beanbags, massage chair and low tables are spread here and there situated for conversations or chill, enhancing the welcome and relax atmosphere and stimulate different uses which sometimes leads to interactions. The interspace between the common areas is furthermore often used to make phonecalls. The other common area functions as the main gather place for all members.

> *"the common room is great for the community building. The ps4 game area for small talks, you get to know people that way"* (interviewee 5, 2019)

The quote above is again a good example how the spaces and facilities can facilitate both strong and weak ties interaction, but in particular it shows how certain spaces that provide elements that can be shared with only couple of people is the connecting element for interaction and building social ties that apparently are valued by the startups.

The common area further features a large and fully equipped shared kitchen and kitchen counter island. Not unimportant, it contains two grinded coffee bean machines that provide free coffee for all members, 24/7 and all sorts of tea free as well. Basically everyone appreciates the free coffee (interviewees 2, 3, 5, 6), it is convenient with clients and besides it seems to increase the liveliness and interaction in the common area. Most startups underline the indispensability of shared facilities set up as living space in between workingspaces, such as kitchen with the free coffee, superfast internet, entertainment area (table tennis) for interaction. Everyday a joint lunch is organised to all members that want to, for a fixed amount per month or paying per usage. The lunch can also be considered a weak ties network-event where members and guests are able to informally get to know each other (interviewee 1, 2019). The area further provides several types of workspaces both flex/co-working as well as private offices. Two co-working tables provide workspaces for startups that follow the acceleration program at the World startup Factory (accelerator)Moreover, couches and sofa's for two-three persons each with a round small table can be used as flex workspace, to have meetings or relax. Also a shared use printer is available. On the side an adjustable room is made that can be part of the common area or closed off by a curtain, mostly used for private meetings, however not sound proof. There is an entertainment table-tennis table in the middle of the area which is used to recreate and have informal talks during a game. Tenants make often use of the table tennis table and some even see it as an indispensable asset.

> *"hoe het nu staat, met de kantine en dat je dan zo af en toe een potje kan spelen... ja onmisbaar eigenlijk"* (interviewee 2, 2019)

As the quote above indicates, it is not only the providence of a certain entertainment facility as the table tennis table that facilitates interaction, but it seems to be the combination of the whole setting that enhances an open and welcome atmosphere to get in contact with each other.

In the same area a mini pitch/staging with beamer facility is situated and serves for meetups, presentations and other events etc. The other side of the staging contains an office and meeting space. The rest of the area consist of office units and gives entrance to a large multifunctional area that is rented out to different parties and serves as conference, workshop and event area.

Recently, The Hague Tech expanded to the 4th floor with a same sort of layout as the 3rd floor. The two levels are little connected with each other and only accessible by elevator or

staircase from each of the three interspaces. The most commonly used staircase is the one in between the two common areas on the 3rd level. Also this level provides a mini-kitchen with access to water. The main kitchen and coffee is still only provided on the 3rd level to stimulate the meeting and interaction between all tenants (interviewee 1, 2019).

Regarding the amount of facilities, almost everything seems complete for the startups (interviewees 2-6, 2019). One particular improvement was mentioned with respect to the opportunity to have more shared private space or phone booth for a phone call (interviewee 4, 2019) or important meeting (Interviewee 6, 2019). The quote below explains this need better.

> *"nu (hebben we een) co working space, maar zijn wel langzaam aan het kijken naar een eigen studio of gesloten ruimte en dat is meer voor afspraken. Persoonlijk vind ik het ook niet prettig als je in een openbare ruimte zit, contract besprekingen te doen of wat dan ook."* (Interviewee 6, 2019)

As can be inferred from this, it is especially for people that use co-working space that miss out a more private space. Although this contradicts with the idea of an open atmosphere where people can share everything that is in theory so important for innovation, there should thus always be a providence for some privacy so that particular information can be kept discrete.

## Building level: facilitating business support & networking

As previously mentioned, The Hague Tech offers a large set of varying (office) spaces, facilities and services. See ***table 23***. All space in between the office units is free to use and is semi-public shared space. The different types of spaces, facilities and services inside The Hague Tech serve a range of different members in their basic needs and facilitate to meet and relax. Also it provides space for both spontaneous interaction and more planned or formal events. Almost everyday an event is taking place, often in the evening. Events range from tech meetups, specifically focused on a particular field to more general workshops for marketing, finance, sales to informal drinks and friday meetups and community building events. Some startups also got to become a member/tenant of The Hague Tech because of the meetups that are hosted every Friday (interviewees 2, 4, 2019). Moreover, the offered facilities such as relax space, table tennis table space, couches in the open space, free coffee whole day long give opportunity to meet and connect informally, as already indicated in the previous subparagraph.

For business support in terms of training, or help from other present entities, the physical layout as shown in ***figure 9*** seems to facilitate herein the right physical proximity, atmosphere and setup between a related diversity of tech companies and startups that help startups to get further when they are stuck. Some mention herein the presence of direct available relevant knowledge as a main advantage (Interviewees 2, 3, 5, 6, 2019). With the quote below a typical example is shown how startups actually consider this business support.

> *"I havent been really involved in the events and everything. I am really working on my startup. But i think that is also something great to have, that there is people with relevant knowledge around nearby"* (interviewee 3, 2019)

As mentioned several times, some startups don't spend that much time joining events or trainings that may help them to improve certain skills, due to their workload. But on the other hand the opportunity and proximity of

the relevant knowledge to be helped when needed is appreciated.

Others also see the diversity of companies within the IT/Tech field and the contacts they build here as an advantage in the form of potential business or future relevant network (interviewees 2, 3, 4, 2019). Although there are relevant other startups and companies present that may be interesting to work with, there is not always the financial possibility because sometimes you are bound to a project of someone already. In a later stage however, these contacts may become more relevant, so it helps building up a network for future opportunities (interviewee 6, 2019). The building of a network at The Hague Tech helps getting a reputation wich attracts then the work or resources needed automatically (interviewee 4, 2019). Some argue that the present people on one floor are mainly increasing their social interaction, joy and relaxation (interviewees 3, 4, 5, 2019). It is not only the presence of the companies, but rather the openness of people together with the physical open atmosphere that contributes to the easiness of joining events or asking help without the administrative hassle or the need of paying for it (interviewee 2, 2019). Members here award each other for the help sooner or later anyway.

> *"ik zie er wel het nut van in, dat je makkelijk op elkaar kan afstappen. Ik ben zelf wel een meer gesloten persoon en zou dat dus zelf minder snel doen. Maar als ik het doe dan is de noodzaak er wel en de hulp ook wel echt fijn"* (interviewee 6, 2019)

The direct proximity of diverse service providers within the IT/Tech field are thus seen as very convenient, as the quote above implicates. Most startups inevitably need marketeers, business developers, administration, legal advice etc (interviewees 2, 3, 4, 6), if that is already present in the building, that is only better (interviewee 2, 2019). However, those more diverse service providers such as legal or administration are missing and seen as a growth pain (interviewees 2, 4, 2019). Overall, startups do prefer a certain common ground which is at The Hague Tech taken care of by the IT/Tech focus (interviewee 3, 2019).

Events that are facilitated at The Hague Tech bring over a range of people (experts, companies, government etc) from in and outside of the The Hague Tech. The Hague Tech builds connections and hosts events that attract thus also relevant network sometimes (interviewee 6, 2019). The events are often organised near evening and situated in the common room, thus visible by all tenants. Although startups do not really feel the need to join each event as they are not always as relevant for them and/or do not have the time (interviewees 3, 4, 5, 6, 2019), thet do go when they really see something interesting or have the time and are in the vicinity (interviewees 3, 4, 5, 6, 2019). Most startups just prefer the spontaneous interaction that evolves when they are busy, and only actively search or go to new events when they really need it (interviewee 4, 2019). The community is therefore seen as a great way to build up your network, instead of building it up from scratch (interviewee 3, 2019). The availability of this community/network is also one of the reasons for startups to choose to work in such places, as at home in principle they can do their job, but they need others to brainstorm or reflect, which is perfect at The Hague Tech (interviewee 2, 2019).

During the daytime it can be observed that the interaction level is varying. But as from the morning on it is common that almost everybody says or gestures hello/good morning to others. Sometimes, a direct conversation comes from the greetings. Also, in the common areas game opportunities can be found, which generates interaction. Sometimes planned, sometimes it attracts other people because of laughing and joy.

Furthermore, a lot of spontaneous interaction occurs in open spaces and corridors. Often people stand talking in the middle of the corridor. During lunch, spontaneous interaction is triggered most, as a common lunch moment is organised where members are triggered to speak to each other and sit around at two tables. Lunch facilities are prepared and spreads, drinks and bread is available. As the products are shared, incentives to talk to each other are at hand literally and conversations easily follow. Next to lunch, the most spontaneous interaction triggering facility is the coffee machine. As coffee is free, members are not hampered to get some during the day and collide into each other often. All these moments of interaction build up social (weak and strong) ties that enhance trust and understanding and thus certain levels of cognitive and social proximity between one another. This in time grows into strong ties that are needed to develop new partnerships or innovations together.

### 6.3.4 A management perspective of The Hague Tech

From the managers (interviewee 1) point of view insight is gained in the background of The Hague Tech regarding the organisation in general, the tenant mix and various services offered as support for startups of which the physical aspects herein will have the focus in this research. With this perspective a better understanding of the previous observation may be obtained.

#### Organisation

The Hague is founded as a BV, for profit organisation, created by entrepreneurs for entrepreneurs, mainly easing the decision-making processes, react quicker and not being stick to certain policies (interviewee 1, 2019). As said in the introduction of this chapter, it evolved from a collaboration between StormDelta and AnnaVastgoed. The Hague Tech is not meant specifically as incubator nor as accelerator, since incubators and accelerators use programs to help startups and are normally considered to be a real save haven for them. The Hague Tech does not run like this. (interviewee 1, 2019)

> *"Het is dus geen incubator of accelerator, hoewel daar wel discussies over zijn, want een incubator is officieel gewoon een veilig huis voor startups, maar wij draaien geen programma"* (interviewee 1, 2019)

As previously mentioned, The Hague Tech is thus basically a community with a physical location for companies, entrepreneurs and startups that also want and need to collaborate with partners and clients. These innovation drivers need other people that do the same but with different expertises. The Hague was lacking such initiative (interviewee 1, 2019). It was not initially meant for startups, but more to built up an ecosystem around technology. As startups are an important part in this ecosystem, since they see innovations and are capable of transforming and commercialising this into a product, they are now considered a target group as well. (interviewee 1, 2019)

#### Vision / objective

On linkedin, a personal message from the founder of The Hague Tech was posted about the initial idea behind The Hague Tech: 'creating an environment for entrepreneurs and innovators to gather and share ideas openly' (Gharibaan, 2019). Mainly the TECH/IT sector was taken as a start to derive from and to focus on, which results in members accelerating the adoption of technology in the solving of issues our society faces. The latter is in essence the ultimate goal. The Hague Tech is there to support all members in their mission, build a network environment to share knowledge and inspire, but also to connect the unconnected (Gharibaan, 2019). The over-coupling physical asset 'real estate' for this initial idea is needed to host and facilitate the growth and heat of an ecosystem supporting

the community (Gharibaan, 2019). The main distinction that The Hague Tech is based on compared to other clusters and similar organisations within The Hague CID as Bink36, Cabbellerofabriek, Apollo14 etc. is the community part. The Hague Tech believes in creating a (world) network for both startups, entrepreneurs, corporates and others that want to innovate or become part of the network in TECH/IT related issues for other reasons. (interviewee 1, 2019)

> *"waar wij specifiek op focussen is de community, dus op het netwerk*
> *En hoe kunnen we dat netwerk nou zo waardevol maken dat je hier bij wil horen en weten dat dat een manier is om je bedrijf te helpen groeien"* (interviewee 1, 2019)

## Tenant mix

The members and tenants of the The Hague Tech community are basically everyone that has a link in work or ambition with tech/IT and wants to be part of the network of The Hague Tech (startups, entrepreneurs, students, companies, etc.) (Interviewee 1, 2019). The users within the building are ranging from from asset builders and service providers to technology creators and network orchestrators. Also institutions among which Leiden university department, The Hague municipality department and the World Startup Factory as accelerator are part of the community. The people are a mix of native Dutch entrepreneurs and international entrepreneurs from around the world, differing in age from young (20s to 60s). Currently The Hague Techs network of members is still growing and reached recently a number of 300 members (interviewee 1, 2019). The Hague Tech offers space to members in different ways. From working in the common room sitting in a couch, to a single flex workplace to office units or even a whole floor. There is no limit per se to stop leasing office space to the members of the community, except to the physical limitations (as in there is no space available anymore) (interviewee 1, 2019). Members can grow in the way they want unlimitedly (when there is space available) and can rent for undetermined-time. Only, if a member does not contribute to the community anymore, this will be reason to quit renting (interviewee 1, 2019). This is basically related to the restrictions that limit a person or organisation to become a member. The main prerequisite for a person to join the community or become a tenant is in essence that technology and innovation should be a part of one's goal or business (interviewee 1, 2019).

> *"Je moet dus dezelfde missie hebben: om technologie adoptie in de samenleving te accelereren"* (interviewee 1, 2019)

This can range from working on a new technology or working in a field that may contribute to the technology (of others). But also students can join by getting a job at one of the companies present. So basically, one should share the mission of accelerating the adoption of technology in society. (interviewee 1, 2019). The Hague Tech tenant mix basically is about building a community together to solve issues our society faces. It is also for that reason that in principal it is not allowed to commercially sell to each other within the community. However, they are promoted to help each other instead (Interviewee 1, 2019). Regarding attracting the right tenant mix it is mentioned that most people find The Hague Tech by google searching for 'tech community' and by joining the events that The Hague Tech hosts, for instance the (tech)meetups that members organise. Other than that also mouth to mouth. The larger corporates or institutions, ministries or governments are actively approached to join The Hague Tech community when there is potential fruitful synergy visible. (interviewee 1, 2019).

## Services and management of synergy

The Hague Tech wants to create a sort of ecosystem to connect different parties from which innovations can evolve that solve societal issues. This ecosystem is based on certain pillars. These pillars are companies, facilities and events (interviewee 1, 2019). The Hague Tech does not specifically run programmes themselves. The facilities that are offered are for instance co-working space and event space. Furthermore The Hague Tech offers various services, also a community manager. The community manager tries to make sure that the direction The Hague Tech is going is being pursued. Furthermore, the community manager, with help of interns (on design, communication, PR, facilities, business development), tries to connect parties and meet the demand of members in broadest sense of the word, hence accelerate the innovation and commercialisation of products and services (interviewee 1, 2019). The facilities and services that are managed and offered by The Hague Tech are summarised in table X.

> *"We praten steeds over een ecosysteem, dat wil zeggen dat we pilaren neer zetten om alle partijen makkelijk met elkaar te verbinden en waaruit weer nieuwe innovatie ontstaat, die pilaren zijn dus facilities zoals een co-working space/labspace/ eventspace, maar ook partijen die je erbij wil hebben, maar vooral ook door de events die we hosten"* (interviewee 1, 2019)

As can be observed, The Hague Tech has thus made use of several physical conditions that were either already at area level present and added on several conditions at the building level. First of all, their location decision choice has been based on the condition such as the presence of a well functioning transport system that increases overall accessibility to them, to relevant institutions in the CID and to other cities. The presence of neighbourhood amenities (although they are present) were not mentioned explicitly but seem to take a role as well considering their desire of being centrally located. At the building level, they provide various spaces for a diverse array of entities, among which thus companies capable of providing services that are of added value to the whole community and thus possibly to startups as well. Also a range of services and facilities are offered by the physical infrastructure that they created as a means to facilitate (among others) startups and stimulate networking.

## 6.3.5 Concluding notes on the physical conditions for business support and networking of startups

When considering the physical conditions of The Hague Tech and its direct environment, some notions can be made. In this conclusion the main observations are emphasised. The question that was asked for the case was how the physical conditions from literature are present at The Hague Tech and how these suffice in facilitating business support and networking. Of startups Furthermore, the management and organisation of these conditions has been looked at. The most remarkable observations are described.

## Transport and accessibility at area level are very important for startups

At the area level it is observed that on the physical infrastructure part the case basically meets for a large part in the conditions that were described in literature. The feedback regarding accessibility was also very clear: accessibility is considered important by startups and seen as very supportive. The transport options at The Hague tech area are sufficient and serving the needs. The Hague Tech is centrally located. This is characterised

by the metro line at 50 meters from the entrance resulting in approximately 3 minutes to both central station as well as station Laan van NOI as other parts within the city. Both stations provide accessibility to other cities such as Delft, Leiden, Rotterdam, Utrecht and Amsterdam. Also the walkability and bike ability is taken care of, resulting in a five minutes walk to various neighbourhood building amenities such as cafes, restaurants retail and supermarket, but also to the central station. As understood, startups do not really care about the amenities in the direct vicinity except for a supermarket. Most work long days and are whole time at The Hague Tech inside. If they do want to go for a drink they go to the city which also nearby. Next to the public amenities, few public space for interaction outside is provided. Furthermore, the accessibility is both facilitating startups close proximity to their office/workspace but also to join events for all relevant or actors that are attracted, invited or want to join events at The Hague Tech. Although the location choice of The Hague each organisation also has been based on the proximity to other relevant institutions and business in the Beatrixkwartier within The Hague, it is not perse considered important by the startups.

## Office space, shared spaces and facilities at building level offer startups the needed flexibility and facilitate business support and networking

The Hague Tech provides a range of different types of office spaces and facilities within the building as described in the literature as well. Overall sufficiently serving the needs of the housed startups. By offering contracts with one month notice startups are offered a flexibility and a the threshold to start is lowered. Furthermore, next to private offices from around 12 m2 that can be expanded, flex desks and co-working spaces are offered which provide a flexibility in the use of space over the week. startups are often working at both client space, home or elsewhere and get the opportunity to work at The Hague Tech whenever they want for reasonable and by startups considered affordable prices. Complimentary to these flex spaces, facilities such as meeting rooms are provided. Basically all startups that use flex space mention the need and use of meeting space to meet with clients or employees/freelancers.

Other facilities that are offered at The Hague Tech and that are considered supportive to startups are the shared kitchen within a large common area with free coffee during the day facilitating and stimulating often weak ties interaction among the tenants within The Hague Tech. Also various relaxing and entertainment facilities are offered spread over the floor level, in the common areas. These aforementioned facilities are surrounded by all private and flex office spaces. Most startups see these facilities as essential, mainly for their well being and small talks, also facilitating weak ties interaction between members.

Furthermore various eventspaces are offered at The Hague Tech, facilitating events initiated by outsiders as well as tenants themselves, hosted by The Hague Tech organisation. Some of these event spaces are situated in the common area, clearly visible by tenants.

The physical infrastructure within The Hague Tech enables business support and interaction not only by the facilities and office space services, but also by the layout of the floor level. All private office spaces are surrounding common areas and shared spaces. Walls are transparent and therefore eye contact and openness is very much triggered, which eases interaction between the businesses and startups. Startups consider the proximity on both cognitive, geographic/physical and organisational level as convenient, but not necessary. Especially the social aspect of Interaction and people around is seen as

supportive. Furthermore events that are hosted at The Hague Tech are not all relevant for startups, but mainly the weak ties building events such as Friday drinks are attended by startups. The fact that the events are held within the building makes it easy for startups to join.

From a management point of view the aforementioned conditions are purposively offered, aiming to create an innovation ecosystem. Sharing facilities, design for interaction, hosting tech/IT related events and a managed tenant mix support the latter in this regard.

# Bink36

## 6.4 Bink36 in Binckhorst

### 6.4.1 Introduction

Bink36, once a PTT serving warehouse and the former office building of KPN has been recently transformed into a multi-tenant building, situated in the Binckhorst. From 1989 until 2006 the building has been vacant, but housing corporation Vestia bought the complex for the purpose of giving room to innovative entrepreneurs. Companies, entrepreneurs and startups working in different sectors could be found here and had the ability to grow their company within a unique office complex and a large freedom of possibilities; working the way they want (Bink36, n.d.). The building itself is unique in its form and characterised by its raw and industrial look. In 2015, real estate investors/ entrepreneurs bought the whole complex. They intended to make Bink36 a future proof multi-tenant building and invested in more parking and super fast 'optical fiber' internet, modernised and generated new energy for its users (Bink36, n.d.). Currently Bink36 is basically fully occupied and often new tenants are on a waitinglist (Interviewee 7, 2019).

The Binkchorst area, of which Bink36 is part of, is a well known industrial area in transformation. The name Binckhorst stems from a historic castle that still finds its place within the area. Binkchorst is part of the neighbourhood Laak and is demarcated between Leidschendam-Voorburg and Rijswijk. It accommodated mainly industrial companies and factories from the mid 20th century, but it is also known for all vehicle dealers and repair garages. In the late 90s, also larger office complexes were constructed in the south west of the area. The area is mainly characterised by its raw appearance. Although it has been a neighbourhood that people were avoiding, currently it is attracting entrepreneurs in creative and craftsmanship industries. Recently, the municipality of The Hague focuses on transforming the area into a work-living environment. In recent years The Hague municipality tried to attract more young and entrepreneurial talent to The Hague by developing the Binckhaven with other multi-tenant buildings such as the caballero fabriek and the recently developed Apollo14. Both provide spaces for startups and businesses and events are organised to connect them and contribute to global challenges. These developments gradually attract more and more entrepreneurs and startups due to the still affordable rents and because of the transforming and thus inspiring area (Impactcity, nd)

### 6.4.2 Who are the startups of Bink36?

Again, first an impression of the startups at Bink36 and their reasons and motivations that attracted them to this location and building is described.

As shown in ***table 24*** the startups that were interviewed are different in their background but as far as is known most of them are Dutch. Most businesses in Bink36 seem service providers and asset builders working in various sectors. There is no specific field apparent in which the startups act together. Regarding their own objectives, they are more believed to become a micro-medium business, rather than scale-ups. Furthermore,

here as well, most startups began at home and ended up for different reasons at Bink36. Regarding the reasoning of startups to develop their business at Bink36 seem quite random. But most important reasons are the affordability and amount of space available. Second is the relative proximity to their homes. From the survey tenants in the Binckhorst of both Bink36 and surrounding offices underline as well the cheap offices space en relative good accessibility (by car).

Table 24. Characteristics of startups at Bink36

| | Bink36 | Bink36 | Bink36 |
|---|---|---|---|
| **Enterprise** | (8) | (9) | (10) |
| **Age/origin/home/study/ experience** | 30//The Hague/artificial intelligence/software engineer | 22/Spijkenisse/The Hague/havo/ | 21/Moordrecht/Moordrecht/havo/ financial consultancy |
| **Type of startup** | Scalable startup | Lifestyle startup | Micro business startup |
| **Business activity** | Asset builder/technology creator | Service provider/asset builder | Service provider |
| **Knowledge mode** | Synthetic | Symbolic and other | Symbolic and synthetic |
| **Start enterprise** | Mid 2014 | Begin 2017 | Begin 2017 |
| **Activities** | Creates virtual tour software connected to hometrainers | Creates christian based events for young women, and online community | B2B marketing and sales bureau |
| **Started as** | Two founders | Founder | Two founders |
| **Employees/freelancers** | 10 employees | 10-20 volunteers (no employees) | 9 employees |
| **Stage** | Scaling | Startup to transition | Transition to scaling |
| **Vision long term** | No selling, growing larger and different segments | Not clear yet | No sell |
| **Workplace at start** | Home attic | Home | At office of |
| **Reasons location choice** | Living there | Living there | Location of |
| **Reasons building choice** | Close to home, nothing else available, cheap and suffient | Needed more space and closeby home and affordable | Close to (overcoupling organisation), but now looking elsewhere as well |

### 6.4.3 A startup perspective description of Bink36 physical conditions as basis for business support and networking of startups

### Area level: accessibility and transport

As said, Bink36 is situated in an industrial area, demarcated by large industrial barns/ warehouses and empty fallow terrain and enclosed by three traintracks of which two of them lifted and along a motorway ***figure 10***. In ***appendix 8*** pictures of Bink36 and environment are added as well as an impression. The building is both accessible by foot, bike or car, and, although less, by public transport. Its is on a +/-15 minutes walking distance from both central station and Hollands Spoor. By bike, this will take approximately 5 minutes. Also from the building towards the highway is a 5 minutes ride, and therefor fairly accessible by car. Along the motorway a bikelane and pedestrian track is present that connects the building with the central station. For all startups the accessibility is seen as important (interviewees 7-9). Startups mention the accessibility as fine per vehicle, but not per public transport, which for those from nearby is ok, as its perfectly bikeable but for people from other cities that travel per train is not.

> *"Onze werknemers) die komen ook van andere steden, ja wat dat betreft wel een beetje jammer, de hele binckhorst is gewoon slecht bereikbaar per openbaar vervoer"* (interviewee 8, 2019)

From the motorway a direct ability to the parking entrance is facilitated. The parking area, (the area all around the buildings) is accessible by a barrier to which a ticket for entrance should be gotten. The space behind the barrier can be considered semi-public space. There is also a fence that closes the whole area after closing times of the building and is thus not accessible, by none of the firms. Bink36 disposes of a large amount of parking spots which are free for the first three hours and completely free for tenants. Also a large covered area is preserved for the parking of bikes or motorcycles. The public space around the entrance of the building is not specifically designed for recreation. On the other side of the building there are outside couches and tables to relax or lunch or work outside.

Figure 10. Demarcated area Bink36 (Google, 2019)

### Area level: proximity to amenities, public spaces and business network

There are no neighbourhood building amenities in the direct vicinity of the building, but the building itself provides several retailers and amenities such as a restaurant/ cafe and lunchroom. Also a rooftop, commercially owned is provided with outside terraces to have lunch or dinner, drinks or events. Startups do not really care about the few neighbourhood amenities, although it could be nice if there were more options closeby for relaxation or other amenities such as a supermarket etc. (Interviewees 7-9, 2019)

> *"voor het bedrijf maakt het niet heel veel uit wat er in de buurt komt, maar voor ons eigen plezier en prive is het lekker als er wat meer*

*ontspanningsmogelijkheden zijn".* (Interviewee 8, 2019)

As the quote above also indicates is the proximity of other businesses or institutions or whatsoever in the area not really relevant for the startups themselves. Outside, behind the second building and parking area there is a small area facilitating a picknic and lunch tables for relaxing, however not much used by the startups from the first building.

## Building level: the building

Bink36 is located at Binckhorstlaan 36, and is a 40.000 m2 multi-tenant building which is by far the largest of its kind in The Hague. The building is over 100 years old and functioned as the former accommodation of PTT and KPN. Bink36 actually consists of four separate buildings, of which two of them (on which the focus in this research lies) are connected to each other by an airbridge on the second level (***figure 11).*** The two connected buildings consist of respectively 4 and 6 levels. Between the two buildings, freight and product suppliers can deliver effectively to both buildings tenants.

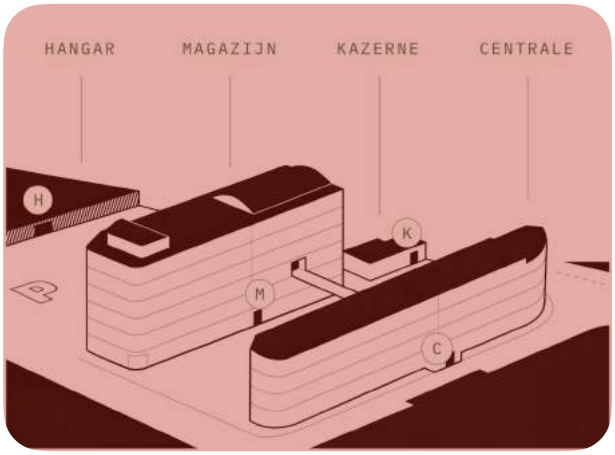


Figure 11. Separate buildings Bink36 (Bink36, 2019)

The whole plot on which the buildings are situated is almost wholly naturally enclosed by the train tracks and at some parts with a fence. The plot is almost fully semi-publicly accessible. There is an entrance road to this plot connected with the main motorway. At the intersection of these roads there are traffic lights that enables passengers to safely cross the main motorway to and from Bink36. After a 30 meters on the entrance street of Bink36 the previously mentioned barrier can be found that gives entrance to the parking spots.

Once behind the barrier, a 50 meters walk on a pedestrian track will lead to the middle of the building where the entrance to the lobby of the first building is located. The lobby has a reception desk and surveillant/receptionist. The reception is considered very handy, especially because the building is quite large, when clients or packages arrive the receptionist receives them (interviewee 8, 2019). At the outside of the entrance tenants can use a card or visitors the intercom to get in when the reception is closed. Also postboxes are found here. There are no couches or seats that facilitate people to sit down together. People can easily entry the building without extra barriers. From the lobby a direct way to the second building entrance can be taken. The lobby has both an elevator and staircasewell to other levels of the building. From the elevators, staircasewell space on right and left side corridors, separated from the lobby/interspace by closed doors, can be reached which give entrance to office units of the firms inside. The lobby also provides a list of all company-names and their number that refer to their location in the building. The first building consists of four floor levels, the second building of six floor levels. ***Figure 12*** shows the the floorplan of one of the repetitive floors in Bink36. Once past the corridor doors, a long empty corridor can be observed, largely lightened by artificial light, but not enhancing the atmosphere as the undermentioned quote openly shares.

*"Het heeft ook niet zo veel sfeer en we vinden het een beetje, kijk als je dit zo ziet, een soort kille gevangenis als je de gangen ziet."* (Interviewee 10, 2019)

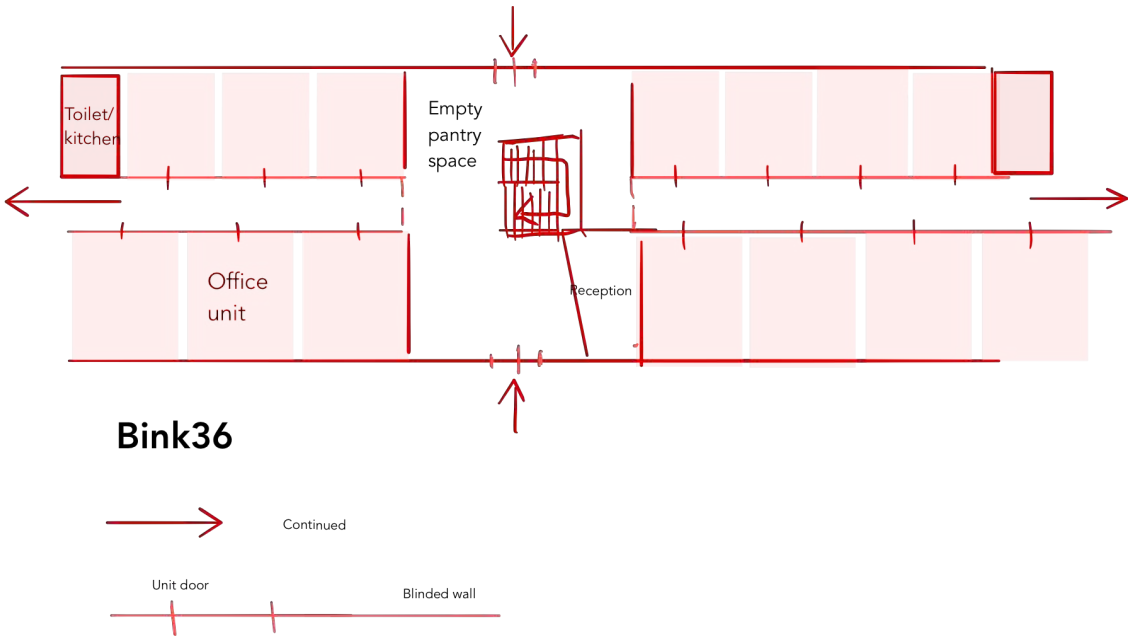


Figure 12. Bink36 floor level conceptual (own ill.)

## Building level: office spaces, shared spaces and facilities

The walls are all blind and provide the doors to the units, all of equal size (30 m2), unless more units are put together. The largest office is 1000 m2. Offices are rented per year and one is able to expand with additional units. Especially the latter is seen as a flexibility to grow within Bink36. But some startup mention that a yearcontract is very inflexible, especially when your business development is not certain (interviewee 8-9, 2019)

> *"(We zijn) direct naar Bink36 gegaan, niets er tussenin. Eerst in een klein kantoortje en inmiddels drie van deze ruimtes. Dat is het fijne wel, makkelijk uitbreiden en makkelijk terugschalen"* (interviewee 8, 2019)

In some corridors there is glass lookthrough that provide insight in the units and thus activities of a company and possible eyecontact, however sometimes the glass is blinded with semitransparent material or roller blind. On each door the unit number is given, sometimes added with a company name. Only few companies give some more information on their company. Only when doors are left open, potential eye-contact and interaction is possible. Each corridor contains access to a very basic toilet and a sink to do the dishes or tap water. The overall quality of the floor levels varies, but seems to be very raw and dusty (interviewee 10, 2019).

All units can be furnished and designed freely to the needs and preferences of the tenant, which gives them the opportunity to make it their own and increase the diversity, uniqueness (interviewee 8-10, 2019). Most tenants do have a small kitchen with coffee machine and their own couches or relaxing amenities.

> *"We hebben verder zelf gewoon alles in onze unit. Er kwam laatst zelfs iemand die onze deur open zag staan en vroeg 'is dit de gemeenschappelijke ruimte?"* (Interviewee 10, 2019)

The quote above nicely illustrates both the lack of a shared, or common room or space where tenants can meet each other or get to know each other better and the fact that all tenants have basically their own office

environment with their own unit, that makes shared facilities redundant.
Startups mostly lunch within their own unit, as the other options are too expensive or not serving their needs regarding food (interviewees 8, 10, 2019). All units provide electricity and if needed, a water connection in a larger office unit can be provided. Ceilings of units are rather high and all offices have a large amount of natural light income. The interspace between office corridors that connects the different floor levels is overall empty and do not provide any extra facilities, it is though used for tenants to make phone calls. Any presentation rooms or other event space that are present are sublet by the tenants themselves.

## Building level: business support & networking

The users that rent in Bink36 are ranging from service providers to product manufactures in both secondary, tertiary and quaternary sectors. The knowledge base is considered to be more symbolic and combinations of synthetic, analytical and/or symbolic. Startups like the diversity of other companies more in the sense that it is inspiring or just nice (interviewee 8-10). The quote below shows this saying in other words and indicates that the diversity may seem to also stimulate innovation, at least inspires others.

> "*dat vonden we juist wel leuk, dat er wel een diversiteite aan bedrijven is. Dat is gewoon leuk. Het was wel een inspirerende gedachte dat er allemaal andere hippe jonge ondernemertjes om je heen zitten*". (Interviewee 10, 2019)

Though it was not the main reason for the startups to locate in a building with such diversity of companies (interviewees 8-10, 2019). The people are mainly Dutch speaking. There is not a specific focus or overrepresented sector apparent, although there are a lot of creative firms present. These firms mix from one man company startups to large corporate companies in fields of design, tech, art, fashion, but also consultancy and financial services and other. Young 20s to old 60s+. Startups in Bink36 do not really care about the diversity of and other companies that are in accommodated in the building, they do not really depend on them or need them (interviewees 8-10, 2019). Nonetheless some startups do collaborate with other companies, however, they mention that the kind of help they get can be acquired also somewhere else: it is just more convenient (interviewee 8, 2019). Furthermore, there is often a lack of common ground, as the companies here are quite different from each other (interviewee 8, 2019).

Next to these innovation drivers, no specific innovation cultivators are present at Bink36. As there are almost no shared services, the services come from the housed tenants that commercially provide amenities such as a lunchroom, rooftop restaurant with events space, coffee house, hairdresser, cycle repair and rent shop etc or other services and consultancies. The various service providers and retail related companies do provide in the office fit out for some of the startups, which is considered handy (interviewee 10, 2019).
There are four Bink36 drink events organised per year for all tenants of the building. These events can be considered building weak ties. Other events may come from the tenants initiatives or from outside. The rooftop bar/ restaurant for instance provides space to meet with clients or to relax, and enjoy the view over the city, though commercially and thus one needs to buy a drink.

As previously described, Bink36 offers the basics to its tenants in terms of office space attached and services as shown in ***table 25***. There is few shared space provided. Basically, companies such as a rooftop-bar may be considered as shared space, but are commercially operated. Other shared space

Table 25. Services offered at Bink36

| Service dimension | Services | Types | Characteristics |
|---|---|---|---|
| **Infrastructure** | - office space<br>- Shared facilities | - Private office space<br>- Shared tiny kitchen/ Restaurant rooftop with multipurpose space(€)/ lunchcorner/barista/ reception/lockers/parking/ outdoor lunch tables/ Interspaces (empty)/ meeting rooms/Meeting rooms (€) | - sizes (from 30 m2 +) blinded walls, year contract 7 days a week open, fixed hours<br>- Kitchen with sink/Commercial retail and use of spaces if offered by other tenants |
| **Business support & networking** | - Presence of supporting businesses<br>- Planned Events<br>- Unplanned | - Diverse fields (media/film/ marketing/finance/IT/ design/craftmanship, horeca, consultancy etc.)/ various expertise/startup-company/service providers/<br>- Bink Borrel<br>- spontaneous interaction | - Mostly dutch background (diverse in age/ education etc)<br>- 4 x year/hosted at Bink36, mostly weak (w) ties interaction<br>- through shared facilities, corridors |

comprises the corridors between office units, the lobby, the outdoor space between the buildings of Bink36 and passage space between floor levels. However, startups emphasise all the lack of space and amenities for meeting and relaxing or interaction (interviewees 8-10). For instance a shared football table or something within the corridors is missed (interviewee 8, 2019).

> *"een plek om ff te zitten of te meeten is er niet echt, ja of je moet naar de rooftop maar daar is het altijd rustig en aan de dure kant"* .(Interviewee 10, 2019)

As said in the quote above, although shared spaces are provided that could facilitate in meeting or relaxation, factors that it is actually not shared but commercial space, decreases the use of it.

The corridors and interspaces do however not clearly facilitate the interaction of its tenants (interviewees 8-10). Regarding the office spaces available, there are as mentioned different units provided, basically distinguished in their size or their access to water. Most units are totally private and do not give an insight from the corridor, others may be provided with small windows. From outside the physical design does thus not stimulate or facilitate interaction by means of provided eye-contact. Startups furthermore do not really know who is in the building, except those who they encounter on their own floor within their own corridor (interviewee 8, 2019). It is often not really crowded, as everyone works in their own unit corridors look very empty and abandoned. But when you speak to people here, you do not get much back, it kind of depends on the openness of the people as well (interviewee 9, 2019).

### 6.4.4 A management perspective of Bink36

From the managers (interviewee 7) point of view insight is gained in the background of Bink36 regarding the organisation in general, the tenant mix and various services offered as support for startups of which the physical aspects herein will have the focus in this

research. With this perspective the previous observations may be better understood.

## Organisation

Bink36 is managed by VGM Bink36, owned by two real estate entrepreneurs. Bink36 is not considered an incubator, though it does provide room for startups, it does not specifically support startups. The business model of Bink36 is based on a fully automised system, in which only leasing the basic of the basic works, as leasing per desk becomes to much of a hustle and costs extra work to the extent that is not profitable anymore (interviewee 7, 2019).

## Vision

The main goal the owner has is professionalising the Bink36 to a multi-office complex and lease it for commercial purposes. Furthermore, the aim is to make the building and its function future-proof. It has no specific focus on startups or sector, but is open to all sectors and company sizes. Bink36 is stripped to the very basics, but, in the view of the owner, the basics are the best one can get in The Hague (interviewee 7, 2019).

> *"Ik heb alles uitgekleed tot aan de basis; maar de basis is het beste dat je kan krijgen in den haag"* (interviewee 7, 2019)

Particularly for startups, they just (figural speaking), need a concrete box with a room for a desk and ability of super fast internet (interviewee 7, 2019). Therefore, in the vision of the manager, the tenant gets what he sees, nothing more (interviewee 7, 2019).
Bink36 does not provide services and facilities that startups do not need or not want to pay for. Furthermore, Bink36 is the largest multi-office complex of the Netherlands and provides 40.000m2 office units ranging from 30m2 to 1000m2, with a very competing m2 price. Bink36 can be compared with a small village, it has everything.

> *"wij zijn een dorp, en in dat dorp daar heb je alles, daar heb je de bakker, de slager, de groenteboer, de supermarkt, de fietsenmaker, maar noem het op en we hebben het hier "*(interviewee 7, 2019)

Improving by means of what tenants want is not aimed for perse, as the building has a couple of hundreds of tenants. There are too many tenants to let them co-decide about the Bink36, each of them wanting something different. Serving their needs would become a journey without an end (interviewee 7, 2019).

## Tenant mix

At the moment, Bink36 has an occupancy rate of 100% and therefore Bink36 is not much growing in size and number of tenants. The occupancy flow is around 4 to 5 units per month. These are either tenants that move out or that want to grow within Bink36. Around 80% of the tenants that start at units of 30m2 move within half a year to 60m2. This is however only possible when there is space available.

Bink36 inhibits a large diversity of companies and entrepreneurs which makes it a very distinctive building. The diversity of the companies is also present on floor level. The manager does purposively not cluster sectors on the same floor, when possible. As for instance tech enterprises can learn from commercial ventures. Now there is sufficient diversity and full occupancy, so a continuous management on the clustering is not priority now. If companies within the same field need each other here, they will find each other anyway. (Interviewee 7, 2019)
Startups/companies leave Bink36 when either they cannot afford to pay the rent, or if they misbehave. In principal all the companies, entrepreneurs or startups that want to rent office here are welcome. These may be enterprises in different sizes or working in different fields. The main restriction is being

able to pay a years rent. As the rent in Bink36 is not sky high, one should be easily able to pay the years rent. (Interviewee 7, 2019) Besides the rent, the manager decides whether an entrepreneur may rent space or not. Therefor the manager looks at the enterprise itself and whether he believes in the product or service that the tenant wants to develop/operate. It also depends on the present diversity that is in the building and to maintain that. So in the end it is in the managers decision, which the manager bases on so called "finger-feelings".

> *"geloof ik in zijn haar product, en of zij de huur kan betalen? Als ik niet in het bedrijf geloof dan heeft t geen zin"* (interviewee 7, 2019)

As Bink36 is considered a small village, it also allowed to have commerce between all tenants. So basically there is a business wise collaboration of different tenants when they need each other. (Interviewee 7, 2019).

> *"businesswise is er samenwerking, in plaats van dat ze met elkaar koffie gaan drinken om een tafel, dat is allemaal heel gezellig maar daar word niemand wijzer van"* (interviewee 7, 2019)

## Services and management of synergy

The manager is no advocate of stimulating interaction of its users with the means of accelerating innovation or whatsover (interviewee 7, 2019). However four times a year he organises a Bink 'borrel' event for all its tenants, where they can meet and get know each other. In his view, the interaction within the building is up to the tenants themselves. The tenants are open to find each other when they need them and it is therefor not normal to have everyone walking on each others floors. In the managers observation, there is commerce present within the building between the tenants, especially as the market is now up and running, companies inside Bink36 rather reach out to small entrepreneurs next to them and this way support each other. So there is more a businesswise interaction instead of an informal interaction (interviewee 7, 2019).

> *"Iedereen zegt wel 'je moet het (interactie) stimuleren' , maar uiteindelijk moet en doe je t zelf. Mensen moeten ook leren en als je t te makkelijk maakt gaan ze t niet leren"* (interviewee 7, 2019)

Regarding interaction, all floors and office units are closed/private units next to each other along a corridor. If one wants interaction, one could leave their door open and greet the passengers etc. If one does not want interaction, one closes their door. Furthermore, there is no shared coffee place or something, people have their own coffee machine in their office. The building is too large for these kind of facilities. (Interviewee 7, 2019)

> *"Je bent hier niet voor je gezelligheid, je bent hier om je bedrijf te runnen"* (interviewee 7, 2019)

The office space that is offered at Bink36 is ranges from 30 sqm units to 1000 sqm. In the view of the manager units of 30m2 are almost the smallest units available in The Hague and smaller than that is not desirable. However, it does happen that two tenants become sharing one office unit. Furthermore, tenants can be as creative as they want within their unit, which offers a very diverse mix of office units. All office spaces are intended to be adjusted to the users needs. Therefore every unit is different from one another. There is no such thing as co-working or flex working in Bink36. The manager believes these types of working are a passed station and probably will not be much in use anymore in couple of years. Basically, flex working is nice in places

as Amsterdam, where the sqm price is much higher. However, Bink36 does have a tenant that sublets flex spaces. If small enterprises ask for office space, they are redirected to this tenant. (Interviewee 7, 2019).

Regarding facilities in Bink36, only the very basics are provided. Office units, high speed internet, a reception, postboxes, toilets, lifts, parkingspaces and some water tap points or kitchen counter. Furthermore, Bink36 has tenants that offer other facilities such as a lunchcorner, a rooftop restaurant with multipurpose space, a coffee store, a fitness service etc. All facilities that not everyone perse needs are not provided by Bink36, only by commercial parties that rent in Bink36.
All services are concluded in table X.

### 6.4.5 Conclusion physical conditions for business support and networking of startups

When considering the physical conditions of Bink36 and its direct environment, some notions can be made. The question that was asked for the case was how the physical conditions from literature are present at Bink36 and how they facilitate business support and networking. Furthermore, the management and organisation of these conditions has been looked at. The most remarkable observations are described.

### Transport and accessibility at area level are not sufficient but important for startups

At the area level it is observed that on the physical infrastructure part the case does not provide all elements as described in literature. Regarding transport options providing accessibility, mainly car transport to Bink36 is sufficiently present, mainly from the highway. The business district, although not very far from Bink36, is not easy to get to. Bike ability and walkability to the central station and station Holland Spoor provide respectively 5 and 15 minutes accessibility. Both stations provide further access to other cities and transit to metro or tram and bus. Startups do mention the lack of transport options and the relative large distance to city centre and neighbourhood building amenities. Especially for employees, the accessibility is not considered supportive. Although various businesses that offer retail and horeca are located within Bin36, tenants miss out more public oriented spaces for relaxing and more options for lunch outside. Horeca within Bink36 is often expensive for daily use, besides startups have the opportunity to prepare lunch within their own unit. Furthermore, a closeby supermarket is being missed. Also at Bink3, few public space for interaction outside is provided. At one side of the second building some tables are situated, but not perfectly visible. Startups do mention the lack of recreational options outside and suggest that there could be more done to make it more attractive. Though there are not specifically events hosted by Bink36, access from other institutions, businesses in the vicinity is mainly not smoothened by the transport options. Still car transport and parking is largely provided and is considered very useful by some startups.

### Office space, shared spaces and facilities at building level are limited, do not provide flexibility and networking but suffice for startups

Bink36 provides basically private office units in various sizes starting from 30 m2 up to a whole floor. Overall sufficiently serving the needs of the housed startups. Contracts that are offered are with one year notice though and by startups seen as limiting their flexibility and increasing their threshold to start. On the other hand, the square meter prices are considered competing in The Hague regarding similar offices. The offices units provide startups with a large amount of space and facilities such as tiny kitchen and the

ability to customise it the way you want. Other facilities shared by other tenants are reception desk, toilets, kitchen counter with sink. Startups at Bink36 rent and work often full time. Some tenants provide within their unit also flex spaces for sub renting.

As said a diversity of businesses is located in Bink36, among which a commercial rooftop restaurant, lunchroom, barista. The rooftop restaurant also provides event space for rent. Startups make use of the amenities inside, but most find them expensive and lacking interaction and liveliness. Some large interspaces/pantry areas on the intersecting staircases between the floor-levels provide space for interaction and most use them for phone calls. Startups mention they miss shared space and facilities for interaction and lack of couches or relaxing opportunities outside their unit.

The layout of the floorlevels is basically characterised by a long corridor with on both side office units with blind walls. Startups consider the floorlevels as lacking a lively atmosphere. Also interaction between the various businesses that are varying in business activity and field is considered incidental. Startups often only 'know' the tenants on their own floorlevel. Business support is not really present both because the physical infrastructure in the building is not stimulating interaction and the cognitive proximity is often coincidental. This mainly from a management perspective organised as the tenant mix is specifically not managed that way and the building is not specifically designed for interaction. Startups within Bink36 basically do not really care about the other tenants, although they all appreciate the diversity of businesses around in the sense of 'it is nice'. Business support as well as networking is thus not perse facilitated by the physical infrastructure of the building. The social interaction for building weak ties is being missed at Bink36.

# Synthesis

## Synthesis

**In this section the two cases are compared with each other and interpreted with the built up theories. In the theoretical framework several conditions were posed as facilitating and stimulating startups business support and networking and contributing to innovation. By comparing the findings of both cases, similarities and differences regarding presence and functioning of these conditions are observed. The comparison is done considering both the managers and startups perspective. The theoretical framework is used to understand how the physical conditions enable, facilitate and stimulate business support and networking for startups. Based on this synthesis an answer is given on the main research question.**

## 7.1 Interpretation similarities and differences physical conditions Bink36 and The Hague Tech at area level from startups perspective

### Main similarities and differences regarding physical conditions at area level between the two cases

Comparing the two cases resulted in similarities at an area level such as the relative close proximity of both Bink36 and The Hague Tech to the train station(s) and the rather good accessibility by car. Furthermore, both cases are also relatively close to amenity rich city centre. Differences observed at area level were the public transport accessibility, the case specific location features, the proximity to neighbourhood amenities and the proximity to other businesses and institutions.

### Area level: location features

In the theory on urban innovation districts, Katz and Wagner (2014) distinguished three types of models of urban innovation districts that were partly characterised by location, form and physical features. Ofcourse, specific users and other contextual specific developments contribute to the shaping of the districts and the eventual typology/model. However, with reference to the characteristics that were assigned to these models, it could be concluded that both cases seem to relate to different models while both within one district. Bink36 is located in an area that is related to the re-imagined urban area model. The Hague Tech is located in an area that is rather related to the anchor plus model. Although this observation does confirm theory on urban innovation district models, it could be questioned whether the models should be understood as representing an innovation district as a whole or that it should be understood as models of separate areas within one district?

With reference to the theory of Van Winden & Carvalho (2016), regarding different types of models of urban innovation districts, it was posed that the dense urban core often attracts businesses related with symbolic knowledge, whereas the urban region/greenfield locations attract more the analytical knowledge based businesses. Synthetical businesses are in their observation found in both types of areas. In practice (regarding the cases studied) this theory can only be partially confirmed. Indeed synthetic knowledge based startups/ companies were found at both cases, in both types of areas. But the symbolic knowledge based companies seemed to be more occurring in the direction of the urban region, as far as the Binckhorst can be assigned as such. Businesses, and in particular startups, that base on symbolic knowledge, do apparently not perse locate in the dense urban core of the city but tend to be attracted to the more suburban and re-imagined area locations in development. This may be explained by the fact that within former industrial area locations there is much and affordable space available in contrast to the rising rents and limited space in the city

centre. Furthermore, symbolic knowledge based businesses also appreciate a distinct identity (Van Winden & Carvalho, 2016) of an area, which is often found in such transformation areas.

## Location choice startups

According to the theory of Sorenson (2018) startups often are limitedly rational in their location choice behaviour. Furthermore in his view, social ties are an important factor in the location decisions of startups. As obtained from the case studies, this theory seems to hold in practice as well. The startups location decisions were almost all somewhat randomly made, but often within The Hague because of their social ties there; close to their homes. Regarding the decision for a particular office building it seems apparent that proximity to their home, affordability and availability of space rules where they end up, especially for startups that have activities that need much space (asset builders or startups with employees). Often the first option they can find is already sufficient, the provided amenities or services seemed not that relevant in that first instance. The latter mainly refers to the observations at Bink36. Although at The Hague Tech similar decision behaviour applies (close to home, availability/affordability) there is also a social aspect apparent: some startups chose The Hague Tech after attending meetups and realising they like the people, mindset and atmosphere there.

## Area level: accessibility and transport

The physical infrastructure at area level is one feature of the physical conditions described in the theoretical framework. Katz & Wagner (2014) describe innovation districts as very well connected and transit accessible. Also Lyu, (2019) mentions the need from startups to have workspace that is accessible.

At both cases there were some similarities regarding this infrastructure found. Both cases are within relatively close proximity of the city centre, fairly accessible by car and within considerable distance of the three trains stations of The Hague. Furthermore, both the areas are perfectly connected with bike and walk pathways. These observations do explain partly the startups location choice, which has been found to be often (among other) due to its close proximity to their homes, or its fair accessibility. This is also understood from the fact that startups often start from their home and look therefore for future places in the near vicinity as well or at most accessible locations.

The main difference between the two cases with regard to their infrastructure is the fairly better accessibility by both public transport and walkability from and to the train station of THT compared to Bink36. This difference was also underlined by both startups from THT as Bink36, the more accessible, the better, especially for employees that have to come from other cities. At Bink36 the lack of accessibility turned out to be not that supportive for those who have to come from cities such as amsterdam and do not own a car. Whereas The Hague Tech, very centrally located close to central station, proves to be very supportive in terms of accessibility of startups employees as well as startups who live in other cities. Thus good basic transport options to at least the (central) station areas are seen as an important factor in facilitating and stimulating in the development of any type of startup and confirms the used theories of Katz & Wagner and Lyu on accessibility.

Another difference is that the car accessibility, and in particular parking ability, at Bink36 is better than The Hague Tech. Parking in the city centre (at THT) is more expensive, which is considered by some startups as very inconvenient, as clients have to pay a large amount of parking costs. Moreover, for startups at Bink36 that have supply of goods to be delivered for their business, this parking space ability is essential.

## Area level: proximity to neighbourhood building amenities and public spaces

Another difference is the presence of neighbourhood building amenities in the direct vicinity of both cases. Katz & wagner (2014) describe the need of proximity to various neighbourhood building amenities such as restaurants, cafes, supermarkets and public spaces etc. to be one of the features of innovation districts. These provide in the needs of the workers and residents in a district. But they also tend to enable interaction between a diversity of people. Lyu (2019) as well mentions the need of proximity to these amenities for startups in particular.

Although Bink36 does inhibit in-house several amenities such as a rooftop restaurant, barista, lunch corner and more, that are all publicly available, the direct surrounding area does not provide in such amenities. In contrast with The Hague Tech that is closely situated to a street full with retail shops and cafes and restaurants. Furthermore, the latter case is also on walkable distance to the central station and the city centre with all thinkable amenities. However, what the findings implicate is that at both cases these neighbourhood building amenities are not deemed really relevant to the startups. The main reason that explains this is the fact that startups have their minds rather on working the whole day and do not that often go outside for a drink or whatsoever. Furthermore, startups often do not have the budget to daily eat or drink outside. But if they do, the city centre is also relatively closeby. In other words, this finding gives reason to think over the meaning of proximity to amenities. One note: it should be known that in both cases, inside the building, opportunity for lunch and drinks was provided anyway.

An exception on the latter observation was the need for a closeby supermarket, that was considered an important need for all. It could be questioned whether this need is specific to an innovation district, or startups, or that it may be such a basic amenity for people in general that it can be considered not district particular.

Either way, the assumption that startups need certain proximity (closeby city centre) to variety of amenities in general may be true, but the exact proximity should thus be discussed.

An indication that these observation holds only to startups and may not to companies, is observed at Bink36. This can be explained because some of the interviewees can be considered more becoming a 'company' and settling down in the area and may begin to care a bit more about the work environment, also for their employees.

## Area level: proximity to other businesses and institutions

Proximity to other relevant businesses and/or (anchor) institutions is described in theory as contributing to a supportive environment enabling knowledge spill overs, co-creation, collaboration and innovation (Figlioli et al., 2017; Startup Commons, n.d.; Katz & Wagner, 2014).

As expected, the two cases differ with regards to this proximity, although again, the extent of what proximity is can be discussed. Nonetheless, there is from the case studies no clear or major indication of the necessity of proximity to such institutions for the particular startup development. As Katz and Wagner (2014) suggest that anchor institutions such as universities can empower entrepreneurship or do highly relevant research on top notch topics to trigger and support other businesses and startups, this is not so much obtained from the startups themselves.

Several reasons can explain this. First it seems to matter what idea/business a startup is working on and wether a relevant connection/ collaboration can evolve with other large institutions or companies. Hereby it basically does not seem to matter wether a startup is an asset builder, service provider, technology creator or network orchestrator, it matters more what particular product or service the startup is working on and its target group. For instance, it can be imagined that startups in creative businesses working on innovative construction of art may not be relevant to connect with other institutions at all. Furthermore, it may be dependent on the goal and scalability of the startup; a social startup or buyable startup may be more likely to connect with large corporations/ multinational or university that is working on similar ideas as they for instance may need the investments more and or need the international network. However, still the proximity was noted not to be necessary as proximity may be considered to be relative, but does seem rather convenient if such a connection/collaboration would be potentially relevant for the particular startup.

Though this contrasts a bit with the aforementioned theory, the present proximity in the case of The Hague tech does enlarge chance of people from governmental institutions, students and other entrepreneurial people to join events taking place at The Hague Tech. This way on a community level relevant connections may evolve due to possible encounters of startups and business network that are thus considered convenient which is ofcourse an open door.

## 7.2 Interpretation similarities and differences physical conditions Bink36 and The Hague Tech at building level from management and startups perspective

### Main similarities and differences regarding physical conditions at building level between the two cases

At building level similarities observed are basically the providence of workspace to multi-businesses in one building, and providing in basic shared resources and social spaces. Differences were found in the type of workspaces, shared facilities and social spaces, and in the apparent management of these.

### Building level: providence of different types of workspaces

According to Figlioli et al. (2017) the basic physical condition for startups is that innovation habitats should provide both private and shared/co-working office spaces to facilitate in the needed physical infrastructure for startups.

Comparing Bink36 and The Hague Tech regarding this condition, it was observed that both provide in private office space and co-working space, which was expected. However, Bink36 disproportionately mainly provides large private units (30sqm and more) and has a tenant that sublets co-working space within a single private unit. Whereas The Hague Tech provides co-working spaces mixed with significantly smaller private units (12 sqm and more). Considering the type of startups and businesses accommodated in the cases it is

understood that Bink36 basically supports startups with a large space need such as 'asset builders' and 'service providers', the types Libert et al. (2016) defined (often creative businesses) whereas The Hague Tech accommodates more IT and knowledge related startups, defined as 'technology creators' that suffice with less space or only flex/co-working space.

The needed physical conditions regarding types of office space are thus dependent on the type of startup activities (and needs). But it also refers to the notion that Bink36 is located in a former industrial area in transformation that offers a lot of space and is due to the, among other factors, limited developments and accessibility still relatively cheap. Whereas The Hague Tech is located in a more dense and near city centre location in which space is scarce and thus also more expensive, which results in smaller units.

## Building level: providence of flexibility of workspace

Lyu (2019) also argued that startups in the startup-phase prefer more affordability and flexibility regarding use of space, whereas towards scaling phase a permanent workspace is preferred.

Regarding this condition it was observed that Bink36 and The Hague Tech partly differed. At The Hague Tech the used workspace, both private as co-working, is highly flexible due to a one month notice period, ability to expand or shrink and ability to only pay for the days you use flex space. In contrast Bink36 has fixed year contracts for its private units, but does provide flexibility to grow or shrink if available. (An exception is the tenant that sublets co-working space in Bink36 and does provide the same flexibility as The Hague Tech).

As expected, startups of both Bink36 and The Hague Tech prefer in startup-phase to transition-phase flexibility in contract which lowers their risk and the threshold to start. This confirms theory of Lyu (2019) on development needs of startups. In addition startups prefer the flexibility to grow in space when in need (employee growth for instance) and when they are capable of affording it.

What these previous notions suggest is that Bink36 seems to attract startups that either already have the budget or have a secure business that allows them to rent for a year. Besides, at both cases it came forward that the ability to grow and expand or shrink in time was positively experienced. This contrasts with theory on innovation habitats and startup development described by Dempwolf et al. (2014) in which startups often have to leave after a fixed term.

Furthermore, an in particular mentioned condition was the need for meeting space next to the providence of flex space. This can be understood as startups need next to their workspace also extra space with some privacy to meet with clients or employees. This adds on the body of knowledge regarding physical conditions for basic physical infrastructure.

## Building level: workspace image and distinctiveness enabling interaction

As posed in the theoretical framework innovation habitats could facilitate in a supportive environment for startups (Figlioli et al., 2017). Furthermore, it could facilitate and stimulate the networking of startups with others around, helping each other and exchange knowledge for innovation. Not explicitly mentioned in the theory is the influence that image and distinct office workspaces have in facilitating this interaction. At Bink36 all units can be outfitted and adjusted the way the tenant wants including kitchen, painting, couches, entertainment whatsoever, the amount of space and structure of walls facilitates this. This resulted

in very diverse and original office units from the inside. However, due to blinded walls at the corridor this is not (always) visible from the outside. This was also mentioned by the startups themselves: everyone likes the idea and finds it inspiring that there are so many different businesses and original units, but you have to get behind the door to be able to see it. Seeing what is going on inside may thus stimulate interaction as well. At The Hague Tech, such facilities and originality that customises the officespace is shared and spread over the floorlevel(s) and contributes to an overall distinct, inspiring and good atmosphere as place to work.

These notions however might implicate how physical image of units (customised by the tenant showing their activities) enables to attract the attention by showing the distinctive activities inside and may therefore inspire and generate new ideas that subsequently involve interactions that may lead to innovations. Opening up the blinded facades would then be needed.

## Building level: providence of shared spaces and facilities for business support and networking

Lyu (2019) describes the need of proximity to social amenities and need of shared spaces, this can be at building and area level. At building level this relates to the social space and shared resources that Figlioli et al. (2017) mention as the services (in this research mainly related to physical/spatial aspects of them) that innovation habitats offer. Van Winden & Carvalho (2015) argue that the providence of shared facilities (facilities that are in the advance of multiple tenants) encourages interaction and knowledge exchange. These interactions can be also related to the theory of Katz & Wagner (2014) on networking assets; programming of space or events that can build strong (strengthening relationships in similar fields) or weak ties (often new and cross sector networking).

Both cases provided in basic shared facilities, but a strong difference is observed in the providence of shared (social) spaces. Bink36 has, with the exception of the in-house commercially managed amenities as the restaurant and binkcorner lunchroom etc, no shared social spaces provided. This is in contrast with what is expected from an innovation habitat. The Hague Tech however, has floorlevels outfitted with shared social spaces where entertainment, relaxation, coffee, lunch and more amenities are mixed over the floorlevels. This aligns more with theory of Figlioli et al. (2017) representing innovation habitats.

With regard to The Hague Tech, it is observed that the need of startups to make use of these shared facilities resulted in mingling with others as they are getting a coffee, want to play a game, make their lunch in the kitchen or have a chat with a colleague in the common room even often in corridor. This confirms the theory of Van Winden & Carvalho, although startups may not always exchange certain knowledge as the theory may refer to. But regarding theory of Katz & Wagner the interaction does seem to be related to both building weak and strong ties. It may however be difficult to assign such interaction directly as weak or strong ties building, it are definitely types of interaction that grow trust and social bonding between the startups and people working there and therefore are essential for eventual detailed information exchange, collaboration or whatsover. Especially the continuous opportunity to see, talk and have social interaction with each other builds up a welcome and open atmosphere.

Startups see these type of interactions mainly as a social advantage, not directly as always helping them specifically in their business or getting to innovations. It contributes more to an atmosphere that is open and supportive and therefore may in time lead to knowledge exchange and business support when needed.

Another observation is the providence of several common spaces and multipurpose and meeting rooms that facilitate the hosting of events for both strong and weak ties interaction open to both insiders (similar field) and outsiders (sometimes cross sector). In these spaces events are hosted by different actors, both outside as startups themselves. Often strong and weak ties networking takes place in these spaces such as hackathons and blockchain meetups. Although startups differ in their time and relevance of participating in these events, the physical proximity of the event at The Hague Tech and the open atmosphere facilitates a low threshold to participate. Thus thus sometimes stimulates arbitrary joining of an event and growing of networks such as finding investors, mentors or other potentially relevant people for business support. This finding also aligns with Van Winden & Carvalho (2015) and Katz & Wagner (2014). Adding on the events that are facilitated, the innovation ecosystem that is talked about is fuelled, as not only network of inside The Hague Tech are attracted but also networks from outside.

With regard to Bink36, it must be noted that social spaces are provided by the tenants themselves behind their doors within their own unit. Each tenant has its own facilities within their unit and is content with that. This decreases the need to get out of the unit significantly and decreases the chance of interaction and knowledge exchange as well. In other words, the theory of van Winden & Carvalho, that without design for interaction and shared facilities there will be no interaction stimulated and thus works also the other way around and can again be confirmed.

According to the startups within Bink36 social interaction between other tenants is lacking and missed. The spaces (pantries for instance) that could provide for interaction are empty and not attractive. The corridors are overall not contributing to a lively atmosphere which is observed as a pity, but does not hinder them in their development perse. There is commercially managed social space (i.e. restaurant) at Bink36 but as mentioned by startups these spaces are either a far walk away, expensive, not serving their needs or do not perse stimulate the startups and others to meet each other as it is often quiet.

Similar as at The Hague Tech, startups in Bink36 do not very much need the interaction for their business support in first instance and are also not perse looking for it continuously and in the building. They do however miss the social interaction in general. In other words, social ties are not strengthened by the present shared spaces and facilitates at Bink36, but it could be discussed what the advantage would be for them when it would be, as the diversity of businesses within Bink36 is high and common ground is low.

## Building level: design for business support and networking

Van Winden & Carvalho (2015) also mention the influence that design for interaction can have on face to face interaction within offices. They argue that layout, accessibility and visibility within floorlevels, enhance planned as unplanned interaction that increase chances of knowledge spillovers and innovation. Herein the theory of Katz & Wagner (2014) regarding networking assets is again related. In both cases this design for interaction was assessed, observing significant difference between Bink36 and The Hague Tech.

At The Hague Tech, as described in description, the floorplan is designed with a relatively open layout of transparent units and co-working spaces together with entertainment space and common social spaces for everyone mixed (see the floorplan in ***figure 9***). As a result, the tenants of The Hague Tech are able to see and be seen by each other easily. The latter generated as

observed both planned and unplanned interaction which aligns with Van Winden & Carvalho (2015).

When considering the feedback of the startups regarding this layout, it is noted that it together with the shared spaces and facilities resulted in an open and welcome atmosphere that is appreciated by everyone. This is because the created atmosphere does several things: it enables a lively environment and contributes to relaxation and wellbeing of the tenants; it lowers the threshold for startups to ask for support as one can make eyecontact easily; helps to get to know others quite soon and; it facilitates and stimulates strong and weak ties interaction, they get to know people from outside or inside as the atmosphere is informal and open. These interactions sometimes lead to new ideas and innovation, but perhaps more importantly expanding of potential relevant network as business support for the startup. Thus the design for interaction and shared facilities together enable in first instance networking and secondly business support when trust and social proximity is built up. The latter also relates to theory of O'gorman and Donelly (2016) in which they see trust and community mindset as one of the important factors of building an innovation ecosystem. Thus social interaction and building trust this way is very important for innovation. If the physical environment can help create an atmosphere that fosters this trust, innovation will come eventually. People need to be comfortable in an environment with other people, shared spaces and facilities can support this.

At Bink36, as described, the floorplan is more repetitive, rigid and simple. Units are blinded at all walls and the layout is more closed (see the floorplan in ***figure 12***). The units are positioned next to each other, basically thsu anonymous and there are no shared facilities or co-working in between. As a result, tenants do not see each other if they do not want to be seen (closed door) and tenants do not often leave their unit as everything they need is inside.

Considering the feedback of the startups regarding this layout, it is noted that the lack of design for interaction and shared facilities at Bink36 created a gloomy atmosphere. This atmosphere makes it less lively around, and results in almost none spontaneous interactions between the tenants as they mentioned. On the other hand, startups mention that they not perse need the interaction for knowledge exchange or business support, and because there is often not much common ground since businesses differ very much. Also the people around might be more introvert or not looking for interaction. Thus this may implicate that design for interaction, both with shared spaces and facilities also needs a certain common ground, cognitive proximity and willingness to build strong ties that can lead to knowledge exchange for business support or innovation.

However, sometimes new business partnering and collaboration evolved at Bink36, despite the physical conditions. This results from active search and planned interacting with related businesses. Thus sometimes the physical proximity of related diversity (of businesses) enable collaboration, but can be seen as coincidental. But it thus more or less align with the Marshallian (1890) benefits of clustering businesses.

## Building level: type of interactions

Regarding the actual interactions observed in both cases, it can be argued that the physical conditions rather seem to facilitate and stimulate strong ties building. At least the interaction constructs social trust and relationships between the tenants and contributes to community forming, necessary for innovation. On the other hand, when cross sector people are invited by means of events, weak ties building is as well stimulated by the

created open atmosphere and seems thus important for both.

But from practice at The Hague Tech it was observed that the interactions generated by the physical conditions are not always leading to new ideas, but rather generate social ties, expanding a relevant network and sometimes to business support or solutions and innovation. Actual strong or weak ties networking assets should be managed by planning events that actually give meaning for the exchange of knowledge and innovation, such as block chain meetups or hackathons.

At Bink36 interaction was thus not much apparent. If there is, it is more or less saying 'hi' to each other but not perse stimulated from the physical conditions mentioned. The interaction that they search for is not needed for business purposes or innovation perse it seems. More social interaction would be more enhancing the atmosphere at bink36, which is in the advantage of the startups in basic needs sense.

## Effect of management on physical conditions

Now the differences and similarities regarding physical conditions have been reflected with the used theories, an explanation of the observed differences and similarities between the two cases can be obtained by considering a management perspective.

## Organisation and business model

Looking at the cases basic business model and organisation there are few similarities apparent. Both The Hague Tech and Bink36 are run as a for profit organisation and use real estate and the accompanied offered services as means to get revenues. This is a familiar observation as also described by Dee et al. (2015); innovation habitats are either growth driven, fee driven or independent organisations, often depending on the phases range at which they target startups. Organisations that accommodate startups during startup phase til scaling phase are often fee driven. The latter situation is observed at both Bink36 and The Hague Tech, where businesses and startups in all phases are accommodated by means of paying a monthly fee or in other words: rent.

## Objective of organisation

Regardless the fact both organisations are for-profit, their objectives and vision are very different. Whereas The Hague Tech is specifically set up to create an ecosystem, a community as it were, for entrepreneurs and innovators that share the same goal of accelerating the adoption of technology in the society, Bink36 wants to profitably rent out real estate to entrepreneurs in which his business model is based on serving cheap and large office-spaces to a broad segment of businesses ranging from digital design to craftsmanship and from IT to financial consultancy.

From this difference it is understood that both cases thus focus on a different tenant mix and have a different goal for how they use real estate (the physical asset). These differences in objectives are according to Dempwolf et al. (2014) the initial basis for whether an organisation becomes an accelerator, incubator, coworking or other innovation habitat. Because from this objective an organisation chooses to be either a for profit organisation or not, decides what startups/ businesses it wants to target and to what extent (provided physical conditions and offered services) they want to support these businesses and startups.

## Difference of present physical conditions at cases explained

Regarding the objectives of the organisations from the two cases it is easy to understand the extent of physical conditions (and thus services) that each case provided.

The Hague Tech objective was to accelerate the adoption of technology in society by creating a community and therefor targeted (among other businesses) startups that share that objective or can contribute in a way to that objective. By generating interactions among its tenants and other people as much as possible they try to accelerate the adoption of technology. Therefore the strategies of Van Winden & Carvalho (2015) to manage synergy among their tenants are identified

In contrast, Bink36 main objective is to get revenues from renting out office space to (among others) startups. Strategies for synergy are clearly not implemented. This is in first instance understood considering the managers intention of not stimulating interactions among its tenants because tenants at Bink36 should focus on working. Furthermore, there is a business model that requires as much profit as possible with the least investments. The limited extent of shared facilities is substantiated with the reason of not providing facilities that assumably not many (startups and businesses) will use or need and each tenant therefore has spaces enough to meet their own needs.

According to Figlioli et al. (2017) innovation habitats can differ in their extent of offered services which thus depend on the organisations objective. Incubators often provide the three types of services, whereas co-working and most other innovation habitats at least offer the basic infrastructure of the first type of services of Figlioli et al. (2017). However, regardless the types of services and conditions offered, the two cases observed in practice did not explicitly assign themselves to one of the innovation habitat types as aforementioned in literature. It may therefore be questioned whether startup support organisations do have to act exactly like an accelerator, incubator, co-working space or other type, in order to cultivate startups and innovation.

## Importance of tenant mix for the physical conditions to enable networking

As also argued in the theory of Van Winden & Carvalho (2017) physical conditions are not enough for enabling synergy. A well balanced and managed tenant mix ensures mutual understanding and common ground that is needed for networking and the sharing of knowledge. Moreover, Boschma (2005) similarly mentions the need for levels of proximity. Physical proximity and a certain cognitive proximity between startups/ businesses are needed for understanding and knowledge exchange.

This factor, clarifies why at The Hague Tech several strategies are used and various services offered that enable interaction among the startups and businesses. Because The Hague Tech manages its tenant mix to be balanced in the sense that all people, innovators, businesses, startups, institutions or whoever contribute to the shared goal: accelerating the adoption of technology in society together. They therefor share a common goal, a common ground. It is also observed that at The Hague Tech there is willingness of the tenants to share knowledge and be open to each other. This relates to theory of Chesbrough & Appleyard, (2007 in Seltzer & Mahmoudi, 2012) that argue that innovation actually depends on the willingness of others to participate in ones innovation process. This as well is part of managing the tenant mix to people that believe in open innovation. This aligns also with Chesbrough & Appleyard, (2007 in Seltzer & Mahmoudi, 2012) where organisation can set expectations on the means of involvement.

Likewise, it can be clarified why Bink36 does not use all strategies, since the tenant mix is so diverse. Basically everyone that is able/can assure to pay a years rent may rent at Bink36. Furthermore, the manager decides on finger feelings whether a startup can join and

therefore partly has control over the exact diversity. There is thus nothing in particular that the tenants share as common goal, industry or whatsoever, thus the probability of sharing knowledge is smaller, however not completely absent.

Based on the aforementioned, it can be concluded that both cases attract a different tenant mix and that the manager of an multi-tenant building has predominantly influence on the creation of innovation ecosystems. Not only by managing a balanced tenant mix, but also by providing in an interaction stimulating environment.

# Conclusions & perspectives

## Conclusions

**Throughout the research several subquestions have been asked and investigated on by means of theory and empirical case studies. In this chapter the main answers on the subquestions and eventually on the main research question will be described. Furthermore a discussion and reflection on the results in a broader context of urban innovation districts will be given leading to some perspectives and recommendations.**

## 8.1 Conclusion

### 8.1.1 Conclusions

In an answer towards the main research question first the context, the innovation district and its potential to form an innovation ecosystem has been asked to understand. This is briefly answered below.

***What are urban innovation districts and an innovation ecosystem?***

Urban innovation districts have evolved over time from a growing economic need to innovate constantly. Changing mega trends and globalisation have shifted the industrial economy towards a knowledge economy. Hence, location decision making of companies have altered and clusters have formed increasingly in the vicinity of dense urban areas, in an attempt to enjoy the economic benefits. These places have become more and more a hotbed for innovation; innovation districts as they are then called. They are defined as "geographic areas where leading edge anchor institutions and companies cluster and connect with startups, incubators and accelerators". Cities promote these urban innovation districts both as tool for economic development, enhancing their competitive position and as a strategy for urban regeneration.

Three models have been identified that typify these districts on location, context and function. They are called: the anchor plus model, the re-imagined urban area model and the urbanised science-park model. These models tend to attract different users as to their knowledge base. The models all consist of certain assets, which are physical (buildings/spaces), economic (firms/startups/institutions/organisations) and networking (weak and strong ties events) assets. One can consider the assets in the form of a pyramid in which the physical assets are basically facilitating the economical and networking assets to get to innovation. These assets all-together can form an innovation ecosystem capable of stimulating innovation and catalysing commercialisation. Ofcourse, other elements, drivers and factors may as well play a role in this ecosystem, but the focus is in this research mainly set on physical/spatial dimension and does not go into other factors. This ecosystem is furthermore characterised by the synergies formed between these three assets. For this synergy several strategies are proposed such as design for interaction, sharing facilities and spaces, promotion of networking and managing the tenant mix. Especially the last strategy touches also on the proximity theory which explains that certain levels of proximity are needed for interaction. Managing this synergy between the assets enables an innovation ecosystem which can function as the engine towards economic development.

With this background the second subquestion has been asked to understand the main economic asset that has the focus in this research: the startup. Furthermore it is investigated what their place is within the innovation district, where do they develop?

***What are startups and what is their place in the innovation district?***

As posed several times before, among the actors that have a driving function in innovation districts are startups. They are considered essential in the process of generating and commercialising innovation, but are often also seen as weak and in lack of resources to do the job. Startups are somewhat ill defined but will be understood as new, active and independent temporary organisations that are often in search for a (repeatable and scalable) business model. Various types of startups can be identified here mainly based on their goal and scalability which in essence comes down to small-business startups, scalable startups and social startups and their business activity which come down to asset builders (build and sell physical products), service providers (use people to offer services), technology creators (often intellectual property of software and data) and network orchestrators (facilitate transactions and interactions). Lastly, they can be distinguished on their knowledge base. These knowledge bases are symbolic, synthetic and analytical. These knowledge bases say something about the type of activity but also about the environment they often cherish to work in. However, the latter says more about where they might end up, but regarding their start location, startups rather locate in places where they used to work, live, have affinity with the industry they work in or have built social/business relationships.

There is also a pattern observed regarding their life course that most startups can relate to. They all go through a set of roughly three life phases. These are defined as the startup phase (ideating and concepting of idea), transition phase (committing and validating of business model) and scaling phase (scaling/growing and establishing of business). During these phases several challenges are met, mainly regarding finance, business support and network. These challenges also come down to a set of (mostly) universal needs. These needs can be summarised to be a physical infrastructure (accessibility office, workspace, amenities, facilities etc), business support (funding, trainings, coaches, talent) and networking (interactions strong/weak ties, peer networking). Because of these needs, several organisations are found that provide the support needed and give startups a place in the innovation district with the potential being part of an innovation ecosystem as was told; relations with other actors formed by events and facilitated with space. The best known organisations that support startups (so called innovation habitats) are incubators and accelerators offering various services in the different phases of startups. Startups thus are given a place in the innovation district, often at several support organisations.

This understanding of startups within urban innovation districts helps to conclude the theoretical framework by questioning and summarising the conditions that the physical environment should meet in order to facilitate startups business support and networking in

their development. In other words, what are the physical conditions to facilitate and enable the economic and networking assets to innovate. As discussed, there is thus both an area level (the district level) in which the startups locate and a building level (often the organisation that support the startup) in which startups work on their product or service.

***What are the physical conditions to facilitate startups in their development within urban innovation districts?***

Innovation districts are seen as a breeding ground for startups during their development. Considering the needs of startups, physical conditions can be subtracted on an area and building level. These conditions are categorised as the physical infrastructure at area level providing the workspaces for the development of startups, generating accessibility and connectivity for the startup and between other relevant actors that may connect in the ecosystem, provides and facilitates in proximity to amenities and public spaces. At building level the conditions come down to providing different types of flexible and affordable work space that facilitate physical business support and provide shared spaces and facilities that are designed for interaction facilitating business support and networking.

These conditions are assessed in two casestudies within the planned Central Innovation District The Hague. Hereby the first subquestion has been asked to consider what conditions occur in the two cases.

***To what extent are the physical conditions present in the cases?***

As observed in the casestudies the physical conditions are not (yet) a normal situation within the planned CID of The Hague. Both cases differ significantly in the providence of the physical conditions, especially at building level.

At The Hague Tech area level most conditions occur, although public spaces around the building are rather limited, but amenities and a number of large corporations, university-and knowledge institutions are in short proximity. At building level all conditions seem to occur. In contrast, at Bink36 conditions at area level are rather different. Accessibility is sufficiently present, connectivity less. Proximity to public spaces and amenities is almost none and similarly this counts for potential relevant organisations/corporations/knowledge institutions etc. At building level, basically the regarding office space conditions more or less suffice, but regarding shared spaces and facilities they are scarcely present.

Knowing this, the second subquestion was to ask how these conditions actually facilitate startups in their development and how these conditions thus facilitate and enable business support and networking for innovation, as supposed with the pyramid in the theoretical framework. Also it was aimed to understand whether conditions differ per type of startup and also how these conditions were managed per case.

***How do the apparent physical conditions facilitate startups in their development?***

As obtained from the casestudies the physical conditions were not all present at both cases. However, the need for them has been investigated though. As obtained from both cases regarding the area level, mainly accessibility and connectivity is considered in both cases as facilitating in business support. Furthermore, good connectivity (as present at The Hague Tech) leads to higher chances of people joining events which thus can facilitate networking. Proximity to amenities, public spaces and other business network are seen as convenient in both cases, but not necessary for their business support. Startups are often inside their office building and do seldom make use of the amenities offered outside. However, inside the building the basic amenities should then be present (coffee/

lunch). Also a supermarket nearby was in both cases an welcome asset.

At the building level the cases show a few important results regarding the physical conditions. First of all, affordable and flexible office space is facilitating in basic business support. Especially flexible in the type contract (one month notice period and flex use gives startups low threshold to start) and office space (private large and small and co-working space types) give different startup activities the space they need or let startups use no more space then needed which lowers their costs as well.

When looking at the provided shared spaces and facilities at The Hague Tech it is obtained that it facilitates both in business support of startups (need of the amenities and spaces offered) and enables networking (social interaction, mainly weak ties). Startups appreciate the providence of shared facilities and spaces as it enhances a welcome and open atmosphere. The facilities regard mainly relaxation opportunities and stimulate the needed social interaction between other startups and tenants. This social interaction also contributes to the open atmosphere and enables easy access to business support from others which sometimes leads to new innovations. Furthermore design for interaction such as transparent walls that enable visibility, short walking distances with the open and mixed layout of private and co-working spaces, social space and shared facilities are important herein as well.

Considering Bink36 facilities and social spaces are not shared in the building, but are provided by the tenants themselves within their units. There are some basic facilities, but these do not facilitate in business support nor networking perse. Due to a lack of shared social spaces and facilities and no design for interaction, the atmosphere in Bink36 is considered more gloomy. This resulted in no or hardly networking between startups and tenants in the building.

However, as understood from both cases, a certain proximity and tenant mix is needed for actual interaction that can lead to business support and innovation. A common ground and similar workfield, or shared goal/objective or theme to work on together is a precondition for the physical conditions to facilitate and enable networking. Also the startups openness and willingness to share knowledge and innovate seems important.

With these answers the main research question can be answered.

***How can the physical environment facilitate and stimulate startups in their development within urban innovation districts?***

Urban innovation districts are more and more considered as places where innovations come off. In this research the focus has been put on the physical dimension and in particular on the physical conditions that can help startups to thrive in urban innovation districts. These conditions refer to the physical assets that are considered one of the pillars of the innovation district. As startups have needs and challenges to overcome ranging from the basic physical infrastructure to do their work to finding and connecting with investors, human resources and other support to develop their product or service, the physical environment of multi-tenant buildings in a planned urban innovation district has been investigated on how it can facilitate and stimulate startups in their development.

This physical environment that can facilitate and/or stimulate startups in their development is downsized to a number of conditions at area level and building level to which this conclusion holds. At an area level it can be concluded that mainly good accessibility and connectivity can facilitate all types of startups in their basic needs and enables easier access to business support and networking in and

outside. Proximity to neighbourhood amenities and public spaces are not that relevant, as city is closeby.
At the building level different types of workspaces (flex and private, small and large mixed up) can facilitate in accommodating different needs of startups (activities) and in the changing demand of startups development (grow/shrink). Contract flexibility and flexible use of space in time is herein considered an important factor that lowers threshold to start.
The condition of providing facilities only facilitates startups that do not have these in their own unit. Shared (social) spaces provide in the needed relaxation and contributes to a welcome and open atmosphere which enhances and stimulates building both weak ties and strong ties interaction. Design for interaction by transparent walls, short walking distances, visibility and mixing co-working with private offices is an extra stimulant. Together these conditions (design for interaction with shared social spaces) facilitate building social ties and enable innovation to be accelerated if startups and other tenants have the needed common ground and proximity, shared goals/objective and willingness to innovate.

For the latter it can be concluded that management and objective of these multi-tenant buildings is thus determinative whether the latter can be achieved. Having the right spaces and facilities on the right location does perse not lead to innovation. Managing the tenant mix, promotion of networking with a goal and constantly managing the synergy is therefore needed as well.

Thus, the physical environment can facilitate in the development of startups by providing in basic needs of accessibility and connectivity in the district, flexible and affordable office space and private space and in extra needs providing a welcome atmosphere with shared social spaces and facilities mixed with workspace, designed to stimulate interaction with a tenant mix that is well balanced (with shared goals/ambition/mutual understanding, trust and openness).

### 8.1.2 Limitations and recommendations for further research

The research that has been conducted has had certain limitations. First of all the results are based on a limited number of interviews. This has resulted in only indications of findings. The results are thus not a complete picture of the possible answers and thus interpretation of the results is not representative but can give an indication. Further research could verify or enhance the results regarding specific startups by conducting a larger sample of interviews at both cases.

Another limitation is the means to clearly distinguish between different types of startups and accordingly put clear criteria to interview them. In this research all startups that have been interviewed were difficult to all assign to one type of startup. It would be good in further research to be very strict in determining what a startup is and accordingly select these startups for interviews to be able to better cluster findings to specific startup type.

In the start of the research also phases of startups have been taken into account. In this research no strong differences have been found, due to the fact that most startups interviewed were in startup/transition phase. It could be interesting to do the same research with startups in scaling phase.

Managing the expectations of startups during the interviews is also important to take note of. Some have more time and are more willing to discuss than others, which led interviews sometimes to become more superficial than going in real depth, which could have bring more valuable data.

### 8.1.3 External validity and transferability

This research is with two case studies better externally valid then if only one case was used. Furthermore, two areas with different features have been investigated which may therefore be more easily transferred to areas with similar characteristics, but as reflected on, the areas should be rather comparable with Dutch areas. Regarding the building level, the results and findings are assumed to play a role for startups in multi-tenant buildings all over the Netherlands or even beyond. The finding that social spaces and interaction by different types of startups is appreciated and helps facilitates essential relaxation and social contact is likely to be apparent at other location as well. The same counts for managing the tenant mix and generating an atmosphere conducive to innovation. This is something that may not only be applicable in urban innovation districts, but as well in smaller cities or places where people or startups eager to innovate are located. Moreover, it was noted from literature (Sorenson, 2018) that startups often start from their home place and search for office space near home or where they have social ties. Smaller cities could make use of this notion and manage the development of startups and at these locations as well and connect them to the wider innovation ecosystem that should managed at intercity level.

### 8.1.4 Internal validity

Reflecting on the chosen methods for this research, it can be concluded that doing the combination of doing both semi-structured interviews and surveys on a larger population helps verifying particular results from interviews. At both cases four or more interviews have been conducted. This is, looking back, not enough to make very clear distinction when taking for instance startup types or phases into account. Furthermore, for the surveys and interviews a list of topics is used, however some topics might be misunderstood and therefore it is very important to clarify also in and surveys interviews every topic, to be sure that answers can be compared. In the survey the, latter was assured by leaving space for substantiation of answers. At interviews, after transcription of recordings the context of the answer has been used to verify that question are understood or answers are comparable.

This part will discuss how the research can be positioned within the graduation laboratory and the corresponding chair of Urban Development Management and will refer to the scientific and societal relevance of the research.

## 8.2 Reflection and perspectives

### 8.2.1 Reflection on findings

As already started in the introduction of this research, the debate on the relevance of urban innovation districts, its function in facilitating and stimulating the evolution of innovation and driving a true innovation ecosystem is still highly active. Increasingly, cities express their ambition to develop such places that can connect institutions and businesses and facilitate the breeding of innovation, in order to cope with the societal issues 'we' have to face. At the same time there are a number of critics that put serious question marks at these developments and for instance argue that apparent branding of districts (e.g. 'central innovation district') are mainly used by policy makers to brush up status and image of areas. Moreover, actual higher numbers of innovations in form of patents are not yet measured as an outcome. In other words, are innovation districts at all existent? Or only a strategy for urban regeneration? Thus to what extent is investing in and developing of cities into lively, dense innovation districts really conducive to innovation?

***Does the CID play a role in development of startups?***

Although this research did not specifically aimed at answering these questions, it can shed some light on them and try to put the discussion into perspective. This research has based its results on two cases where startups develop within the planned central innovation district (CID) The Hague. Considering the aforementioned points of discussion the CID has been purposively stated as a 'planned' innovation district, since it can be rather considered a mere ambition of the municipality of The Hague. Nonetheless, the CID does dispose of a number of various assets and conditions that enhance its potential to be(come) an innovation district. But do these conditions together suffice to drive an innovation ecosystem and does it matter at all for a startup?

In comparison, Yes!Delft, a tech incubator located at the edge of the university campus TUDelft, is an example of a startupecosystem that connects startups with corporate partners and institutions. Despite the fact that it has not the accessibility, nor the density of the CID with its business, and (governmental) institutions and amenities in relative close proximity of each other, it does grow a considerable number of successful startups. This gives to think to what extent innovation districts as previously characterised really play a role in facilitating and stimulating startups' development. Is there an added value of being geographically part of an innovation district?

Back to the CID, this research showed that certain physical conditions at area level such as good accessibility are important elements in facilitating the startup in general. Is this a unique finding? Probably not, since good accessibility is nowadays a condition that both residents and workers in general appreciate and require. It therefore is not specifically something to typify an innovation district with, but on the other hand is a necessary condition to enhance an innovation ecosystem, wherever. Contrastingly when regarding the proximity of businesses and institutions within the district, it was concluded to be not that relevant, at least for startups, though it could be convenient. Proximity to public spaces for events and amenities as cafes and restaurants were also not found that relevant for startups, as they spend most of their time building their product or service inside the office. In other words, considering the general conditions that an innovation district ought to dispose of do not seem to directly relate to the startups development success. On the other hand, it can be discussed how proximity in the Netherlands is regarded. Is perhaps everything in the Dutch context considered nearby?

Following this reasoning, there may be a difference in what 'we' call proximate. This difference could be explained with the fact that there is a significant difference between the American examples that the Katz and Wagner (2014) describe and for instance the Dutch districts. In the American context, cities are from another scale and mono-functional business districts are at significant larger distances from cities and its amenities and the lively public spaces than compared to the Dutch context. This was also inferred from the interviews in which this relative close proximity to city centre was mentioned several times. In this view, the meaning of urban innovation districts as described by Katz and Wagner should perhaps be seen differently in the Dutch context. In other words, as long as there is a fair and good accessibility present within a city that enhances connectivity between organisations, businesses and institutions that want to drive innovation, it may already be considered to be an innovation district. The value of urban innovation districts then lies in the type of particular institutions, businesses etc that together work within particular fields for change and innovation. However, without actual networking and connections between

these different actors that translate into innovations, it is no more than a normal city.

***Importance of the building level***

The latter opens up another point of attention. The primary focus in this research has been on how the physical environment at both area and building level facilitates and stimulates the startup in its development in the context of an urban innovation district. In doing so, the place of the startup within the urban innovation district has been sought. For a startup, the physical conditions at building level are seen as more relevant in their development. It is at the building level that the startup finds its appropriate office space, the needed facilities and services and may connect with others that enhances their development. And it is at the building level where events are hosted and relations with actors of the innovation district and beyond evolve that may lead to new innovations. The area accessibility, affordability and availability of office space are one of the main reasons for the startup to locate somewhere, next to social ties within the city or at the particular location. In other words, sofar it seems that the innovation district 'needs' the attraction of startups more than that the startup needs the urban innovation district itself to be located in. It is more the particular incubator, or multi-tenant building that provides a habitat for startups.

This became clear because it are the physical conditions in a building that can facilitate and stimulate and thereby accelerate interaction and networking for innovation between startups and other actors. The physical environment of a multi-tenant building acts in this sense as facilitating and stimulating weak and strong ties networking of startups. Although on the one hand active management can be needed for organising actual weak or strong ties networking in the form of meetups, workshops, lunches, drinks or other events and for connecting with the actors in the wider district to bring new people in, on the other hand, just adding the right physical conditions sothat an open and welcome atmosphere is created can already suffice in facilitating and stimulating both weak and strong ties interaction as long there is a balanced tenant mix. For instance providing gaming areas stimulate continuous small talk interactions that enhance trust building, social cohesion and strong ties which may be essential to future collaborations.

***No synergy without managing a balanced tenant mix***

Networking for innovation is thus only possible if synergy between these actors is can be achieved. Otherwise, the physical conditions for stimulating networking can be considered redundant. This calls thus for a need in common ground, a related diversity, by sharing a same objective and the presence of right cognitive proximity or by having relevant knowledge etc. But also the willingness to innovate and openness to share and with others is an important factor. Without such management or such presence, synergy is coincidental and not likely to evolve and new innovations will probably be left out. In other words, it is the interdependency between the assets (physical, economical and networking/social) that feeds the innovation ecosystem. Management of the physical conditions adaptive to a balanced tenant mix and promoting networking by means of organising events is thus in more and less extent needed.

Another aspect that seems to play a role in generating synergy seems to relate to the type of startup. Although as concluded the main physical conditions seem to apply more or less equally to different types of startups in practice, there was a difference observed regarding the need for shared spaces and facilities for interaction that can facilitate and stimulate innovation. Though a lively atmosphere and social interaction is appreciated by any startup, some startups (often micro business startups) do not perse

care about sharing facilities and spaces to interact with others for business support, knowledge exchange and innovation and seem rather focused on their own product/ service. This was especially the case at startups that have a large office unit that provides in the needed facilities and social space. However this lack of need might also be related with whether the business activity is innovative and complex or not and whether the startup has the willingness to share and collaborate with others, this can vary per person and thus per startup. A micro business startup is often not that complex and mainly focused on executing and operating their businessmodel and thus may not need the networking and interaction with others that much. Or the startup(founder) is not willing to or open to share and innovate based on their personal objectives. In other words, innovation districts may be best functioning for people that have an intention to innovate together and want to interact, although more interviews are needed to substantiate this.

***Does a gathering of entrepreneurs and startups equal an innovation hotbed?***
Exactly the latter puts a question mark at the simple assumption that multi tenant buildings where creative people, startups and businesses work on innovative products and services are immediately marketed as a hotbed for innovation. This is, as observed in practice, not directly true. Although startups do develop their products there and sole innovation may come off, business support and new processes of innovation do not naturally occur if the physical conditions inside are not facilitating this and the tenant mix of the building is not balanced and stimulated by networking events in this sense. So do 'we' then need to adapt these buildings such as Bink36 and implement physical conditions that are lacking without managing the tenant mix? Or will actual community management and networking events in the current setting help facilitating and stimulating startups potential? Probably not, as the startups and businesses themselves are more focused on running their business and may not perse have the intention to interact with others as they may not need it themselves. Thus, again, it is the combination of balancing the three assets that enables an innovation ecosystem.

### 8.2.2 Perspectives for practice

Though this research has mainly focused on physical aspects that facilitate startups in urban innovation districts and did not explicitly take other drivers and elements that sure influence the innovation district and its ecosystem into account, it does give an indication and food for thought on how urban innovation districts are planned and what direction it could or should take. Taking the aforementioned considerations into account, one could question what these may implicate for the development of such districts and thus also for the CID in particular. Taking into consideration the last subquestion; can it give some direction on how area and building managers can not only facilitate but also stimulate startups and influence and enhance the innovation ecosystem? Or can it implicate what city planners can or cannot do in order to make an innovation ecosystem function?

First of all, the idea that innovation districts should all be developed as highly dense, accessible and lively areas with lots of amenities where anchor institutions can connect with startups may help to imagine an ideal visual picture of 'the urban innovation district'. However, as observed in practice, actual innovations or new connections are not necessarily made because of such innovation district areas. Said differently, the area level is only to a certain extent of influence. At least for startups in this sense.

Regarding this area level, it was again confirmed in this research how a high accessibility can facilitate in the development of startups. Besides that, it can also enhance a better connectivity between various relevant actors within a district. Also, the importance of

proximity to other actors and amenities in a district was put in perspective. In other words, cities that aim to create innovation districts should rather focus on startups locations' accessibility, for instance close to 'central' stations and provide in space for events and meeting at these locations. For the development of startups and generating an innovation ecosystem, liveliness, amenities and density of an area are not that relevant, especially because the needed proximity of the latter within the Dutch context is actually often present already. On the other hand, particularly for the Binckhorst transformation to make it also attractive to live in, providing in extra neighbourhood amenities can be important, but that goes beyond the scope of this research.

In this research there were two distinguishing observations regarding the physical conditions at building level for startups. First there is a need for conditions that facilitate startups in their basic needs and second there are conditions that can even stimulate startups and are important elements for enabling the innovation ecosystem. Especially the latter are such conditions that aim to stimulate interaction and drive innovation. This gives to think whether at an area level design for interaction and shared spaces etc will be as well conducive to innovation. As observed, it is often within the building that actual connections evolve. Therefore, advise would be to focus more on several highly accessible places where events can be held for various actors dealing with related issues, by which the floorlevels within the building are designed for interaction and a welcome and open atmosphere is created to stimulate interaction. Best is also to let events take place at locations where startups develop, as startups often do not have that much time or interest to go out themselves. Attracting the relevant actors to these locations remains the main challenge.

Clustering of firms, institutions and organisations at very close proximity in an area has hereby also been put in perspective. Although it can be convenient for startups, it is not necessary and also not per definition conducive to innovation. More important would be that relevant organisations and business etc (these are for instance relevant because they work in a same field of knowledge or on the same themes etc) are good connected regarding transport/walk and bikeability. The better the accessibility, the better the potential connectivity can be. Furthermore, there will probably be a need for active management and organisation of meetings and events to attract and bring together the various actors and provide meaning for interaction.

As discussed, a balanced clustering of startups and (small) firms, departments of institutions etc at building level was concluded to be contributing to the development of startups, if the physical conditions at building level are as well properly organised and means for interaction is managed (meetups/events/lunches etc). An important condition is then whether the present knowledge is relevant for each other and not competing; a related diversity. Moreover, for open innovation connectedness, trust and a community mindset were in theory mentioned as essential and in practice observed as important. In other words, multi-tenant buildings can be a hotbed for innovation, only if synergy between the tenants is managed (when needed) by both physical (atmosphere and design for interaction) as social intervention (weak but more importantly strong ties networking). Advise for planners of urban innovation districts would then be to influence the clustering of firms in multi-tenant buildings by supporting organisations that aim to connect innovative startups and businesses with overlapping aims and generate hereby communities of innovation. Based on the perspectives above and results of the research some recommendations can be made

regarding the management and governance at area level and building level for innovation districts.

## To area managers

- In general, focus on generating communities of innovation where officecomplexes facilitate place for not only startups but also medium sized firms and entrepreneurs and people that have affinity or may have a relevant contribution to the community challenges/field of innovation.
- Enhance, when needed, accessibility to these places and between relevant institutions and businesses for optimal connection.
- Invest in ecosystem community management at area level to stimulate interconnections between people, businesses and institutions that are working on similar challenges and the joining of events at these communities of innovation.

## To multi-tenant building managers that aim to stimulate innovation

- Provide in both flex/coworking office spaces and private spaces, but provide them mixed up surrounding common space, so-that common space is always lively.
- Provide common spaces, but ensure when more levels in a building with businesses in similar field that there is one kitchen and coffee space to attract everyone there.
- Design for interaction and shared entertainment/relaxation facilities throughout the building: thus good visibility and transparency, but moreover, work to a welcome and lively atmosphere for the specific tenants. Keep common spaces cosy.
- Provide the ability to use meeting space for those with a co-workingspace or small office and provide non-disturbance spaces for the needed privacy/silence or discrete phonecalls/meetings
- Provide flexibility to grow by providing different unit sizes
- Provide affordable and flexible contracts (one month notice), especially for startups in starting phase for both offices and flex/co-working spaces. Also provide in use of flex space per timeunit.
- Provide in shared multipurpose rooms/presentation/workshops etc where weak and strong ties building events can be hosted and attract and invite startups/people from various institutions or firms to make use of this spaces.
- Manage the tenant mix to be complementary (service providers that can facilitate in startups development) to each other and condition/select them to be open to share knowledge, or have the same goal/ambition or common ground to contribute to community building.
- Provide a community manager that can facilitate and when needed be adaptive to the needs and opportunities for interaction and knowledge exchange to create synergy and let these be connected with community managers at area level.

***Facilitating or stimulating?***

To come back to the main title of this research: are physical conditions mainly facilitating or also stimulating the development of startups? As concluded based on this research, the physical conditions are mainly facilitating their development. However, certain physical conditions can also have a stimulating function, especially when there is a balanced presence of tenants and innovation and networking is promoted. But the underlying question is rather: should 'we' actually focus on facilitating or stimulating the development of startups in urban innovation districts, enhancing the innovation ecosystem and accelerate innovation? And if 'we' do not? Do 'we' then miss out opportunities? As most startups tend to be easily satisfied with basic physical conditions, one could question whether 'we' should also explicitly stimulate them. It just depends, stimulating and triggering startups that have the right intention, being open and wanting to innovate

together by sharing knowledge may pay off when investing in both physical and networking assets that facilitate and stimulate interaction. Other entrepreneurs, startups that just want to do business will probably not be stimulated to innovate together by doing more than basic facilitating their development. In other words, there is a limit to the extent to which for instance cities can contribute to the generation of innovation ecosystems in urban innovation districts. It is mainly built by people that intend to be part of it, and those can be supported by both a facilitating and stimulating physical environment. Besides, further stimulating startups and should come from networking assets; various events that bring together relevant actors (knowledge institutions, investors etc) within similar fields where societal challenges can be tackled together.

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# Appendices

## Appendix 1: list of interviewees

| **Interviewees The Hague tech** | **Function** | **Date** |
|---|---|---|
| Interviewee 1 | Community manager The Hague Tech | 11 Februrary 2019 |
| Interviewee 2 | Startup founder | 8 February 2019 |
| Interviewee 3 | Startup founder | 12 February 2019 |
| Interviewee 4 | Startup founder | 14 February 2019 |
| Interviewee 5 | Startup founder | 27 February 2019 |
| Interviewee 6 | Startup founder | 27 February 2019 |
| **Interviewees Bink36** | **Function** | **Date** |
| Interviewee 7 | Real estate manager and owner Bink36 | 5 March 2019 |
| Interviewee 8 | Startup founder | 8 March 2019 |
| Interviewee 9 | Startup founder representative | 8 March 2019 |
| Interviewee 10 | Startup founder | 8 March 2019 |

## Appendix 2: interview protocol/guidelines managers

## Interview protocol with (community) manager multi tenant building/ support organisation The Hague Tech

**Background The Hague Tech**

When did The Hague tech start?
Wanneer is The Hague Tech ontstaan ?

Who's initiative was it, how?
Wiens initiatief was het, hoe is het begonnen?

What kind of company are you? How would you define it? Incubator? Profit driven?
Wat voor bedrijf zijn jullie/ of hoe kan ik jullie het best omschrijven? Winst gedreven?publiek? privaat? NGO

What is the exact idea/aim of The Hague tech, what distinguishes you respective to other communities?
Wat is het idee/doel van The Hague Tech en wat onderscheidt het van soortgelijke initiatieven/ communities/incubators?

Why this specific location?
Waarom den haag, waarom dit gebied en dit gebouw?

Do you see any fruitful synergy from the location here towards other companies and institutions, or could you as well have started it in the binckhorst?
Zou the hague tech ook op een andere locatie binnen het CID succesvol/goed kunnen werken?

Is the building(levels) rented or owned?
Worden de verdiepingen gehuurd of is het jullie eigendom?

**Current process**

How many start-ups/community members do you have now and is there a threshold what the building can offer, or that you want to provide space for?
Hoeveel startups huisvesten jullie nu en zit daar een limiet aan, zo ja vanwege ruimte of strategisch?

How do you attract new start-ups or how does the process go, do they find you, or both?
Hoe werkt het proces van het binnenhalen van startups? Kloppen ze bij jullie aan of zoeken jullie ze op? Of..

Are there restrictions for start-ups/community members (except that they should be tech) to not start here?
Hebben jullie duidelijke voorwaarden voor wie er community member kunnen worden (buiten het feit dat het technische focus moet hebben)

How long do start-ups stay here, is there a limit (space/time)
Wat is het idee omtrent het behoud van startups/members? Kunnen ze zolang blijven als ze willen of is er een limiet in ruimte/tijd?

What do you offer startups?
Welke services/diensten/ resources bieden jullie startups zoal?
What tools/instruments/resources do you have to help startups?
Welke tools/instrumenten/middelen hebben jullie in huis om startups te helpen (geld/mensen/ connecties)

Is there any demand or desire from start-ups you cannot meet?
Is er, voorzover jullie weten, een vraag van startups waar jullie niet aan kunnen voldoen?

You organise events here, how much connection is there with other institutions, companies, students etc?
In hoeverre is er connectie met andere instituten, universiteit, hogeschool, community hubs zoals Bink36 of cabbelerofabriek etc,  bedrijven, studenten uit de directe omgeving, als in aanwezig op evenementen of anderzijds?

Are there any barriers you encounter, physically, economically or socially?
Zijn er zaken waar jullie tegenaan lopen, of zaken die je niet hebt, beter kunnen?
Bereikbaarheid, parkeeropties/buitenruimte/bepaalde faciliteiten/of cafes/supermarkt in de buurt/ operationele kosten?

**Future**

Is there in any sense of awareness of being in the innovation district The Hague?
In welke mate zijn jullie bewust van het CID, maken jullie daar gebruik van?

Is The Hague tech planning to grow, or fuse with other startup communities and thus shift location?
Zijn jullie van plan te groeien of te fuseren/verhuizen?

## Interview protocol with (community) manager multi tenant building/ support organisation Bink36

**Background Bink36**

When did Bink36 start?
Wanneer is Bink36 ontstaan?

Who's initiative was it, how did it start?
Wiens initiatief was het, hoe is het begonnen?

How do you define your company? (Public or private owned? NGO? Are you profit driven?
Hoe zou je dit bedrijf/organisatie kunnen definioeren? Publiek bezit? Privaat? NGO

What is target group/ who are your target clients?
Is het een specifieke doelgroep die je huisvest?

What is the exact idea/aim of Bink36, what distinguishes you respective to other communities?
Wat is het idee/doel van Bink36 en wat onderscheidt het van soortgelijke initiatieven/ communities/incubators?

Why this specific location?
Waarom den haag, waarom dit gebied en dit gebouw?

Do you see any fruitful synergy from the location here towards other companies and institutions, or could you as well have started it in the binckhorst?
Zou Bink36 ook op een andere locatie binnen het CID succesvol/goed kunnen werken?

Is the building(levels) rented or owned?
Worden de verdiepingen gehuurd of is het jullie eigendom?

**Current process**

How many start-ups/community members do you have now and is there a threshold what the building can offer, or that you want to provide space for?
Hoeveel startups/bedrijven huisvesten jullie nu en zit daar een limiet aan, zo ja vanwege ruimte of strategisch?

How do you attract new start-ups/companies or how does the process go, do they find you, or both?
Hoe werkt het proces van het binnenhalen van startups? Kloppen ze bij jullie aan of zoeken jullie ze op? Of..

Are there restrictions for start-ups/companies/community members
Hebben jullie duidelijke voorwaarden voor wie er mag huisvesten?

How would you define the characteristics of your clients?
Hoe zou je je clienten kunnen karakteriseren? Is er iets wat hen verbind? Gemeen hebben?

How long do start-ups/companies stay here, is there a limit (space/time)
Wat is het idee omtrent het behoud van startups/companies members? Kunnen ze zolang blijven als ze willen of is er een limiet in ruimte/tijd? Wat is de gemiddelde doorlooptijd?

What do you offer startups/beginnende ondernemers?
Welke services/diensten/resources bieden jullie startups zoal?

What tools/instruments/resources do you have to help startups?
Welke tools/instrumenten/middelen hebben jullie in huis om startups te helpen (geld/mensen/ connecties)

Is there any demand or desire from start-ups you cannot meet?
Is er, voorzover jullie weten, een vraag van startups waar jullie niet aan kunnen voldoen?

You organise events here, how much connection is there with other institutions, companies, students etc?
In hoeverre is er connectie met andere instituten, universiteit, hogeschool, community hubs zoals the hague tech of cabbelerofabriek etc,  bedrijven, studenten uit de directe omgeving, als in aanwezig op evenementen of anderzijds?

Are there any barriers you encounter, physically, economically or socially? Are there for instance governmental policies that influence/support or restrict any developments you do/want to do? Or are there institutional resources that influence your growth?
Zijn er zaken waar jullie tegenaan lopen, of zaken die je niet hebt, beter kunnen?
Of is er overheids/gemeentelijk beleid dat jullie ergens van weerhoud om te verder te groeien/ ontwikkelen? Zijn er institutionele bronnen die jullie groei kan beinvloeden?
Bereikbaarheid, parkeeropties/buitenruimte/bepaalde faciliteiten/of cafes/supermarkt in de buurt/ operationele kosten?

**Future**

Is there in any sense of awareness of being in the innovation district The Hague, do you make use of this?
In welke mate zijn jullie bewust van het CID, maken jullie daar gebruik van?

Is Bink36 planning to grow, or fuse with other startup communities?
Zijn jullie van plan te groeien of te fuseren? Wat is het toekomst perspectief

**Note: Transcriptions of interviews can be provided on request**

## Appendix 3: interview guidelines startups

**Introduction**

For my graduation project of the master 'Management in the Built Environment', which I am pursuing at the faculty of Architecture at Delft University of Technology, I am researching how physical, network and economic aspects of urban innovation districts support the (changing needs of) startups during their development.

Urban Innovation Districts are seen as 'geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators'. (Katz and Wagner, 2014)

This interview is particularly focused on two areas within the intended Central Innovation District in The Hague, in which you are located at the moment, the Beatrixkwartier and the Binckhorst.

The results of this interview will only be used for educational purposes, and the answers will be kept anonymous. It will approximately take about 15-30 minutes minutes to answer the questions.

The interview will start with some general background questions about your (founder of the enterprise) personal situation to classify your startup, and continues with questions about the support of apparent assets that during different phases.

You may answer the questions in DUTCH or ENGLISH

In advance I would like you to thank you very much for taking time to answer my questions.

**Interview protocol startups**

Criteria for startups to take part in interview:

- Age of founders startup til 45 Years max, preferably til younger
- Located in either: startup hub Binckhorst (diverse sectors) or Beatrixkwartier (one sector)
- Startup/enterprise has Max 10 employees
- Age of startup +- 5 years

start-ups are defined to be: being active (during a given time to sell products or services), new (not existing before a given time) and independent (no subsidiary or related to larger companies) And they work on/in: (1) a new product (or service) or new species of already known product (or service) (2) new methods (or process) of production or sales of a product (or service) (3) new market (4) new sources of supply of raw material (5) new industry structure

**Background information startup and founder(s)**

- Location of interview (binckhorst/beatrixkwartier)
- Name startup/company
- Age of startup/company
- size of enterprise one-man company/small enterprise (number of employees/founders)
- Age founder(s)
- Residential location founder
- Place of birth
- Last completed education level and its location?
  why did you start a startup company? First time startup?experience?

- What do you make/work on? A product? A service? Something else? (Business type)
- How would you categorise the knowledge sector your are working in, is the knowledge for instance based on: analytical (science based), symbolic (aesthetic/artistic based) or synthetic (engineering/problem solving based) knowledge or something else?
- What is your (long term) aim/goal with the enterprise? (Type of startup)
- When and why did you locate in the Hague Tech/Bink36? How did you become aware? Where were you located before? First office?

**Supply and support of assets in the first three phases of development**

I want to ask you about your startup needs regarding the physical, economical and networking assets as shown in table 1 and consider three phases: These phases may be perceived differently per startup but I will look at them as follows: see figure 1. The main aim to discover in each phase are what assets are present and if and how they support you during your development and whether certain assets are missing.

I start from a small scale(building level) to a larger scale (neighbourhood level) per phase

**(1) Startup phase**:initial idea to making business plan,
**(1) Transition phase**: seeding/lay foundation for scaling (startup at incubator?)
**(2) Scaling phase**: outside incubator? exit/establishment/expansion)
**(3) Exit phase**: Startup becomes a company, diversification, Harvest the venture through (IPO) Initial Public Offering, private sale, merger or acquisition

How do you see this? Where are you now?

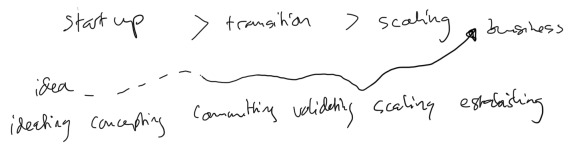



Figure X. Development phases of a startup based on Startup Commons, (2018) and Picken

**Topic list: physical, economical and networking assets and elements**

| Building level assets | Elements | Examples |
|---|---|---|
| Physical | - ***office spaces***<br>- ***Shared spaces and physical connectors*** | - home / open/flex /private / public / creative / other)<br>- meeting rooms / lab space / creative space / multipurpose space / silent space / relax space / canteen /entertainment space / lobby / outdoor space / coffeebar / bar / sportsspace / Connecting elements (elevators/entrance spaces) and circulation space / |
| Economic | - ***innovation drivers***<br>- ***innovation cultivators*** | - startups (same sector) / startups (different sectors) / entrepreneurs / SME's<br>- business support organisations (accelerators / incubators) / proof of concept centers / business community members / trainees / employees / |
| Network | - ***interaction strong ties***<br>- ***interaction weak ties*** | - (planned/formal) tech events / workshops / training sessions / cluster specific meetings / events<br>- (unplanned/informal) spontaneous interaction / business events / networking breakfasts / events / hack-a-thons / tech jam startup classes / drinks / serendipity encounters / gaming / coffee / lunch etc |
| Assets supporting elements | - ***services***<br>- ***atmosphere*** | - internet / printers / coffee / reception / 24-7 / Space flexibility (to move and grow) /Contract flexibility / food and services / variable space costs / parking spaces /<br>- openness and tolerance, diversity of people around |

| Neighbourhood level assets | Elements | Examples |
|---|---|---|
| Physical | - ***public spaces***<br>- ***(shared) building/ spaces***<br>- ***accessibility assets/***<br>- ***physical connectors*** | - parks / plazas / streets with energy and activity /concerts / living labs / innovation expositions / digitally wired<br>- residential housing options / affordable housing / co-living space / microhousing / affordable office space / flex work spaces / lab spaces / other / common eating spaces / meeting spaces / entertainment space / etc.<br>- bikeable / walkable / public transport /private transport / infrastructure etc.<br>- Connecting elements/ entrances/fences |
| Economic | - ***innovation drivers***<br>- ***innovation cultivators***<br>- ***neighbourhood building amenities*** | - research institutions / universities / governments / large firms / SME's / startup (hubs) / students / employees<br>- incubators / accelerators / business support / support programs / proof of concept centers / local high schools / job training firms / legal council / patent attorneys / venture capital firms / investors<br>- medical offices / grocery store / supermarket / restaurants / coffee bars / horeca bars / small hotels / local retail / services / facilities (sports etc) |
| Network | - ***strong ties interaction***<br>- ***weak ties interaction*** | - planned/formal) tech events / workshops / training sessions / cluster specific meetings / other?<br>- unplanned/informal) spontaneous interaction / business events / networking breakfastst / events / hack-a-thons / tech jam startup classes / drinks / serendipity encounters / meeting opportunities |

Table 1 . Interview topics: based on factors of attraction and research of (Katz and Wagner, 2014; van der Zandt, 2018; Pluijmen, 2017; Lamnak, 2015; Magdaniel 2016)

**Questions that can be asked based on the list**

What assets/elements are present?
Are they important to you? Do they support you?
How do they support you?
Are you satisfied with it?
Are you missing any

**Note: Transcriptions of interviews can be provided on request**

## Appendix 4: survey and results

The survey questions can be found following this link below:

**Link:** https://www.enquetesmaken.com/s/02b7a9b

Results can be asked for on request, as these are too large to attach in this document. The following may take you there as well, but may need credentials to view.
**Link:** https://www.enquetesmaken.com/?url=export/responses&uid=1456583&type=csv

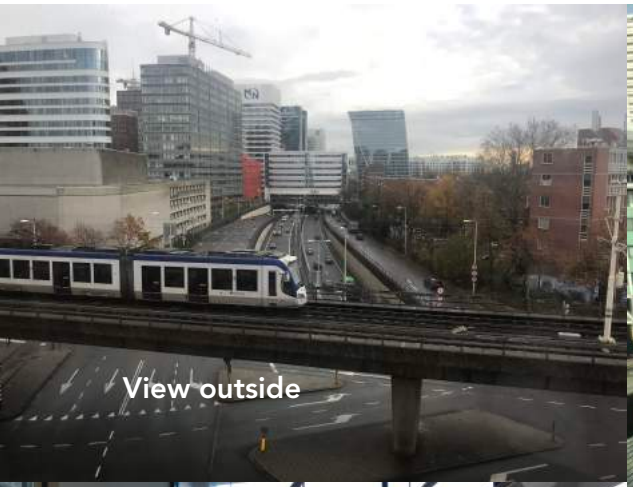
## Appendix 5: multiple views on phases startups

| Phases | Stam (2003, p. 59-60) | Picken (2017, p.588) | Startup Commons, 2018) |
|---|---|---|---|
| Phase 1 (0-1 year) | **Startup**: at the very start of forming an new venture, there is the entrepreneur who sees/identifies an opportunity which he/she can realise by access to the right resources. | **Startup**: In the startup phase it is about defining and validating the business concept, which is based on the market opportunity, the offering, the business model and the go to the market strategy. | **Formation**: this phase is about ideating and concepting of the startup. The initial idea of product or service is being defined and a vision and strategy is worked on. Often only one person or vague team is at the start and may grow to core co-founders. |
| Phase 2 (1-5 years) | **Initial survival**: the startup has survived in a market environment and is able to break even the costs for the product/service with the revenues from buyers/ takers | **Transition**: In the transition period, traction in the market place is being gained and the often loose structure of the startup is transformed in a more formal and disciplined form for scaling. | **Validation**: this phase is about committing and validating. in this phase the organisation is able to already have a initial product/service and are validating the product/market fit and may generate already revenue. The organisation becomes more formal and more team-members may be acquired |
| Phase 3 (2-3 years) | **Early growth and growth syndrome**: Next the early growth phase can start in which further investments may and can be made for further growth until the growth syndrome kicks in in which growth is limited to continue | **Scaling**: After in transition phase the scope and complexity increases, the scaling phase starts in which a sustainable business growth should be achieved that needs professional leadership and execution. | **Scaling**: this phase is about scaling and establishing. market traction has found place, significant funding has been attracted so the startup can grow fast. Improving and establishing the startup to continue growing. The organisation has become more the form of a company. |
| Phase 4 | **Accumulation**: In the last phase, the accumulation phase, often the initial identity of the enterprise has been transformed for new continued growth and is basically independent of the founder-entrepreneur. | **Exit**: The fourth phase is often an exit in the form of IPO, private sale, merger or acquisition to harvest the accumulated value for the investors and founders. | |

## Appendix 6: multiple institutions/firms within the Hague CID

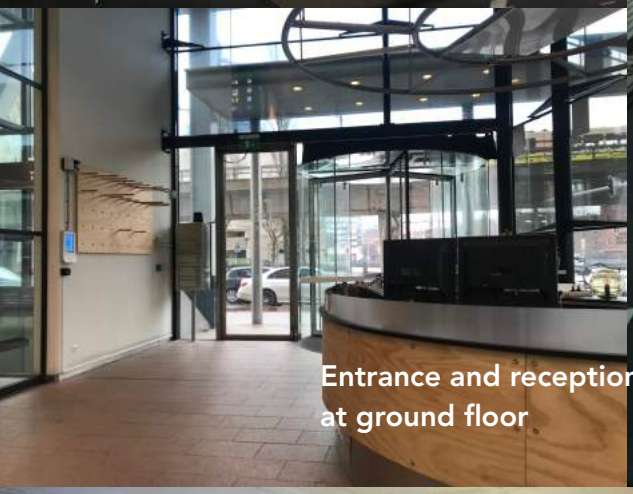
| Education/ knowledge | Mixed entrepreneurship | Cyber security | Tech/IT/Telecom | Peace/Justice | Governance |
|---|---|---|---|---|---|
| Leiden University (governance, international law, politics) | New World Campus (global impact) | The Hague Security Delta (HSD) (different small and large firms) | SIEMENS | UNICEF | Municipality of The Hague |
| The Haagse Hogeschool (applied sciences) | **Bink36 (mixed sectors)** | | AT&T | CICC | National Parliament |
| Inholland (applied sciences) | **The Hague Tech (tech/IT sector)** | | T-Mobile | The Hague Institute for Innovation of Law | Ministry of Foreign Affairs |
| ROC Mondriaan (vocational education | Apollo 14 | | The Hague Tech | Humanity Hub | Ministry of Finance |
| TU Delft (Engineering and Policy Analysis) | Cabbalero Fabriek | | | Eurojust | Ministry of Economic Affairs |
| Royal Academy of Arts (creative, Photography and Graphic Design) | Mooof | | | EDPTC | Ministry of Interior Kingdom Relations |
| Royal Conservatory | Spaces | | | | Ministry of Defence |
| TNO (applied scientific research) | | | | | Ministry of Education |
| Platform 31 | | | | | Ministry of Culture & Science |
| ICTU | | | | | Ministry of Infrastructure and Environment |
| NWO | | | | | |

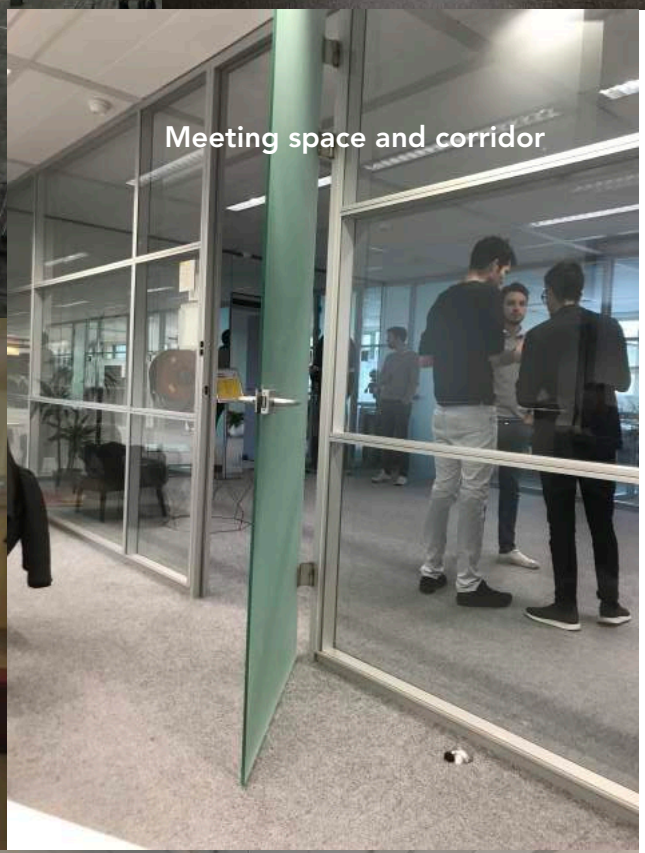
## Appendix 7: photos of The Hague Tech

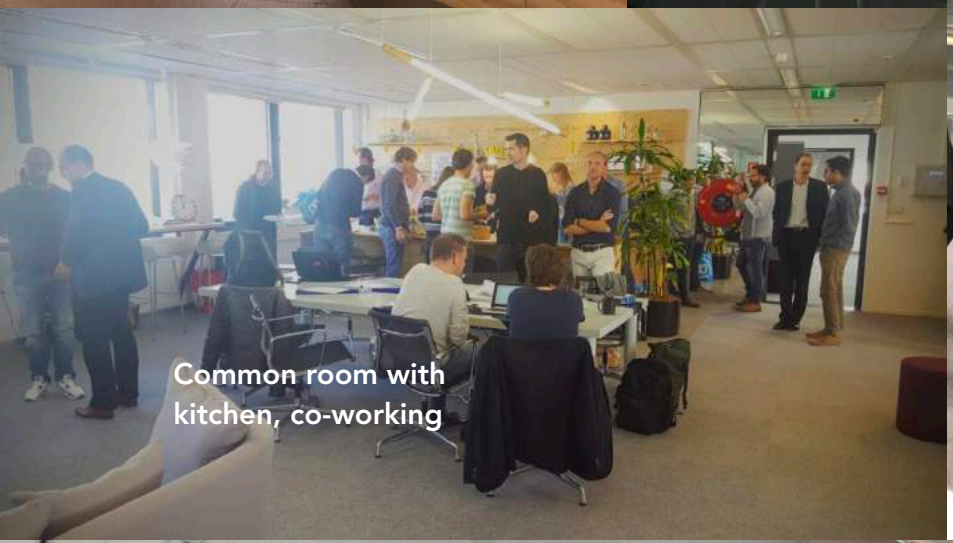

View outside

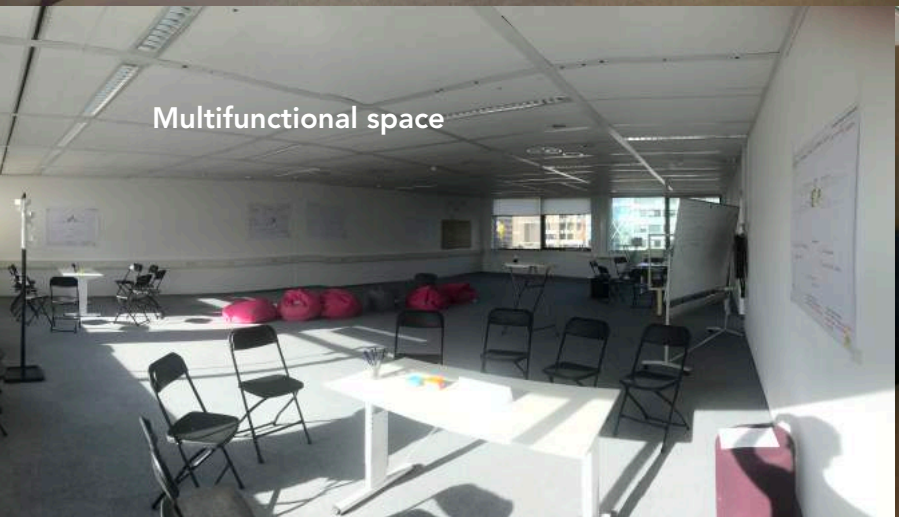

View outside

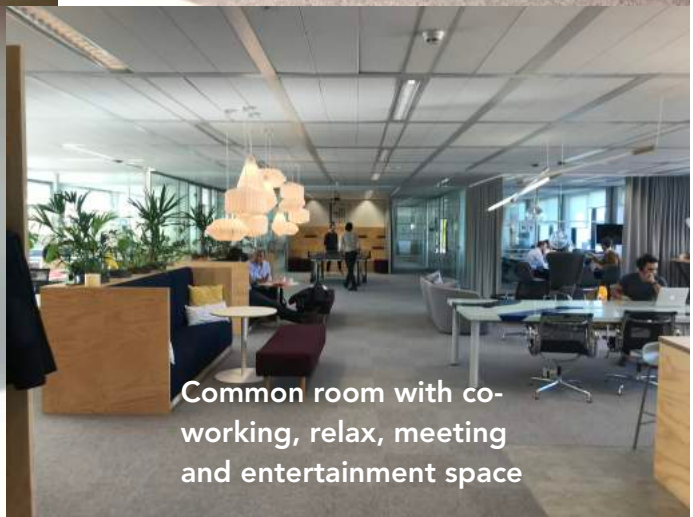

View from metro stop on building


Entrance and reception at ground floor

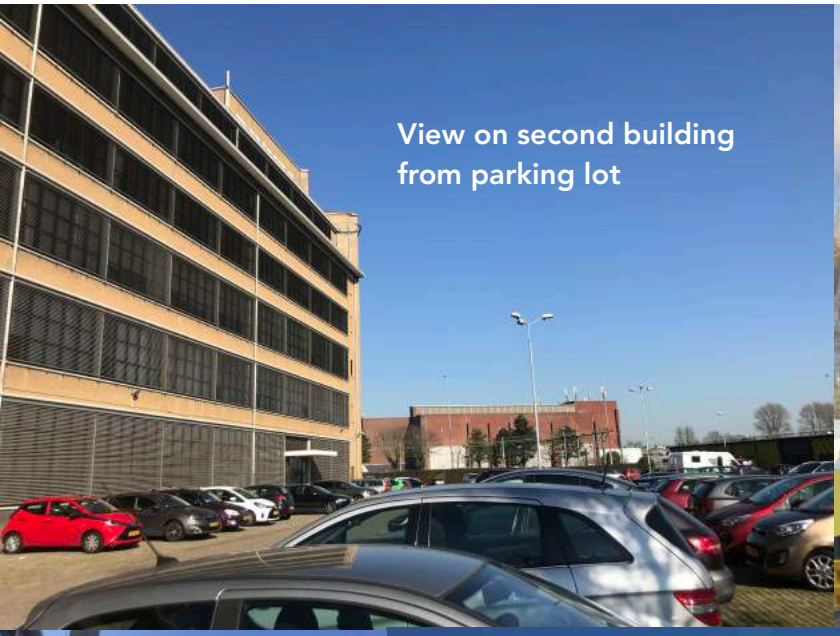

Meeting space and corridor


Common room with kitchen, co-working


Multifunctional space


Common room with co-working, relax, meeting and entertainment space

## Appendix 8: photos of Bink36

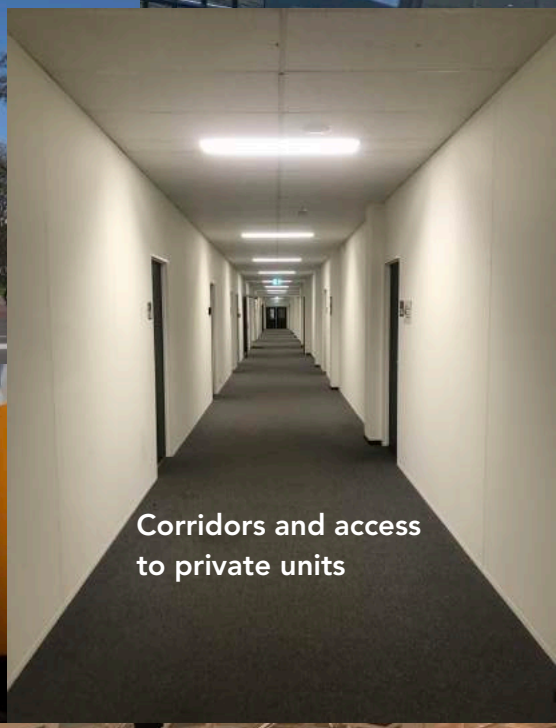


View on second building from parking lot

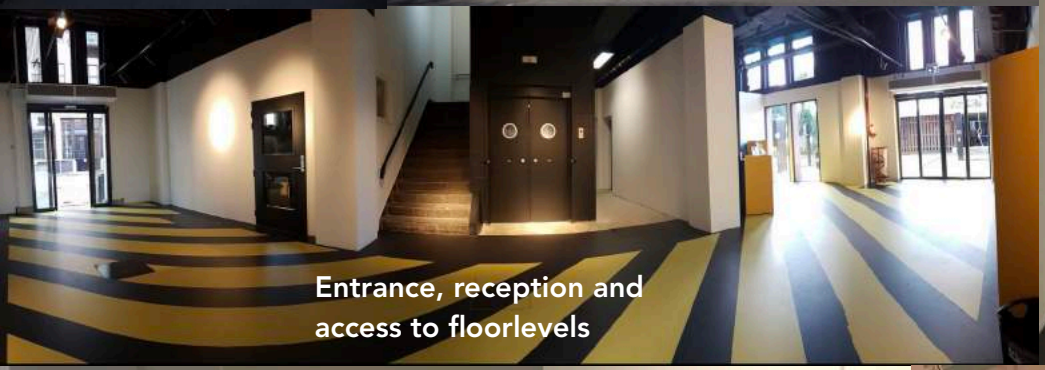

View on main entrance road of Bink36

View on bridge from in between the buildings

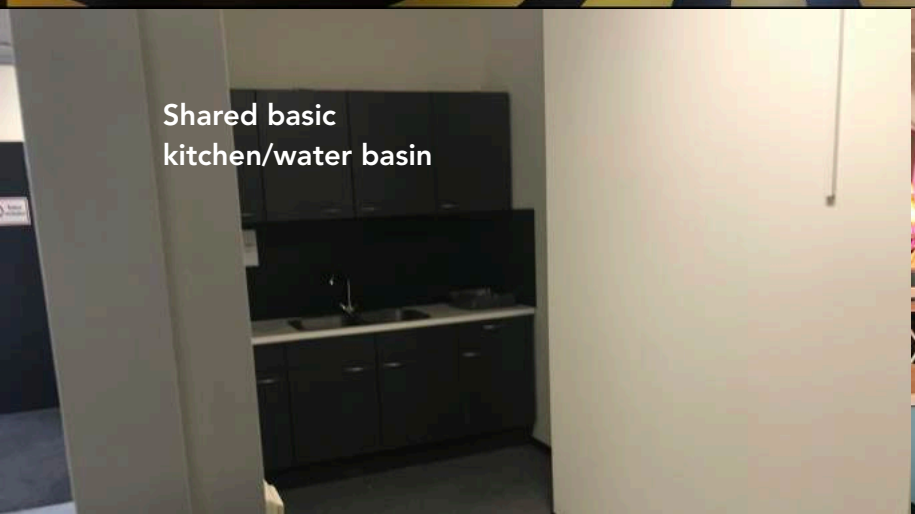

View on building from motorway



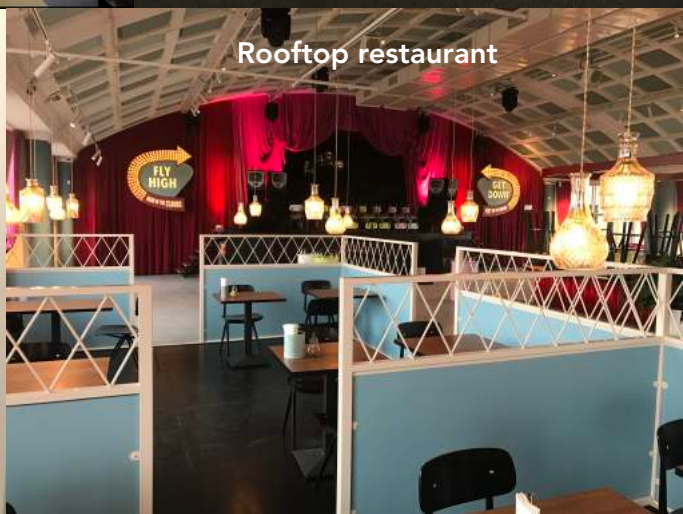
Corridors and access to private units



Entrance, reception and access to floorlevels



Shared basic kitchen/water basin




Rooftop restaurant