

# WOESTE BURGERS



## THE ATTRACTION AND RETENTION OF USERS TO URBAN INNOVATION DISTRICTS

AN ADVICE FOR THE MERWE-VIERHAVENS BASED ON LESSONS LEARNED AT STRIJP-S

MASTER THESIS - BRITT VAN DER ZANDT - JANUARY 2018 - TU DELFT

the 1990s, the number of people in the world who are illiterate has increased from 400 million to 600 million.

It is not only the number of illiterate people that has increased, but also the number of illiterate children. In 1990, 100 million children were illiterate. In 1995, the number of illiterate children had increased to 120 million. In 2000, the number of illiterate children had increased to 150 million. In 2005, the number of illiterate children had increased to 180 million. In 2010, the number of illiterate children had increased to 210 million.

The number of illiterate children in the world is increasing rapidly. This is a serious problem that needs to be addressed. The United Nations has set a goal of reducing the number of illiterate children in the world by 50% by 2015. This goal is ambitious, but it is necessary if we are to achieve the Millennium Development Goals.

There are many reasons why the number of illiterate children is increasing. One of the main reasons is that many children do not go to school. This is because their parents cannot afford to send them to school. In many developing countries, the cost of education is very high. Parents have to pay for books, uniforms, and other school supplies. They also have to pay for the teacher's salary. Many parents cannot afford to pay these costs, so their children do not go to school.

Another reason why the number of illiterate children is increasing is that many children are out of school. This is because they have to work to help support their families. In many developing countries, children are often forced to work in dangerous and unhealthy conditions. They work long hours for very little money. This prevents them from going to school.

There are many ways to reduce the number of illiterate children. One way is to make education free for all children. This would remove the financial barrier that prevents many children from going to school. Another way is to provide free school supplies and uniforms. This would also remove a financial barrier. A third way is to provide free meals for children in school. This would encourage children to go to school and help them to learn better.

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*Photo's cover + section covers: Ivar van der Zandt*



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## PREFACE

In front of you lies the final report of my graduation research, concluding the master 'Management in the Built Environment' at the Faculty of Architecture, Delft University of Technology. The research is conducted in the graduation lab 'Urban Innovation Districts', which is part of the domains Urban (Re)development Management and Real Estate Management.

The report presents the results of the research conducted to the user side of Urban Innovation Districts. Based on the lessons learned during the research conducted at Strijp-S, an advice is written for the development of the Merwe-Vierhavens in Rotterdam: an innovation district that is still in an early development stage. Hopefully, this report will provide the area managers of both Strijp-S and the Merwe-Vierhavens with new insights, helping them to better attract and retain users and realise more inspiring and successful innovation districts.

Ever since I have started the study of Architecture, I have been interested in the people side of architecture and the built environment. During my master, I discovered that the conceptual and strategic levels on which urban areas are developed match my interest, because it includes both creativity and management. The people side, creativity and management are perfectly combined in 'Urban Innovation Districts', the subject of the research.

Looking back at the graduation period, I am still thrilled with the choice of the subject. My interests were served very well in this research. It has been a period with ups and downs, but overall I look back at a challenging, fun and educational period. I enjoyed conducting the survey and interviews, and was pleasantly surprised by the enthusiasm of the interviewees and the participants of the focus group. And although I had visited Strijp-S many times already - since I was born and raised in Eindhoven - thanks to this research I got the chance to discover even more inspiring places and activities in the area.

I would like to thank my graduation mentors Yawei Chen and Flavia Curvelo Magdaniel for their time, feedback, and support during the last year. I have always experienced our meetings as being very motivational and helpful. Besides, I would like to thank all interviewees, respondents and the participants of the focus group. I am very thrilled that you were willing to help me with my graduation project. Finally, I would like to thank my friends and family for their support, and for making the last 6,5 years of studying very enjoyable.

Britt van der Zandt

Rotterdam, January 2018





## MANAGEMENT SUMMARY

### Introduction

As a result of the New Economy that has led to a change of location preferences of companies, cities have changed (Hutton, 2004, p.89). Instead of at R&D campuses, companies more often locate in inner cities. These locations are popular because they offer a critical mass of human capital, amenities and environmental conditions, enabling them to function as the ultimate enablers of innovation, entrepreneurship and growth (Graham and Marvin, 2000; Florida and Gertler, 2003 in Hutton, 2004; Florida, Adler & Mellander, 2016). Examples of these inner city locations are **Urban Innovation Districts (UIDs)**, which can be defined as *‘geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators’* (Katz & Wagner, 2014, p.1). The areas are usually physically compact, transit-accessible, and technically-wired, and offer mixed-use housing, office, and retail (Katz & Wagner, 2014, p.1).

Although success-stories are increasingly well documented, understanding of the causes and mechanisms behind these successes is often lacking (Van Winden et.al., 2013, p.76). One of the aspects underexposed in research is the people side, while research has stated that the presence of people in UIDs is crucial for innovation (Florida, Adler & Mellander, 2016, p.3). Not being able to attract and retain people will hamper the development of new products and ideas, the growth of skill-bases, the liveliness of areas, and the scope for high quality amenities, which are essential for the distinctive atmosphere characterizing UIDs. It is therefore important that area managers understand who the people are, what they need and how to position them.

As such, the research goal is to define possible improvements in the attraction and retention of users in UIDs, by understanding the users of UIDs, gaining insight how area managers steer on the attraction and retention of users, and improving the alignment between users and area managers. In line with these goals, the research question is:

*“What are the critical factors to successfully attract and retain people in Dutch Urban Innovation Districts, and how can area managers steer on the attraction and retention of these people?”*

The research focuses on UIDs in the Netherlands, where many vacant industrial buildings and areas with potential for redevelopment can be found. Since most of these can be seen as *‘re-imagined urban areas’* as defined by Katz & Wagner (2014), the research focuses on this type of UIDs. As such, lessons learned during the research can be applied to other Dutch areas as well.

The Merwe-Vierhavens in Rotterdam is an example of such a vacant industrial area, and is currently being redeveloped as an UID. The redevelopment is still in an early phase and proves to be difficult because the area is still partly used as harbour area. Therefore, an advice for the development of this area as an UID is written, dealing with the main challenges in the area. The advice is based on the research conducted at Strijp-S in Eindhoven: a successful UID that is already in an advanced development stage.

### Methodology

To be able to write an advice for the improvement of the attraction and retention of users in UIDs, first insight needs to be gained in the user types and -preferences, factors of attraction and retention per user-type, and strategies used by area managers to attract and retain users. These research objectives are translated into a conceptual model, shown in figure 1.

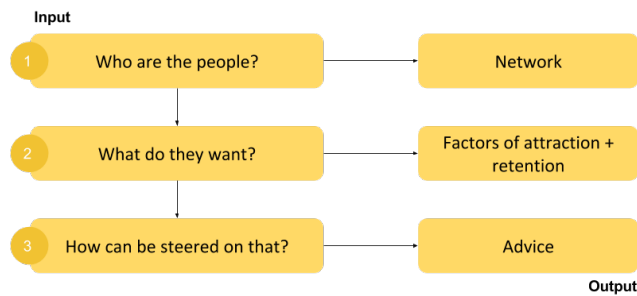


Figure 1. Conceptual model of the research structure (own illustration).

The research is designed as a case study research, in which the case of Strijp-S is studied in detail. At Strijp-S interviews with area managers, a survey, a focus group with users, and two micro cases are conducted. To test the applicability of the lessons learned at Strijp-S, they are applied to an area with different socio-economic characteristics, the Merwe-Vierhavens. An advice for the development of the area as an UID is written. Figure 2 shows an overview of the research design, including the different research methods.

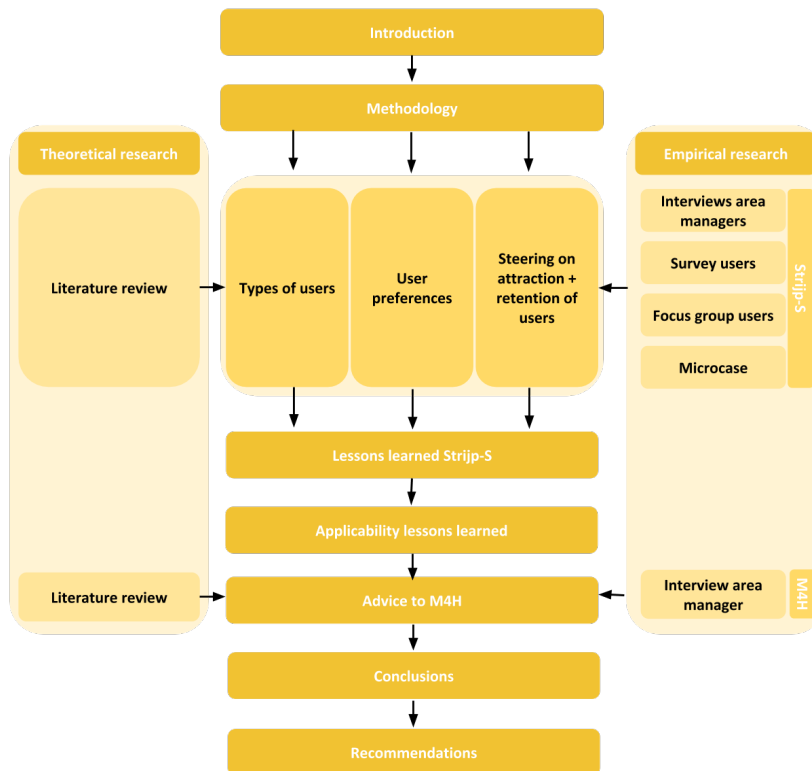


Figure 2. Research design (own illustration).

The research methods used are literature review, a survey, semi-structured interviews, two micro cases and a focus group. Literature review is used to gain insight in important subjects and for the definition of variables. The survey is used to gain insight in user preferences and -experiences at Strijp-S. The focus group is used to verify the results of the survey, and to further discuss user preferences and -experiences. Semi-structured interviews with area managers of Strijp-S and M4H are conducted to gain insight in the visions, target groups, and strategies and means used to attract and retain users. By means of the micro-cases, more insight was gained in the role Strijp-S plays in the development of starting enterprises.

## Theoretical framework

The goal of the theoretical framework is to gain insight in the types of users present in UIDs, their preferences, and strategies and means used by area managers to attract and retain them. The results are translated into variables as a basis for the empirical research.

### Innovation and urban development

Innovation is strongly related to the built environment, as the degree to which innovation can take place depends on the innovation environment, and thus on the urban environment. The main reasons for cities to develop UIDs are (1) to (re)develop unproductive parts of the city, (2) to attract, create, or retain talented individuals and innovative companies, and (3) to become or remain innovation hubs (Morisson, 2015, p.41).

Knowledge intensive activities facilitated by UIDs can also improve cities competitiveness (Morisson, 2015, p.65+66), which has become increasingly important as a result of structural changes taking place outside of the cities that are primarily beyond their control.

### Characteristics of UIDs

The main characteristic of UIDs is that they provide innovation ecosystems, resulting from a particular combination of physical, economical and social assets. Physical assets of UIDs encourage networking, and are designed to stimulate new and higher levels of connectivity, collaboration and innovation. Social assets in UIDs include restaurants and bars, and activities taking place in the area organised to strengthen relationships within similar fields of knowledge and build new, often cross-sector, networks between users. Economic assets in UIDs often include start-ups and entrepreneurs that drive innovation, incubators and shared working spaces that cultivate innovation, and coffee bars offering workplaces and hence complementing social interactions (Katz and Wagner, 2014, p.10).

UIDs reach their full potential when there is a balance between the three types of assets, combined with a supportive, risk-taking culture. Hence innovation ecosystems can be created, being '*synergistic relationships between people, firms and place that facilitate idea generation and accelerate commercialization*' (Katz and Wagner, 2014, p.10).

### Users of UIDs

Following the roles people can have in life (Frenkel, Bendit and Kaplan, 2013b, p.152) a distinction is made between residents (family), workers (work), and visitors (leisure). The presence of all three groups is essential for the success of UIDs. Workers are usually the first user group attracted, and hence determine the identity of the district. Residents are crucial for the liveliness and safety of the area at any time of the day. Visitors connect the district to the surrounding areas, create liveliness, and are part of branding.

The three groups are further divided into sub-groups for the analysis of their preferences. Within the group of workers, a division is made between companies and employees. Both play an important role in UIDs, but the way they see and value locations is presumably very different.

For companies, a further division is made based on sector (analytical, synthetic, symbolic, facilitator and services) and size of company (one-man company, start-up, small-, medium-, large company). For employees the same division of sectors is made. Besides, a division is made based on six life stages (students, starters, young families, families, empty nesters and elderly). For residents, the same division of life stages is made. In addition, a division is made based on income groups (low-, lower middle-, higher middle-, and high income). Lastly, for visitors a division was made based on purpose of visit (social activities, sports activities, cultural activities, purchases, and attractions). Besides, a division is made based on age groups in which some life stage groups are merged (age 18-30, 30-55, 55-70, and 70+).

### Attraction and retention of users in UIDs

Although some factors are considered attractive by all types of users, individuals value them differently and there is no one type of attractiveness. Table 1 gives an overview of the factors that – according to literature – are considered attractive per user group.

	Companies	Employees	Residents	Visitors
Factors considered attractive	Presence of other firms Business support Business community Business events Economic incentives Variety of amenities Social tolerance Accessibility Flexibility of space Costs + quality of space Quality of life for employees	Variety of amenities Social tolerance Accessibility Presence of other employees Business community Business events Employment opportunities Interaction Social diversity Economic incentives	Variety of amenities Social tolerance + openness Urban diversity Accessibility Safety Cleanliness Liveliness Presence of other people Costs + quality of space Employment opportunities Friendliness	Variety of amenities Variety of events Accessibility Urban diversity Safety Attractions Variety of restaurants + shops Image

Table 1. Factors of attraction per user group (own illustration).

A specific tenant mix that helps to build the identity of the area as a place to be for certain types of companies should be attracted (Van Winden and Carvalho, 2015, p.7). Morisson (2015, p.38+55) states that the ideal population breakdown of UIDs contains 30% creative and knowledge workers, 10% entrepreneurs, 5% artist, 15% students, 30% employees and 10% retirees and unemployed. The ratio of entrepreneurs, creative, and knowledge workers compared to the rest of the people living in the district should be 1:1.

### Steering on the attraction and retention of users in UIDs

UIDs do not arise spontaneously; the city plays an important role in the development instead. As such, area managers are able to steer on the attraction and retention of users. Several strategies and means can be deployed to attract and retain users to UIDs. Table 2 gives an overview of these strategies and means according to literature.

	Companies	Employees	Residents	Visitors
Strategies and means to attract + retain users	Offer a variety of amenities Organisation of events + activities Branding + marketing Involve users in the development process Offer business support, -events, and -communities Selection based on sector	Offer a variety of amenities Organisation of events + activities Branding + marketing Involve users in the development process Offer business support, -events, and -communities	Offer a variety of amenities Organisation of events + activities Branding + marketing Involve users in the development process Selection based on commitment to area Invest in culture + leisure opportunities	Offer a variety of amenities Organisation of events + activities Branding + marketing

Table 2. Strategies and means to attract users (own illustration).

### Variables

The results of the literature review can be translated into variables for users and variables for area managers, which serve as the input for the empirical research. The variables for users are divided into variables related to physical, economic, and social assets, following the division of Katz & Wagner (2014). Physical variables have further been clustered into variables relating to amenities, public space, building level and accessibility. Economic variables have been split into a group of variables relating to costs and expenditures and a group relating to the economic environment, mainly of interest for workers. Social variables are divided in variables related to the atmosphere and variables related to interactions.

The variables for planners are divided into variables related to vision, user groups, strategies and means to attract and retain target groups, user relations, and evaluation. ‘Vision’ is further divided into vision on the development of the area and vision on the way of developing the area. ‘User groups’ is split in target groups, present user groups, and future user groups. ‘Means to attract and retain users’ is further divided into strategies and means to attract users, and strategies and means to retain users. ‘User relations’ is further divided into user involvement, relations between users, and relation between users of the area and surrounding areas. Finally, ‘evaluation’ was for Strijp-S split in lessons learned and advice for future developments. For M4H it was split into potential and challenges.

### Empirical research

In this part of the research the user types and –preferences, and the strategies and means used by area managers at Strijp-S and M4H are studied.

#### Strijp-S

The preferences and experiences of users present at Strijp-S were identified based on empirical research. For each user type, successful factors of attraction and retention, and improvement were distinguished. Also strategies and means used by area managers to steer on the attraction and retention of users were discussed.

#### Success factors – factors of attraction and retention

When looking at all user groups in the same way, accessibility by public transport, location, and openness & tolerance, are the most successful factors of attraction and retention, followed by liveliness, cultural- and aesthetic amenities, and spontaneous interaction.

However, the importance of the presence of the four user groups should be weighted differently, as they have different functions in the area. In view of the long term, emphasis should be placed on the attraction and retention of workers and residents. Considering the importance of these groups, the most important factors of attraction and retention are accessibility by public transport, openness and tolerance, location, and liveliness.

With regards to the process of innovation emphasis should be placed on the attraction and retention of workers. As such, the most successful factors of attraction and retention include accessibility by public transport, openness and tolerance, location, liveliness, cultural- and aesthetic amenities, spontaneous interaction, the presence of other companies, affordability, image and innovativeness. Table 3 summarizes these factors.

Factors of attraction + retention	Long-term			Short-term
	Crucial for innovation		Supporting for innovation	
	Companies	Employees	Residents	Visitors
Accessibility public transport	x	x	x	x
Openness and tolerance	x	x	x	x
Location	x	x	x	x
Liveliness	x	x	x	
Cultural amenities	x	x		x
Aesthetic amenities	x	x		x
Spontaneous interaction	x	x		x
Presence other companies	x	x		
Affordability	x	x		
Image	x	x		
Innovativeness	x	x		
Internal accessibility			x	x
Accessibility private transport			x	x
Atmosphere			x	x
Housing type			x	
Social diversity				x
Planned interaction				x
Events				x
Friends/family				x

Table 3. Overview most successful factors of attraction and retention per user group.

During the analysis of the preferences and experiences per sub-group, some remarkable findings came forward. These relate to satisfaction, interaction, accessibility and amenities:

- Symbolic companies are more **satisfied** at Strijp-S than synthetic companies, while both types of companies are well represented in the area.
- Smaller companies value **interaction** more than larger companies.
- **Interaction** seems to be more valuable to older people than to younger people.
- Younger people seem to prefer public **transport**, while older people seem to prefer private **transport**.
- Companies and employees active in the symbolic sector seem to prefer public **transport**, while companies and employees active in the synthetic sector seem to prefer private **transport**.
- Companies and employees active in the symbolic sector seem to value cultural **amenities**, and to a lesser extent also aesthetic- and functional amenities, more than companies and employees active in the synthetic sector.

### Success factors – strategies and means for the attraction and retention of users

The strategies and means used to steer on the attraction and retention of users were identified based on the interviews conducted with area managers at Strijp-S. The most important ones for both the attraction and retention of all user types are steering on strong concepts, initiating activities and events, and providing room for initiatives. The most important strategies to steer on the attraction of all user groups are making a-cyclical investments, steering on magnets, establishing a cultural fund, and marketing and branding. The most important strategies to steer on the retention of all user groups are involving users in the development process, and steering on the preservation of the identity of the area. Table 4 gives an overview of all strategies and means defined and their applicability.

► Applicable to ▼ Strategies and means	Attraction (a) Retention (R)	Employees	Residents	Visitors
Steering on strong concepts	A + R	x	x	x
Activities & events	A + R	x	x	x
Provide room for initiatives	A + R	x	x	x
A-cyclical investments	A	x	x	x
Steering on magnets	A	x	x	x
Cultural fund	A	x	x	x
Marketing and branding	A	x	x	x
Involve users in development	R	x	x	x
Steer on the preservation of the identity of Strijp-S	R	x	x	x
Offering flexibility	A + R	x	x	
Community management	A + R	x	x	
Elevator model	A + R	x	x	
Offering cheap space	A	x	x	
New concepts	A	x	x	
Community management	R	x	x	
Accommodate growth of existing community	R	x	x	
Facilitating entrepreneurship	A + R	x		
Mats points for assigning dwellings	A + R		x	
Programming the connection with the city	A + R			x

Table 4. Strategies and means used to attract users to Strijp-S.

### Factors of improvement

When looking at all user groups in the same way, functional-, natural-, and recreational amenities need most improvement to attract and retain more users. However, again the importance of the presence of the four user groups should be weighted differently. With regards to the division between long-term and short-term visions, emphasis should be placed on improving the factors mentioned by the groups of workers and residents. These groups indicated functional-, natural-, and recreational amenities, costs for services, -goods,

and -space, accessibility by private transport, internal accessibility, and spontaneous interaction as factors of improvement at Strijp-S.

With regards to the process of innovation, emphasis should be placed on improving the factors seen as factors of improvement by workers. These include – next to the factors of improvement as mentioned above – meeting places in the public space, social diversity, openness & tolerance, and interaction between companies.

Factors of improvement	Long-term			Short-term
	Crucial for innovation		Supporting for innovation	
	Companies	Employees	Residents	Visitors
Functional amenities	X	X	X	x
Natural amenities	X	x	X	X
Recreational amenities	X	X	x	x
Costs for services and goods	X	x	x	
Costs for space	X	X	x	
Accessibility by private transport	X	X	X	
Internal accessibility	x	x	x	
Spontaneous interaction	x	X	X	
Meeting places in the public space	X	x		x
Social diversity	x	x		
Openness and tolerance	x	x		
Interaction between companies	x	X		
Tenure		X	x	
Flexibility of space	X			
Presence of a suitable labour pool	x			
Shared spaces in buildings			x	
Aesthetic amenities			x	

Table 5. Factors that need improvement in order to better attract and retain users.

### Merwe-Vierhavens (M4H)

The present user groups at M4H include mostly companies and employees, and some types of visitors. Residents are not present in the area yet, although housing will be realised on the short term. Target groups include larger production companies with a focus on innovation, a variety of middle- and high-income residents, and several types of visitors.

### Successes and potential

The successes and potential of M4H as UID are summarized in four main points:

- **Incubators:** The area houses several incubators and multi-company buildings, housing and supporting small entrepreneurs and start-ups.
- **Social innovation:** M4H has the potential to become a social UID. The area houses social companies involving residents of surrounding areas. Also the user community established several small initiatives, hence stimulating organic development.
- **Space for development:** In Rotterdam space for development is scarce, however M4H offers plenty. The area can serve manufacturing companies that need a lot of space, hence contributing to the image of Rotterdam as manufacturing city. Besides, the space can be used to solve part of the inner-city housing shortage in Rotterdam.
- **Living labs:** Plenty of public experimenting space will be offered in the area, enabling entrepreneurs, residents and visitors to experiment, innovate and learn, and at the same time discover the area.

### Challenges

There are currently some big challenges hampering the development of the area. These can be summarized in four themes:

- **Existing infrastructure:** The current infrastructure is designed for industry, and there is little space for slow traffic. Until 2025, port-related companies will still be active in the area. These companies come with strict regulations that clash with the

regulations for housing, making the realisation of a mix of working and housing though. Lastly, the physical relations with surrounding areas are bad.

- **Plan of approach:** There is only a very general plan of approach for the coming years, and no clear investing party.
- **Presence of a critical mass:** The critical mass of users that is needed to take the development to the next level is still missing.
- **Liveliness and interaction:** Interaction takes places within the many multi-tenant buildings, but is limited at area level. From the outside the area still looks like the industrial area it used to be before, and is not experienced as a lively area.

## Advice

The comparability of Strijp-S and M4H and the applicability of the lessons learned at Strijp-S to the challenges at M4H are discussed first. Then, the actual advice is presented.

### Input advice

Strijp-S and M4H have similarities and differences that make Strijp-S a suitable case for the distraction of lessons learned and M4H a suitable case for the application of lessons learned. However, there are also some important differences between the areas that might influence the effectiveness of the advice. These can be clustered in three groups, relating to history, location and demographics.

Regarding **history**, all buildings at Strijp-S were owned by Philips, while M4H was owned by multiple harbour companies. As a result, Strijp-S became available for redevelopment at once, while M4H becomes available for redevelopment piece by piece. Therefore, the redevelopment of M4H will take longer than the redevelopment of Strijp-S.

Regarding **location**, Strijp-S located at walking distance from the city centre, while M4H is located at cycling distance from the city centre. This has consequences for the natural passage and inflow of users to the areas.

Regarding **demographics**, Strijp-S mainly serves starters and empty nesters – people without children – with middle-incomes, while M4H will serve a broader group of residents, including (young) families. Besides, the residents of the surrounding areas of M4H can be seen as a more vulnerable group than the residents of the surrounding areas of Strijp-S. This makes social inclusion at M4H harder but more important as well. Although the development of M4H as an UID is still in an early phase, social inclusion has already been managed better than at Strijp-S.

For each challenge defined for M4H, the applicability of the lessons learned at Strijp-S is discussed by addressing similarities and differences between the areas regarding some sub-challenges. Hence, it could be determined if and how the lessons learned at Strijp-S can be used in the advice for M4H.

### Advice

Based on the similarities and differences between Strijp-S and M4H, and the applicability of the lessons learned from Strijp-S to the main challenges defined for M4H, the advice for the development of M4H as an UID can be written. For each sub-challenge focus points that should be taken into account by area managers to deal with the challenge are defined. For each focus point, also potential strategies and means are proposed. These are all summarized by table 6 to 9.



## (1) Existing infrastructure

Sub-challenge	Focus points	Potential strategies and means
Actual infrastructure	Slow traffic	Construct slow traffic lanes in and to the area, to improve walkability and bikeability. Create interesting routes for cyclists and pedestrians. Herein the location of the area along the water could be used.
Physical relation with surrounding areas	Development of the boundaries of the area	Create amenities or functions at the boundaries of M4H where activities interesting for residents of surrounding neighbourhoods as well take place.
	Accessibility/ connection city centre	Create connections with bus, metro or tram between the city centre, surrounding areas and M4H, in order to improve accessibility with public transport. Create connection by car with the city centre, surrounding areas and M4H, in order to improve accessibility with private transport. Besides, make sure the area provides enough and affordable parking spots. Create interesting cycling routes between the area and the city centre.
Realise housing next to harbour companies	Experimental housing	While housing still cannot be realised on a large scale, where possible experiment with (temporary) housing to improve the liveliness of the area at any time of the day.

Table 6. Focus points and potential strategies and means to deal with the existing infrastructure.

## (2) Plan of approach

Sub-challenge	Focus points	Potential strategies and means
Clear plan of approach	Determine directions and actions	Define directions for the long-term development, and actions for the short-term development. Hence, the plan will remain flexible and can be adjusted to the current situation.
	Involve users in the development of the plan	Reflect on the plan on a frequent basis, and adjust the next actions to the current priorities and needs. Organise brainstorm sessions with users, and ask them what they need, want, and what is next according to them. Outsource parts of the plan to companies present in the area.
Clear investing party	Divide tasks, risks, investments and responsibilities	Establish a 'Board of Inspiration', including the main investing parties. Preferably involve both private and public parties. Divide tasks, risks, investments and responsibilities among the members of the 'Board of Inspiration'.

Table 7. Focus points and potential strategies and means to deal with the plan of approach.

## (3) Liveliness and interaction

Sub-challenge	Focus points	Potential strategies and means
Interaction on area level	Shared spaces	Create shared spaces in the public space where people can meet. Make all building plinths publicly accessible, so people can see by themselves what is going on in the buildings.
	Activities and events	Organise area-wide activities and events for different types of users. Provide space for user initiatives. Establish a cultural fund in which the managing parties invest, to support cultural initiatives.
Transparency of present people, activities and places	Transparency within the area	Create an app or website that gives a complete overview of the people (i.e. companies, entrepreneurs), activities (i.e. festivals, exhibitions) and places (i.e. amenities, meeting places) in the area. Organise area-wide activities and events for different types of users.
	Transparency outside the area	Use social media to update people about the people (i.e. companies, entrepreneurs), activities (i.e. festivals, exhibitions) and places (i.e. amenities, meeting places) in the area. Organise activities for residents of surrounding areas and other people interested in the development to update them about what is going on in the area.

Table 8. Focus points and potential strategies and means to deal with the lack of liveliness and interaction.

#### (4) Critical mass

Sub-challenge	Focus points	Potential strategies and means
Attract workers, residents and visitors	Accessibility/ connection city centre	Create connections with bus, metro or tram between the city centre, surrounding areas and M4H, in order to improve accessibility with public transport. Create connection by car with the city centre, surrounding areas and M4H, in order to improve accessibility with private transport. Besides, make sure the area provides enough and affordable parking spots. Create interesting cycling routes between the area and the city centre.
	Recreational-, functional- & cultural amenities	Make a-cyclical investments, by investing in amenities already before residents are present in the area. Provide space for user initiatives. Establish a cultural fund in which the managing parties invest, to support cultural initiatives.
	Openness and tolerance	Offer a variety of working places, dwellings, price ranges, events, activities, and amenities to attract a diversity of workers, residents and visitors.
Attract workers	Diversity of companies	Steer on concepts or sectors in the attraction of companies and employees (community management). Offer a variety of workspaces to attract a diversity of workers.
	Interaction between companies	Steer on concepts or sectors in the attraction of companies and employees (community management). Initiate business events for several types of companies and employees. Create shared facilities and spaces where people can meet.
Attract residents	Interaction on building level	Establish a residents association. Organise activities and events for residents. Create shared facilities and spaces where people can meet.
Attract residents and visitors	Interaction on area level	Organise area-wide activities and events for different types of users. Create transparency of activities going on in other buildings. Create meeting places in the public space where people can meet. Create recreational amenities that stimulate interaction.

Table 9. Focus points and potential strategies and means to deal with the attraction of a critical mass.

In order to be able to deal with the other challenges first a plan of approach needs to be made, containing directions and actions that are needed to deal with the other challenges. It is important to point out that the challenges should not be seen as separate steps that need to be dealt with one by one, but as organic processes instead. During the development, the plan of approach can be adjusted based on the current supply and demand in the area. Also the challenges of infrastructure, a critical mass, and liveliness and interaction are intertwined; they could not be dealt with without organising the other challenges as well.

## Conclusions

In the last part of the research, the conclusions, recommendations and reflection are discussed.

### Conclusions

The critical factors to successfully attract and retain people in Dutch UIDs are mainly a variety of amenities, location, accessibility, openness and tolerance. These factors are important for the attraction and retention of workers, residents as well as visitors.

Furthermore, for the attraction and retention of workers, also the presence of other companies and employees, business events, costs for space, and interaction between companies and employees have proven to be crucial. In the attraction and retention of residents, next to the general factors also size of housing, diversity of people, interaction with neighbours, and liveliness prove to be critical. Lastly, for the attraction and retention of visitors next to the general factors activities and events are critical as well.

To steer on the attraction and retention of users, area managers can use several strategies and means. Some of these are applicable to workers, residents as well as visitors. These include organising events and activities, involving users in the development process, branding and marketing, steering on magnets, making a-cyclical investments, establishing a cultural fund, steering on the preservation of the identity, and providing room for user initiatives.

Some strategies and means are applicable to some user types only. As such, community management, accommodating growth, offering affordable space, and offering new rental concepts are applicable to the attraction and retention of workers and residents. In addition, facilitating entrepreneurship can be used to attract and retain workers. Lastly, programming the connection with the city can be used to attract and retain visitors.

### Recommendations

Some recommendations with regards to practice and further research can be distinguished. Both are discussed below.

The recommendations for practice are as follows:

- The advice for M4H is based on the lessons learned from Strijp-S. However, considering the ways in which the areas became available for redevelopment, the situation at M4H can be considered more realistic.
- The advice for M4H focuses on four main challenges. However, these are not the only things that should be improved to turn the area into a successful UID.
- The advice should be seen as a guideline for the development of M4H providing direction and defining priorities, not as a strategy that is ready for use.
- The most suitable way of developing UIDs always depends on an area's history, location and demographics, and is thus always case-specific.
- Area managers should especially focus on the attraction and retention of workers, as this is the most important user group for the main goal of UIDs: innovation.
- In the development of UIDs, it is essential to involve users. Hence, area managers are able to respond to their needs and wishes. A condition for this is a plan of approach that includes room for flexibility.

The recommendations for further research are as follows:

- To provide a more complete and detailed advice, the same empirical research that was conducted at Strijp-S should be conducted at M4H as well.
- By means of conducting a user survey at M4H as well, the ratios of the user groups can be determined.
- To increase the validity of the research, more interviews and focus groups could be conducted. Also the survey could be conducted amongst more users.
- It would be interesting to conduct the same research at Strijp-S in 5 or 10 years. Hence, differences between user groups, -preferences and -experiences can be identified, and social inclusion and gentrification could be better researched.
- It would be valuable to conduct the same type of research for the 'anchor plus model' and the urbanized science park model' as well, so the user preferences of the different models can be compared.
- It will be interesting to further research social inclusion in UIDs, and the ways in which area managers can stimulate social inclusion and deal with gentrification.

### Reflection

Strijp-S and M4H are both considered re-imagined urban areas according to the definition of Katz & Wagner (2014). However, after having studied both cases there prove to be some significant differences between the areas that influence the effectiveness of strategies and means that can be used by area managers. It can therefore be concluded that in this respect the division of innovation districts into three types is too general.

Therefore, a suggestion is made for an adaption of the model, including a more specific sub-division of areas. This sub-division is made based on the history (influencing the time-span in which areas become available for development), the location (influencing natural passage), and the demographics (influencing the importance of social inclusion) of the area.

With the help of table 10, 18 sub-type of re-imagined urban area can be distinguished. First determine the time-span in which the whole area becomes available for development, thereafter determine the distance to the city centre, and lastly determine the demographics of surrounding areas.

1	2	3
Time-span in which the complete area becomes available for development	Distance to city centre	Demographics surrounding areas
Short (less than 5 years) Medium (5 to 10 years) Long (more than 10 years)	Walking distance (under 1,5 km) Cycling distance (1,5-5 km) Riding distance (over 5 km)	Vulnerable groups Middle- or higher income groups

Table 10. Step-by-step plan to determine the sub-type of re-imagined urban area.

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## READING GUIDE

The research is built up around six parts. The contents of these parts of the research will be described shortly.

### Part 1: Introduction

This part addresses the choice for the subject 'Urban Innovation Districts' and the problem definition. Also the research goal and the research question, the research scope, the deliverables, and relevance are discussed.

### Part 2: Methods

In this part the strategies and methods that will be used during the research are discussed. The research objectives, conceptual models, the research sub-questions and the research strategy are described. Also the research methods, the development of the advice for the Merwe-Vierhavens, the validity and generalizability of the research are discussed.

### Part 3: Theoretical framework

This part presents the literature review that was conducted. Important concepts are introduced and variables that are defined based on this literature review are discussed. These variables are used as the basis for the empirical research that is conducted later in the research.

### Part 4: Empirical research

In this part the results of the theoretical framework are applied in practice. The focus is on the case of Strijp-S, in which user preferences and -experiences, and strategies and means used by managers during the development of the area are researched by means of several empirical research methods.

### Part 5: Results

To verify the circumstances under which the lessons learned from Strijp-S case are applicable, the lessons are applied to an area with different socio-economic characteristics: the Merwe-Vierhavens. An advice for the development of this area as a successful UID is written.

### Part 6: Conclusions

In the final part, the main question and the sub-questions are answered, and the limitations of the research are discussed. Also some recommendations for practice and further research are given. The reflection looks back at the research process and –project.



A photograph of an industrial facility, possibly a refinery or chemical plant. The image shows a complex network of dark metal beams and pipes, with a prominent vertical pipe running through the center. The structure is set against a light sky and a white building with windows on the right. A semi-transparent white horizontal band is overlaid across the middle of the image, containing the word 'INTRODUCTION' in yellow, uppercase, sans-serif font.

# INTRODUCTION

## 1. INTRODUCTION

This chapter addresses the choice for the subject 'Urban Innovation Districts' and the problem definition. Subsequently, the research goal and the research question, the research scope, the deliverables, and relevance are discussed.

### 1.1. Subject choice

As a result of the New Economy – being the rapid growth of information and communication technologies (ICT) since the 1990s – cities have changed (Hutton, 2004, p.89). This is mainly because of the three new elements of this economy, which have led to the change of location preferences of companies. The first element is the extent and scale of new industry developing within the inner city, as well as the variegation of New Economy districts, sites, and production ensembles. The second element is the nature of industries and firm types having hybridised, incorporating both design n-oriented advanced-technology industries (such as internet services, software design, and computer imaging), and technology-intensive creative and cultural services, (including graphic design, industrial design, and architecture). The third element is the new division of production labour (social, spatial and technical), being associated with inner city industrial clusters (Hutton, 2004, p.106).

In the New Economy, value is generated by human creative capabilities instead of by physical labour (Florida & Kenney, 1993 in, Morris, 2015, p.8). The barriers that once separated innovation from production are removed (Morisson, 2015, p.9). As a result, the value in different industries has shifted from zones dominated by hardware producers to places that can sustain innovation in software and content (Florida, Adler & Mellander, 2016, p.11). In other words, companies more often locate in inner cities instead of at the Research and Development campuses they were commonly located before.

The combination of the focus on knowledge, innovation and creativity, and the occurrence of global trends towards globalization, sustainability, open innovation, communications, and media technologies make inner cities attractive again (Morisson, 2015, p.36). Inner cities are mainly popular for companies to settle because they offer a critical mass of human capital, amenities and environmental conditions, enabling them to function as ultimate enablers of innovation, entrepreneurship and growth (Graham and Marvin, 2000, p.78; Florida and Gertler, 2003 in Hutton, 2004, p.90; Florida, Adler & Mellander, 2016, p.11). Also, inner cities provide different kinds of proximity, making them suitable for the creation of knowledge exchange and innovation networks (Van Winden and Carvalho, 2015, p.5).

Examples of inner city locations where companies and entrepreneurs often choose to settle are Urban Innovation Districts (UIDs). These can be defined as *'geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators'* (Katz & Wagner, 2014, p.1). The districts are the manifestation of mega-trends altering the location preferences of people and firms and, in the process, re-conceiving the very link between economy shaping, place making and social networking (Katz & Wagner, 2014, p.1). Innovation districts are usually physically compact, transit-accessible, and technically-wired, and offer mixed-use housing, office, and retail (Katz & Wagner, 2014, p.1).

The term 'Urban Innovation District' is a specific term; others refer to similar areas as 'Creative Districts', 'Creative Factories', 'Science Quarters', 'Open innovation campuses' etc. While some areas are officially labelled as UIDs, in practice there are other areas that have the same characteristics, but are not labelled as 'Urban Innovation District'. European examples of UIDs are 22@Barcelona, Digital Hub in Dublin and Silicon Roundabout in

London. Dutch examples are Strijp-S in Eindhoven, the Rotterdam Innovation District and the Central Innovation District in The Hague.

Innovation districts thus play an important role in the current time that deals with global trends towards globalization, sustainability, open innovation, communications, and media technologies. They serve the changing needs and wishes of people as a result of these trends by bringing together knowledge, innovation and creativity. As such, they facilitate the generation of new ideas, and are seen as essential locations in the knowledge economy (Morisson, 2015, p.39). This research is aimed at gaining more insight in how exactly innovation districts serve peoples needs and facilitate the generation of new ideas.

## 1.2. Problem definition

UIDs are developing fast and prove to be very important for cities in current times of globalisation and emerging new technologies. However, the research conducted in UIDs is still limited. Although success-stories are increasingly well documented, understanding of the causes and mechanisms behind these successes is often lacking (Van Winden, De Carvalho, van Tuijl, van Haaren & Van den Berg, 2013, p.76).

One of the aspects underexposed in research and case studies is the people side, while research has stated that the presence of people in UIDs is crucial for innovation (Florida, Adler & Mellander, 2016, p.3). Yigitcanlar, Baum & Horton (2007, p.6) even state that people are the motor of social and economic growth and urban development, and that the key to regional growth lies in concentrating a critical core of highly educated and productive people, also known as knowledge workers. For policy makers, understanding the preferences of knowledge workers is thus important to propose policy measures for attracting and retaining them, while mitigating potential suburbanization effects (Frenkel, Bendit & Kaplan, 2013b, p.152).

Not being able to attract and retain people will hamper the development of new products and ideas, the growth of skill-bases, the liveliness of areas, and the scope for high quality amenities, while these are in fact factors essential for the distinctive atmosphere that characterizing UIDs. This atmosphere is key to the success of UIDs, contributing to the attraction and retention of more workers, residents and visitors, and the growth and further development of these areas.

In order to create successful and attractive UIDs it is important for area managers to understand who the people are, what they need and how to position them.

## 1.3. Research goal and research question

The main goal of the research is to define possible improvements in the attraction and retention of users in UIDs, in order to realise optimal innovation ecosystems, improve urban competitiveness and fill part of the gap in literature about user preferences. This goal can be divided into 3 sub-goals: (1) to understand the users of UIDs, (2) to gain insight how area managers steer on the attraction and retention of users, and (3) to improve the alignment between users and area managers.

### *Understanding the users*

On the user side, the research is aimed at providing better understanding of who the users of UIDs are, what they need and how to position them in the development of UIDs. Understanding the preferences of different types of users is crucial to achieve a balanced mix of users, which can strengthen innovation ecosystems, and in turn result in better attraction and retention of more users.

By understanding the differences between groups of users, specific factors of attraction and retention for these groups can be determined. These factors of attraction and retention will be divided into physical, social (networking) and economical factors, following the types of assets as defined by Katz & Wagner (2014).

#### *Gain insight in the management of the attraction and retention of users*

Not only users benefit from a balanced mix of users and good functioning innovation ecosystems. Since innovation districts play an important role in urban competitiveness, and their success is determined by innovation ecosystems and a mix of users, these are important for area managers as well. These conditions contribute to the attractiveness of areas for users and companies, resulting in more people visiting and settling in the area. The image of an area as an UID can hence be strengthened and the development of the area can be accelerated. Since UIDs are manufacturable and area managers determine the strategies and means used to attract and retain users, it is important to gain insight in the management as well.

#### *Alignment between users and planners*

Alignment between users' preferences and area managers' strategies and means is crucial to improve the attraction and retention of particular users in UIDs. Area managers being able to better respond to the needs and wishes of target groups eases the creation of a balanced mix of users, contributing to optimal innovation ecosystems, a liveliness atmosphere, and growth. This is beneficial for both users and area managers. The process of attracting and retaining users is thus interplay between users and area managers and both will take advantage of better alignment.

In line with these three goals, the main research question is:

***“What are the critical factors to successfully attract and retain people in Urban Innovation Districts in the Netherlands, and how can area managers steer on the attraction and retention of these people?”***

Herein, *'critical factors'* are seen as specific reasons for people to choose to visit or settle in an area. *'Successfully attract and retain people'* is seen as convincing different types of users to repeatedly visit or settle in UIDs. *'Area managers'* are seen as all people and parties professionally involved in the development of UIDs.

This question will be answered by means of theoretical- and empirical research conducted in two Dutch cases: Strijp-S in Eindhoven and the Merwe-Vierhavens in Rotterdam. The methods will be further discussed in chapter 2.

## 1.4. Research scope

Based on location, characteristics and the represented industries, Katz and Wagner (2014) distinguish three UID models: the 'anchor plus model', the 're-imagined urban area model' and the 'urbanized science park'. These models will be discussed further in chapter 3.

This research focuses on UIDs in the Netherlands, since several new UIDs are currently being developed here, but little research to these areas has been conducted so far. Besides, the Netherlands has many vacant industrial buildings and areas with potential for redevelopment. Redeveloping these areas and buildings will contribute to the formation of more innovation ecosystems, and therefore to more attractive and successful places.

Since most vacant industrial buildings and areas in the Netherlands match best with the re-imagined urban areas model as defined by Katz & Wagner (2014), the research will focus on

this type of innovation districts. As such, lessons learned from the case studies in this research can be applied to the redevelopment of other buildings and areas in the Netherlands as well.

The Merwe-Vierhavens area in Rotterdam is an example of a Dutch vacant industrial area that is currently being redeveloped as an innovation district. The redevelopment of this area is still in an early phase and proves to be difficult as still some industrial functions are located in the area. As a result, the attraction and retention of different types of users to the area happens to be difficult as well. Hence, it will be useful to write an advice for the attraction and retention of users in the Merwe-Vierhavens.

This advice will be based on research conducted at Strijp-S in Eindhoven. Strijp-S is a former industrial area that is currently in an advanced development stage. Many different types of users are present in the area, and it is considered a successful Dutch innovation district. By means of interviews, a survey and a focus group with users, urban planners and policy makers, lessons learned from this case can be applied to the case of the Merwe-Vierhavens. The cases and methods will be further discussed in chapter 2.

## 1.5. Deliverables

To be able to realise successful and attractive places that enable innovation ecosystems, and successfully redevelop the significant amount of vacant industrial buildings and areas in the Netherlands, insight needs to be gained in the people side of UIDs. By researching who the people in Dutch innovation districts are, what they need, and how to position them, an advice can be drawn for the development of innovation districts in the future.

The advice will specifically written for the area managers of the Merwe-Vierhavens in Rotterdam. The advice might help managers to provide directions and hence structure and ease the development process. Some recommendations in the advice might be applicable to the development of other Dutch innovation districts as well.

## 1.6. Relevance

Regarding the relevance of the research, the societal relevance and the scientific relevance can be distinguished. Both will be shortly discussed.

### 1.6.1. Societal relevance

Writing an advice that might simplify the redevelopment of industrial areas and buildings will be useful, since there are several vacant industrial buildings and areas that are suitable for redevelopment in the Netherlands. Easing the redevelopment process of these areas, especially the people part, contributes to the realisation of more successful, inspiring and attractive places.

Both area managers and users will take advantage of the advice. Managers will be able to better respond to the needs and wishes of users, and hence better steer on the attraction and retention of target groups. In this manner the innovation ecosystem in the area can be improved, resulting in innovation, growth, and the attraction of talented people, which can in turn improve urban competitiveness. This will enable users to reach the ultimate level of innovation and self-development. Therefore, user satisfaction will be higher as well. The process is thus interplay between users and area managers.

Since successful and attractive UIDs stimulate the development of new ideas, innovation, and the formation and growth of new companies, the advice will indirectly improve the city

competitiveness of Dutch cities as well. When multiple successful innovation districts can be realised in the Netherlands, even the national competitiveness might be improved.

#### 1.6.2. Scientific relevance

During the last years, quite some researchers focussed on the subject of UIDs. As Van Winden et. al. (2013, p.76) state, success-stories of Urban Innovation Districts are increasingly well documented. However, understanding of the causes and mechanisms behind these successes is often lacking.

Besides, CoreNet (2013, p.5) states that it is becoming increasingly important to gain insight in the wishes and needs of users. They even indicated that users often find that real estate owners and developers do not listen to their needs and wishes (CoreNet, 2013, p.5).

On a scientific level, by researching the user perspectives with the corresponding preferences and needs, this research will add theory about the people side of Urban Innovation Districts. Hence, it will fill part of the gap in literature.









# METHODS

## 2. RESEARCH DESIGN & METHODOLOGY

In the previous chapter, the subject choice, problem definition, research question, and the research goals have been discussed. Also, the deliverables and the relevance have been addressed. This chapter presents the strategies and methods that will be used in order to research the user preferences and experiences in the case of Strijp-S, and to write an advice for the area managers of the Merwe-Vierhavens.

The research objectives and conceptual models will be discussed, followed by the sub-questions and the research strategy. Subsequently, the research methods and the development of the advice are discussed. The chapter closes with an elaboration on the validity and generalizability of the research.

### 2.1. Research objectives

To be able to write an advice about the improvement of the attraction and retention of users to UIDs, first insight needs to be gained in UID users in general. The research objectives that are connected with this aim are (1) to gain insight in the different types of users of UIDs and (2) to gain insight in the preferences of these different types of users. Besides, the objectives aiming at gaining insight in the managers' side of UIDs contain (3) to gain insight in the strategies used by urban planners and policy makers to attract and retain users and (4) to define possible improvements. In figure 3 and 4, the objectives are translated into conceptual models, which present the structure of the research as well.

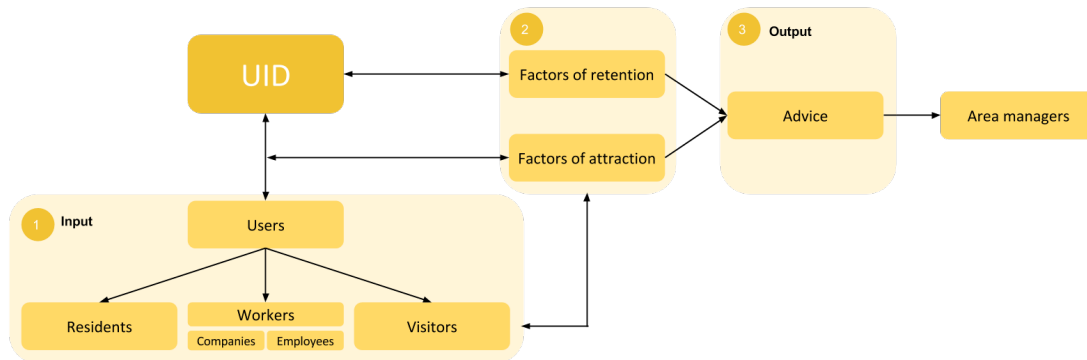


Figure 3. Links between the 3 parts of the research in relation to UIDs (own illustration)

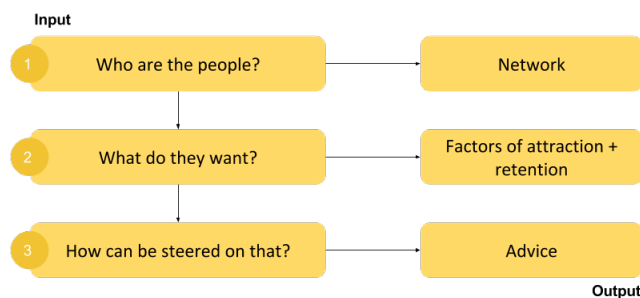


Figure 4. Conceptual model of the research strategy (own illustration)

### 2.2. Research sub-questions

The research question as was formulated in the introduction will be answered step-by-step by answering five sub-questions. For each part of the conceptual model (Figure 4), some sub-questions were formulated. Per question, the purpose, the outcome and the method of data collection will be shortly discussed.

## 1 Who are the people?

- (1) Who are the people meant to use UIDs?
  - Applicable to: Strijp-S + Merwe-Vierhavens
  - Outcome: This question will help to construct an overview of target groups of UIDs in which the relations between users can be defined.
  - Data collection: To answer this question, a stakeholder analysis will be made based on literature, and interviews with area managers of Strijp-S and the Merwe-Vierhavens.
- (2) Who are the people using UIDs?
  - Applicable to: Strijp-S + Merwe-Vierhavens
  - Outcome: This question will help to construct an overview of present users of UIDs in which the relations between users can be defined.
  - Data collection: To answer this question, a stakeholder analysis will be made based on literature, a survey conducted with users of Strijp-S, and interviews with area managers of Strijp-S and the Merwe-Vierhavens.

## 2 What do they want?

- (3) What are the physical, economical and networking factors of attraction and retention for the different types of users of UIDs?
  - Applicable to: Strijp-S
  - Outcome: This question will result in an overview of factors of attraction and retention. With the help of the stakeholder overview constructed in the first part, factors of attraction per cluster (residents, workers, visitors) can be distinguished.
  - Data collection: This question can be answered by means of a survey, a focus group with users, two microcases and studying literature.

## 3 How can be steered on that?

- (4) How do area managers steer on the attraction and retention of people to UIDs?
  - Applicable to: Strijp-S + Merwe-Vierhavens
  - Outcome: This question will provide an overview of the strategies and means that are used by area managers to steer on the attraction of users in UIDs.
  - Data collection: To answer this question, interviews with area managers of Strijp-S and M4H will be conducted, and literature will be reviewed.
- (5) How can area managers better steer on attracting and retaining people in UIDs?
  - Applicable to: (Strijp-S) + Merwe-Vierhavens
  - Outcome: An advice for the area managers of the Merwe-Vierhavens (and Strijp-S) how to better steer on the attraction and retention of people.
  - Data collection: To answer this question, a comparison between the factors of attraction and retention distinguished in part 2 and the strategies and means distinguished in part 3 will be made.

### 2.3. Research strategy & design

A research strategy is a general orientation to the conduct of social research, which can be quantitative or qualitative (Bryman, 2012, p.35). The research is mainly focussed on the preferences, behaviour and perception of users, and is therefore mostly qualitative. In qualitative research an inductive approach is emphasized to the relationship between theory and research, so emphasis is placed on the generation of theories (Bryman, 2012, p.36). This is in line with the gap in literature as discussed before, since by carrying out case studies theories can be added to the existing literature.

However, the analysis of the data that is conducted by means of the survey amongst users of Strijp-S is quantitative.

A research design provides a framework for the collection and analysis of data. The choice for a research design reflects decisions about the priority of particular dimensions of the research process (Bryman, 2012, p.46). This study is a case study research, in which the case of Strijp-S is analysed in detail. To verify the lessons learned at Strijp-S and research under which conditions these lessons are applicable, they will be applied to a case with different socio-economic characteristics: the Merwe-Vierhavens. Based on the lessons learned, an advice for the development of the Merwe-Vierhavens as an innovation districts will be written. Figure 5 shows an overview of the research design.

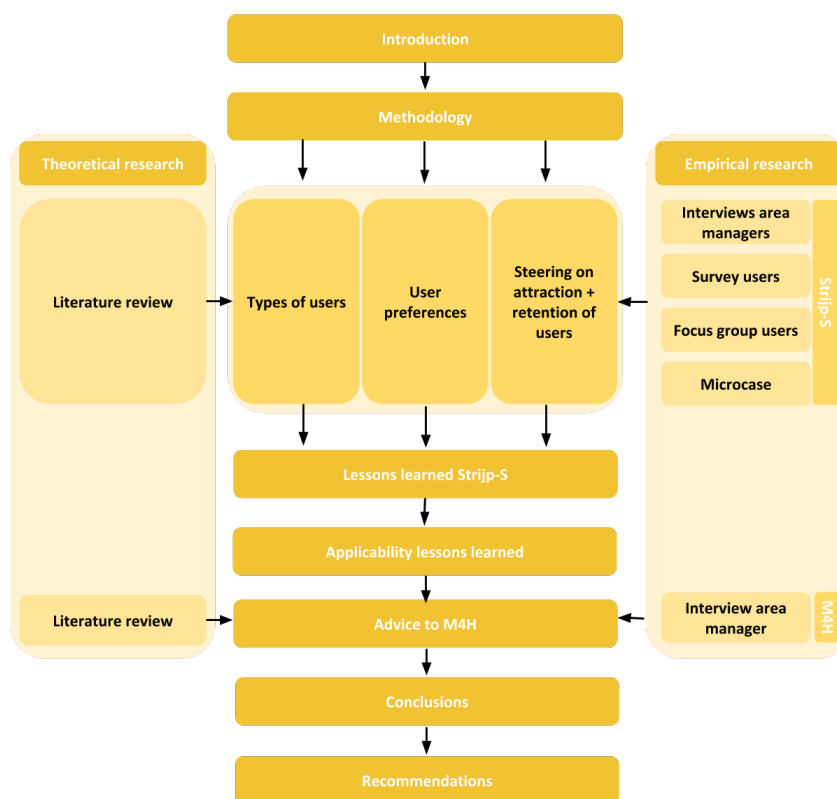


Figure 5. Research design (own illustration).

### 2.4. Cases

Two cases are selected for an analysis of user types, factors of attraction and retention, and strategies and means used to steer on the attraction and retention of users are analysed.

Strijp-S is the 'example case', in which empirical research will be done to identify user preferences, -experiences and strategies and means used by area managers during the development process. The conditions under which the lessons learned from Strijp-S are applicable are verified by means of applying them to another socio-economic area: the

Merwe-Vierhavens. Based on the lessons learned at Strijp-S, an advice will be written for the development of the Merwe-Vierhavens as an innovation district.

The Merwe-Vierhavens is chosen as the case for which the advice is written, because of the following reasons:

- The area is being redeveloped as an Urban Innovation District.
- The development of the area is still in an early stage, therefore the advice can still be used during the development.
- The development of the area, including the attraction and retention of users, proves to be hard. This is because of harbour-related functions that are still located in the area, which are connected to strict regulations and thereby hampering the development of other functions in the area.
- Not all types of users are already present in the area. Currently workers and few visitors are present, but there are no residents yet. Since the goal is to attract all three groups in the future, an advice to steer on the attraction and retention of users might be useful.

Strijp-S is chosen as the example case because of the following reasons:

- The area is being redeveloped as an Urban Innovation District.
- The area is considered a successful example of a Dutch innovation district. Therefore lessons learned from this case can be applied.
- The area is already in an advanced development stage. Therefore not only the attraction, but also the retention of users can be investigated.
- Different types of users are present in the area. As a result, the motivation to settle in the area, the needs and wishes, and the satisfaction of different users can be compared. Also, the relation and the interaction between the different types of users can be investigated.
- Strijp-S is comparable to the Merwe-Vierhavens, as both cases are re-imagined urban areas. Also the Rotterdam Innovation District, of which the Merwe-Vierhavens is part, and Strijp-S have similar positions in Dutch Mainports: Port of Rotterdam and Brainport Eindhoven (Kuipers & Manshanden, 2010, p.15).

The focus in this research is on users, and in that respect the areas can be well compared. Strijp-S is in a more advanced development stage already and houses more users at the moment, but the types of users area managers aim to attract at both areas are largely similar.

Although both areas can be classified 're-imagined urban areas' following the definition of Katz & Wagner (2014), in itself the areas are in fact quite different. Both areas are (former) industrial areas, but the nature of the industries the areas used to house differs. This has affected the layout, contracts and management structure of both areas. These differences might affect the effectiveness of development advices or strategies, and will therefore be further researched in chapter 4, 5 and 6.

#### 2.4.1. Merwe-Vierhavens

The Merwe-Vierhavens area in Rotterdam is part of the Rotterdam Innovation District, which is in turn part of the Stadshavens Rotterdam. The redevelopment of the Stadshavens area has resulted from the socio-economic urgency to make the city and its port future-proof and to increase its competing powers (Stadshavens Rotterdam, 2017b).

The Merwe-Vierhavens is being developed as an international testing ground for innovative energy supply and water management, where scientists, consultants and engineers share their knowledge and skills and experiment with new concepts. Because the port is still in

operation in the Merwe-Vierhaven, the area provides an inspiring environment for pioneers, artists and entrepreneurs in the manufacturing industry (Municipality of Rotterdam, 2011, p.31). At the same time, this hampers the realisation of new functions in the area, such as living, and hence the attraction and retention of users. The industrial heritage situated in the area is however very convenient for their ateliers and workplaces (Municipality of Rotterdam, 2011, p.31).

#### 2.4.2. Strijp-S

Strijp-S in Eindhoven is an old property of Philips, on which its' factories were located. The area is being redeveloped since 2006. The masterplan for Strijp-S contains the preservation and renovation of several historical buildings, as well as the construction of new urban developments (Goulden, 2015).

Strijp-S has been considered as the location that can create the missing metropolitan environment to the city of Eindhoven (KuiperCompagnons, 2008, in Van Winden et. al., 2013, p.55). As a multi-functional urban sub center, it has to create the living and working conditions that increase the attractiveness of Eindhoven for international knowledge workers and artists (KuiperCompagnons, 2008, in Van Winden et. al., 2013, p.55).

Several businesses are located in the various ateliers, studios and workspaces, retail and hospitality is represented, and the first residents have moved to Strijp-S in 2013 (Goulden, 2015). As such, meanwhile Strijp S has become the largest urban redevelopment area in the Netherlands (Eurocities, 2015, p.2).

## 2.5. Research methods

Research methods are techniques for collecting data (Bryman, 2012, p.26). The techniques used in this research are a literature review, a survey, semi-structured interviews, two micro cases and a focus group. The research methods will be shortly discussed in the following paragraphs.

### 2.5.1. Literature review

Literature review is used to form a basis of knowledge about important subjects. Reviewing literature helps to identify what is already known about subjects, what concepts, theories and methods have been applied to the subjects, what controversies about the subjects exist and how they are studied, what clashes of evidence exist, and who the key contributors to research on the subjects are (Bryman, 2012, p.8).

The literature review in this research focuses on the characteristics of UIDs, user types, user preferences, and strategies and means used to steer on the attraction and retention of different types of users to UIDs.

The results of the literature review are translated into variables, which are considered 'attributes on which cases vary' (Bryman, 2012, p.48). These variables will be the input for the empirical research. To cluster these variables, a division between physical, economic and social variables has been made, following the types of assets that Katz & Wagner (2014) distinguished. Appendix V and VI provide overviews of the variables that were defined.

After the execution of the empirical research, the results from this research are compared to literature, so new theory could be added to partially fill the gap in literature.



### 2.5.2. Survey

A survey is used to gain insight in the preferences and experiences of different users at Strijp-S. The survey is conducted as a self-completion questionnaire amongst residents, companies, employees and visitors of Strijp-S.

The survey includes questions about users' motivation to visit or settle at Strijp-S, the importance of several factors the quality of these factors at Strijp-S, and possible points of improvement. 207 people, with different roles, have responded to the survey. The survey can be found in Appendix X.

### 2.5.3. Semi-structured interviews

Semi-structured interviews with area managers of Strijp-S and the Merwe-Vierhavens are conducted to gain insight in their vision on the development of the areas, user groups, strategies and means used to attract users, user relations and an evaluation of the current situation. The interview protocol can be found in Appendix VII.

At Strijp-S, interviews are conducted with people that have different roles in the development of the area. Therefore people working at the Municipality of Eindhoven, Park Strijp Beheer (the owner and management company of Strijp-S), and housing associations will be interviewed. At the Merwe-Vierhavens, the area manager was interviewed (Table 11).

Case	Organisation	Function	Interviewee
Strijp-S	Park Strijp Beheer	Project director	Interviewee 1
Strijp-S	Park Strijp Beheer	Community manager Office-S	Interviewee 2
Strijp-S	Municipality of Eindhoven	Alderman of Design & Innovation	Interviewee 3
Strijp-S	Municipality of Eindhoven	Program manager Spoorzone	Interviewee 4
Strijp-S	Trudo	Project director Strijp-S	Interviewee 5
Strijp-S	Woonbedrijf	District manager Strijp-S	Interviewee 6
Merwe-Vierhavens	Port of Rotterdam	Area manager Merwe-Vierhavens	Interviewee 7
-	Municipality of The Hague	Researcher UIDs	Interviewee 8
Strijp-S	Westmore	Entrepreneur (microcase)	Entrepreneur 1
Strijp-S	Antiono Media	Entrepreneur (microcase)	Entrepreneur 2

Table 11. Interviewees (own illustration)

### 2.5.4. Micro cases

The micro cases are aimed at gaining insight in the development of enterprises and the role Strijp-S played in the development of these enterprises. The micro cases consist of a short literature review about the development stages of starting enterprises and single interviews with entrepreneurs. Two enterprises at Strijp-S were analysed. The entrepreneurs are included in table 11 as well.

### 2.5.5. Focus group

For the focus group, several users of Strijp-S with different roles within the area were invited. The focus group is used to validate the results of the survey, and to get more explanation about some user preferences and -experiences. During this focus group, participants 'motivations to settle and stay at Strijp-S, experiences and some results of the survey were discussed. The protocol for this focus group can be found in Appendix IX.

## 2.6. Development of the advice

The advice for the development of the Merwe-Vierhavens is based on a combination of literature and results from the empirical research conducted at Strijp-S. To be able to write an advice for the development of the Merwe-Vierhavens as a successful innovation district, first some things have to be framed and clarified about this case as well. Therefore the main

challenges at the Merwe-Vierhavens are defined as starting points for the advice. By comparing these challenges to the situation at Strijp-S, it can be determined if the lessons learned at Strijp-S regarding several subjects can be applied. If the lessons prove to be applicable, focus points that should be taken into account by area managers of the Merwe-Vierhavens in order to deal with the challenges are defined, together with some potential strategies and means to organise these focus points.

The advice should be used to define priorities in the development of the Merwe-Vierhavens, and should not be seen as a step-by-step plan or strategy. Since the advice is based on another case in combination with literature, further empirical research should be conducted at the Merwe-Vierhavens if area managers aim to turn the plan into a plan of approach.

## 2.7. Validity & Generalizability

During the data collection, biases influencing the validity and the generalizability of the results of the research may occur. During literature review the reader may i.e. interpret documents differently than the writer's perspective, or documents may be written from one perspective.

Besides, in semi-structured interviews the risks exist that the interviewer affects the interviewee's answers (Bryman, 2012, p.233). It is therefore important to ask the same questions to all interviewees. Therefore an interview protocol has been written (Appendix VII). The interviewer effects are eliminated in self-completion surveys (Bryman, 2012, p.233). However, there is no possibility to help respondents if they have difficulty during answering a question of a self-completion questionnaire. It is thus important that the questions are clear and unambiguously. Besides, there is a risk to missing data or low response rates (Bryman, 2012, p.234).

While organising focus groups, group effects can occur. These include for example people talking much more than others, and opinions being influenced by the other participants (Bryman, 2012, p.518). Being the moderator, it is thus important to make sure all different opinions are heard and everyone is offered the chance to talk.

According to Bryman (2012, p.47), validity is concerned with the integrity of the conclusions that are generated from the research. A distinction can be made between internal and external validity. Internal validity concerns the question whether a finding incorporating a causal relationship between two or more variables is sound (Bryman, 2012, p.712). External validity is concerned with the question whether the results of a study can be generalized beyond the specific research context in which it was conducted (Bryman, 2012, p.711).

Concerning internal validity, this research aims to find relationships between physical, economic and social assets and the attraction and retention of particular users. Furthermore, relationships between the attraction and retention of users and strategies applied by area managers are studied. As the results are mainly based on one case study, these relationships may not be valid for all other cases.

Concerning external validity, the results of the research cannot be generalized. One case is studied and this is not representative for all re-imagined urban areas in the Netherlands. When significant part of the users and area managers of Strijp-S has participated in the survey, interviews and focus group, based on this research a valid advice to the area managers of the Merwe-Vierhavens can though be written. In this manner, the conditions under which the lessons learned are applicable can be tested. In this research, the advice is however specifically written for the Merwe-Vierhavens, and is not binding.

Since there are not many re-imagined urban areas in an advanced development stage in the Netherlands yet, the lessons learned from Strijp-S could be useful in the future redevelopment of industrial areas as well.







THEORETICAL  
FRAMEWORK

### 3. ATTRACTION AND RETENTION OF USERS IN UIDS: THEORY

This chapter presents the theoretical framework that will be the basis for the empirical research conducted in the next chapters. As such, literature about characteristics of innovation districts, users of innovation districts, the attraction and retention of users to innovation districts, and strategies and means used to steer on the attraction and retention of users to innovation districts is reviewed.

First, some key definitions and abbreviations are provided, which will be useful for the understanding of rest of the chapter. Subsequently, literature about the subjects above will be discussed. Finally the results of the literature review are translated into variables.

#### Key definitions

Analytical sector	Companies active in industries based on analytical knowledge creation. Analytical (science-based) knowledge relies on the application of universal scientific laws and 'know-why' (Asheim, et. al., 2007 in Van Winden & Carvalho, 2016, p.58)
Area managers	In this research seen as all parties involved in the development of innovation districts. Usually including the municipality, real estate companies, entrepreneurs, private companies, and universities (Morisson, 2015, p.49-52).
Economic assets	The firms, institutions and organisations that drive, cultivate or support an innovation-rich environment (Katz and Wagner, 2014, p.10).
Innovation	The multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace (Baregheh et. al., 2009, p.1334)
Innovation ecosystem	A synergistic relationship between people, firms and place that facilitates idea generation and accelerates commercialization (Katz and Wagner, 2014, p.10).
New Economy	Rapid growth of information and communication technologies (ICT) since the 90s (Hutton, 2004, p.89).
Physical assets	The public- and privately-owned spaces – buildings, open spaces, streets, and other infrastructure – designed and organised to stimulate new and higher levels of connectivity, collaboration, and innovation (Katz and Wagner, 2014, p.10).
Quality of life	The 'liveability' of a region. Commonly expressed in an index that includes factors as the standard and variety of amenities, education and community facilities, climate, environmental quality, housing affordability, crime level, and transportation access (Van den Berg et al., 2004; Yigitcanlar, 2005 in Yigitcanlar Baum & Horton, 2006, p.15).
Quality of place	The unique set of characteristics that define a place, making it attractive and liveable. Florida (2002) derives three dimensions of quality of place: what's there, who's there, and what's going on (Yigitcanlar Baum & Horton, 2006, p.14).
Social (networking) assets	The relationships between actors – such as between individuals, firms, and institutions – that have the potential to generate, sharpen, and/or accelerate the advancement of ideas (Katz and Wagner, 2014, p.10).
Symbolic sector	Companies active in industries based on symbolic knowledge creation. Symbolic (aesthetic and artistic-based) knowledge is primarily linked with the creation of symbols, images, designs and cultural artefacts (Asheim, et. al., 2007 in Van Winden & Carvalho, 2016, p.57).
Synthetic sector	Companies active in industries based on synthetic knowledge creation. Synthetic (engineering and problem-solving-based) knowledge results from the application or re-engineering of exiting knowledge pieces, relying on 'know-how', customization, and problem-solving skills (Asheim, et. al., 2007 in Van Winden & Carvalho, 2016, p.58).
Urban Innovation District (UID)	Geographic areas where leading-edge anchor institutions and companies cluster and connect with start-ups, business incubators, and accelerators (Katz & Wagner, 2014, p.1).

#### Abbreviations

CBD	Central Business District
M4H	Merwe-Vierhavens
PSB	Park Strijp Beheer
SMEs	Small and medium-sized enterprises
RID	Rotterdam Innovation District
R&D	Research and development
UID	Urban Innovation District

### 3.1. Innovation and urban development

Innovation and urban development are strongly connected, and their connection has become even more important as a result of the New Economy. This paragraph shortly introduces the concept of innovation, the relation between innovation and the built environment, and the role of innovation in urban development.

#### The concept of innovation

As different forms of innovation – relating to new products, materials, processes, services, and organizational forms (Ettlie and Reza, 1992 in Baregheh, Rowley and Sambrook, 2009, p.1324) – draw on different teams, departments, and professional disciplines, innovation has been discussed variously in literature (Baregheh et. al., 2009, P.1324). In line, several definitions of the concept of innovation exist. Baregheh et. al. (2009, p.1334) researched the existing definitions of innovation and formulated a general definition of innovation, being: *“the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace”*.

Innovation is widely considered as the life blood of corporate survival and growth (Zahra and Covin (1994, p. 183 in Baregheh et. al., 2009, p.1324), and is recognised to play a central role in creating value and sustaining competitive advantage (Bessant et al., 2005, in Baregheh et. al., 2009, p.1324). Baregheh et. al. (2009, p.1323) state that organizations need to innovate in response to changing customer demands and lifestyles and to capitalise on opportunities offered by technology and changing marketplaces, structures and dynamics.

Curvelo Magdaniel (2016, p.364) verified five conditions for innovation. These include (1) long-term concentration of innovative organisations, (2) climate for adaption along changing technological trajectories over time, (3) synergy among organisational spheres, (4) identity of the innovation area, and (5) diversity of people and density of social interaction.

#### Innovation in relation to the built environment

Innovation is strongly related to the built environment, as the extent to which innovation is possible varies greatly over space. This extent is connected to a region’s technological infrastructure, being the level of local research and development activity, as well as its support services and localization of related research (Feldman and Florida, 1994 in Florida, Adler & Mellander, 2016, p.6). The degree to which innovation can take place depends on the innovation environment, which is in turn determined by the urban environment.

Curvelo Magdaniel (2016, p.363+364) researched the relation between innovation and the built environment on area level and states that the built environment is a catalyst for innovation. This is demonstrated by five decisions and interventions on the built environment, which facilitate conditions required for innovation in the context of the knowledge economy. These include (1) location decisions and area development facilitating the long-term concentration of innovative organisations in cities/regions, (2) interventions enabling the transformation of the built environment at area and building levels, facilitating the climate for innovation over time, (3) large-scale real estate interventions facilitating the synergy among organisational spheres, (4) location decisions and interventions supporting image and accessibility, defining the innovation area by emphasizing its distinct identity, scale and connectivity features, and (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.

To create the 'ideal' innovation environment, it is all about balance between physical, economic and networking of assets as distinguished by Katz & Wagner (2014). In line, Van Winden and Carvalho (2015, p.21) formulated a key challenge for the 21<sup>st</sup> century's knowledge locations and their strategy-searching managers: *'To balance tensions between planning and spontaneous development, between functionality and serendipity, between uniformity and diversity and between creating a 'city in a city' and defining the knowledge location as part of a larger functional area'* (Van Winden and Carvalho, 2015, p.21).

### **Innovation and urban development**

With regards to urban areas, Morisson (2015, p.14) states that innovation can be a source of unlimited growth, and can be the key to a higher standard of living, sustained growth, and high employment rates in urban areas. As such, the main reasons for cities to develop innovation districts are (1) to (re)develop unproductive parts of the city, (2) to attract, create, or retain talented individuals and innovative companies, and (3) to become or remain an innovation hub (Morisson, 2015, p.41). The idea behind innovation or creative hubs is that science, technology, design, arts, culture, media, and engineering can be used as driving forces of urban regeneration and economic development (Da Cunha & Selada, 2009 in Morisson, 2015, p.35).

Knowledge intensive activities facilitated by innovation districts foster productivity and create localized high-quality jobs, which offer economic advantages and in turn improve cities' competitiveness (Morisson, 2015, p.65+66). In line, Chen (2015, p.3) states that in today's society economic success is increasingly based upon the effective utilisation of intangible assets as knowledge, skills and innovative potential as key resources for competitive advantage.

Urban competitiveness has become increasingly important as a result of structural changes taking place outside of the cities that are primarily beyond their control, such as globalization and the emergence of new technologies. As result, political and economic power is shifting from the national to the local level, and competitiveness between cities became a priority for policymakers (Morisson, 2015, p.7+8).

Within urban competitiveness, cities are compared based on the availability of urban amenities, and the quality of professional-, cultural-, and social life (Morisson, 2015, p.38). In addition, Morisson (2015, p.3) states that the distinctive feature of successful cities is their innovative capacity. As innovation districts offer the ideal environment for innovation, they play a crucial role in urban development.

Innovation districts offer these ideal environments for innovation by creating artificial reefs to nurture innovative ecosystems that make radical innovations possible (Morisson, 2015, p.2). The vibrancy of innovation districts aims at facilitating exchange of knowledge and attracting the young, creative class (Morisson, 2015, p.63). As such, they are the natural habitat for knowledge-intensive companies. Innovation districts provide these companies with access to a talented pool of knowledge workers, facilitate collaboration, open innovation, and spill overs - in turn accelerating the process of innovation - and provide them with an innovative legitimacy and an urban campus (Morisson, 2015, p.66+67).

## **3.2. Characteristics of Urban Innovation Districts**

Innovation districts provide the ideal environment for innovation, and thus play an important role in urban development. This paragraph will further discuss this specific environment by addressing the characteristics of innovation districts.



### 3.2.1. Assets of Urban Innovation Districts

UIDs provide innovation ecosystems, resulting from a particular combination of physical, economical and social assets. To create the ‘ideal’ innovation environment, it is all about balance between physical, economic, and social assets. But, in UIDs it is essential that not everything is planned and balanced in detail. This would result in areas being too organised, whilst in UIDs serendipity and space for spontaneous development are key. The three types of assets and how they contribute to innovation ecosystems will be discussed shortly.

#### Physical assets

Physical assets consist of the built environment, cultural- and environmental amenities, and complementary institutions shaping environments (Katz and Wagner, 2014, p.10).

The built environment in UIDs typically exists of many heritage buildings and architecturally distinctive structures, providing flex-offices and shared spaces. A common type of physical assets is cultural amenities, including galleries, museums, exhibition spaces, and the historical legacy of districts. Furthermore, environmental amenities of UIDs (i.e. parks or squares) offer opportunities for social interaction and exchange. Finally, the complementary institutions typical for UIDs can include colleges of art and design, institutions specializing in training of artisans and public agencies. These institutes facilitate interactions, exchange, and collaboration among enterprises. Besides, they enhance the creative human capital of constituent industries and firms, and support the complexity of industrial organisation in the inner city (Hutton, 2004, p.93).

The physical assets of innovation districts thus not only encourage networking, but are also designed and organized to stimulate new and higher levels of connectivity, collaboration and innovation (Katz and Wagner, 2014, p.10). The characteristics and functions of physical assets in UIDs are summarized in Figure 6.

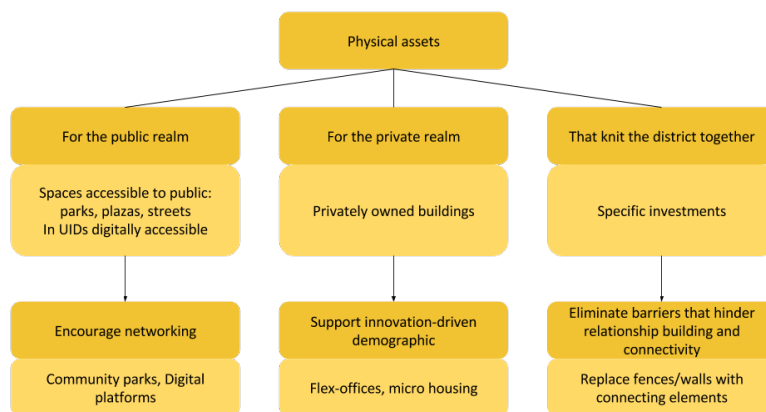


Figure 6. Physical assets in UIDs, based on (Katz and Wagner, 2014, p.12).

#### Social assets

Social assets consist of the enabling infrastructure where connections take place, networks are built, and innovative combinations are consummated (Katz and Wagner, 2014, p.10). As this can result in generating, sharpening and accelerating the advancement of ideas and innovation, networking and collaborating is of significant importance in UIDs. Therefore, social assets are crucial in these areas.

Besides restaurants and bars, social assets in UIDs also include activities taking place in the area, which are specially organised to strengthen relationships within similar fields of knowledge (strong ties) and build new, often cross-sector, networks between users of the area (weak ties) (Katz and Wagner, 2014, p.10). These include for example special training sessions, workshops and networking breakfasts. The characteristics and functions of social assets in UIDs are summarized in Figure 7.

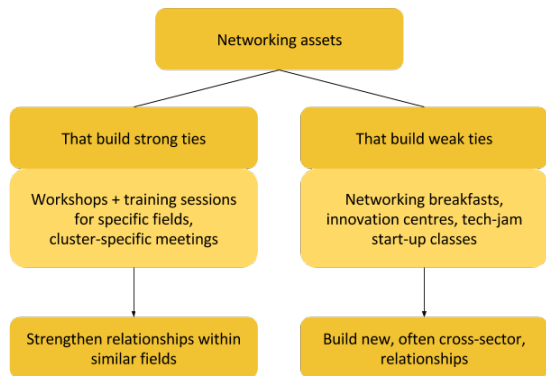


Figure 7. Networking assets in UIDs, based on (Katz and Wagner, 2014, p.13).

Weak- and strong ties are of equal importance in innovation districts. While weak networks serve as the acquisition of knowledge and ideas, strong networks facilitate the conversion of such ideas into innovations (Morisson, 2015, p.100). However, radical innovations are more likely to occur along weak, spatially distributed ties (Belussi & Sedita, 2010; Granovetter, 1973 in Morisson, 2015, p.98).

### Economic assets

Economic assets drive innovation and include people, firms and services that develop new technologies, services or products (Katz and Wagner, 2014, p.10). Economic assets in UIDs drive, cultivate or support an innovation-rich environment (Katz and Wagner, 2014, p.10). They often include start-ups and entrepreneurs that drive innovation, incubators and shared working spaces that cultivate innovation, and coffee bars offering workplaces and hence complementing social interactions. The characteristics and functions of economic assets in UIDs are summarized in Figure 8.

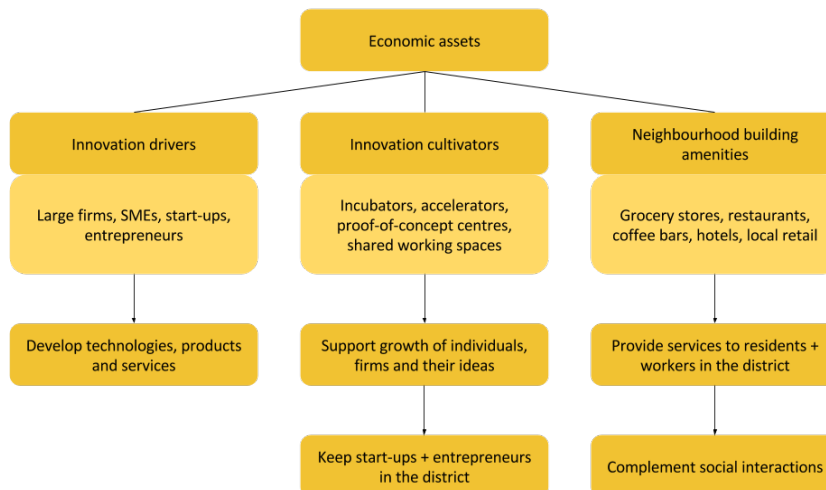


Figure 8. Economic assets in UIDs, based on (Katz and Wagner, 2014, p.11).

### Innovation ecosystems

Urban Innovation Districts reach their full potential when there is a balance between the three types of assets, combined with a supportive, risk-taking culture, creating an innovation ecosystem (Katz & Wagner, 2014). An innovation ecosystem can be defined as 'a synergistic relationship between people, firms and place that facilitates idea generation and accelerates commercialization' (Katz and Wagner, 2014, p.10). Figure 9 shows the relations between the three types of assets and how they contribute to innovation ecosystems, being distinctive for UIDs.

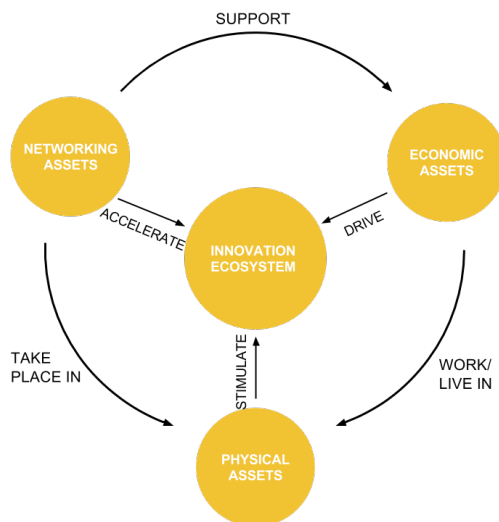


Figure 9. Relations between assets in UIDs, based on (Katz and Wagner, 2014, p.11).

Innovation systems can also be seen as what Landry (2008, p.133) calls creative milieus: *'places that contain the necessary preconditions in terms of hard and soft infrastructure to generate a flow of ideas and interventions'*. These milieus are physical settings where a critical mass of entrepreneurs, intellectuals, social activists, artists, administrators, power brokers or students can operate in open-minded, cosmopolitan contexts and where face to face interaction creates new ideas, artefacts, products, services and institutions and as a consequence contributes to economic success (Landry, 2008, p.133).

In this context, hard infrastructure is the nexus of buildings and institutions, and soft infrastructure regards the system of associative structures and social networks, connections and human interactions, that underpins and encourages the flow of ideas between individuals and institutions (Landry, 2008, p.133).

The added value of innovation ecosystems is that they produce synergy through increasing efficiency in resource utilisation, hence creating image and reputation, and stimulating fruitful knowledge exchange and innovation networks (Van Winden and Carvalho, 2015, p.2). Herein, synergy is seen as *'the interaction of multiple elements in a system to produce an effect greater than the sum of their individual effects'*. Once created, it contributes to attracting more companies and tenants (Van Winden and Carvalho, 2015, p.8).

Van Winden and Carvalho (2015, p.14) state that synergy can be managed by (1) designing for interaction (physical assets, e.g. semi-public spaces, mixed-use spaces), (2) managing the tenant mix (economic assets), (3) sharing facilities and promoting networks and communities (social assets, e.g. coaching, mentoring, social events).

### 3.2.2. UID models

The optimal innovation ecosystems for particular innovation districts are thus created by different combinations of assets. Innovation processes are notably different across industries (Asheim et. Al., 2007 in Van Winden and Carvalho, 2015, p.20), and hence innovation takes place in different ways in different UID models. As a result, the models attract different target groups with different location preferences, which hence have different factors of attraction and retention.

Based on location, characteristics, and represented industries, Katz and Wagner (2014) distinguish three UID models. Table 12 gives an overview of these models and their characteristics.

UID model	Anchor plus model	Re-imagined urban areas model	Urbanized science park model
Situation	Downtowns/midtowns central cities	Near/along historic waterfronts	Suburban/exurban areas
Characteristics	Mixed-use development centred around anchor institutes and a rich base of related firms, entrepreneurs and spin-off companies involved in commercialization of innovation	Industrial/warehouse districts undergoing physical and economic transformation to chart a new path of innovative growth Change powered by: transit access, historic building stock, proximity to downtowns of high rent cities Supplemented with research institutes/anchors	Traditionally isolated sprawling areas of innovation are urbanizing through increased density and infusion of new activities that are mixed
Example	Kendall Square, Cambridge	22@Barcelona	High Tech Campus ,Eindhoven

Table 12. Models of UIDs, based on (Katz and Wagner, 2014, p.2+3).

### 3.2.3. Conclusion

Urban Innovation Districts are areas providing innovation ecosystems that facilitate knowledge exchange and the attraction of the young creative class, resulting from a particular combination of physical, social and economical assets. They are important in urban development, as they increase cities' competitiveness that has become important as a result of the New Economy.

Three types of UIDs can be distinguished, differing based on location, form and function, and types of users (especially companies). These are the anchor plus model, the re-imagined urban area model, and the urbanized science park model.

## 3.3. Users of Urban Innovation Districts

In the previous paragraph, the relation between innovation and urban development, the physical, economic and social assets of UIDs, and the different types of UIDs have been introduced. As UIDs generally offer a variety of functions, they also have a variety of users with their own preferences. Although these preferences are personal and every individual has different preferences, clusters of users with the same type of preferences can be made. This chapter discusses the different types of users present in Urban Innovation Districts, their characteristics, and their location decision-making processes.

In their research, Frenkel, Bendit and Kaplan (2013b, p.152) emphasize the three roles people can have in life, being the roles of household member, worker and leisure consumer. Kelly and Kelly (1994, p.250) make a similar division and state that family, work and leisure can each be identified respectively by the central dimension of bonding, productivity, and freedom. Following these researchers, a distinction is made between residents (family), workers (work), and visitors (leisure). These roles also match the central mechanisms of the creative class theory of Florida (2002) and the ambition of many knowledge locations: *"to live, work and play"*. Based on these mechanisms people choose cities and knowledge locations (Van Winden et.al., 2010, p.23). The characteristics and the preferences of these user types, and sub-groups will be discussed in the next paragraphs.

### 3.3.1. Workers

Since workers are usually the first user group to enter districts, they determine the identity of districts. This identity influences the attraction of more workers. Also the way of working and the degree to which workers are willing to share and collaborate contributes to the attraction and the retention of workers. Hence they can be seen as the most influential user group within UIDs.

Within the group of workers, a division is made between companies and employees. Both play an important role as users of UIDs, but the way they see and value locations can be very different. As a consequence of the industry the companies and employees are active in, they share some common preferences regarding suitable working environments, but their location decision-making processes differ.

While it is likely that the location decision-making process of companies is mainly based on the degree in which a location is strategic for the development of the company, the location decision-making process of employees is more based on socioeconomic factors and quality of life. The preferences of employees are likely to be more similar to the preferences of residents than to the preferences of companies.

### Location preferences of workers

Location preferences of both companies and employees can differ as a consequence of the industry they operate in. As such, it is likely that designers value a dynamic and lively environment, because this could be a source of inspiration for their work. However, scientists need to be very focused and do very precise work, and therefore are more likely to value a quiet and structured environment. Both belong to the cluster of workers, but have different location preferences. These differences occur based on three models of knowledge creation, distinguished by Asheim et. al. (2007 in Van Winden & Carvalho, 2016, p.54).

Industries based on analytical (science-based) knowledge are i.e. medical and biotechnology industries. Companies active in these industries prefer large urban regions with strict safety regulations and quietness. Their employees value proximity to other scientists, but do not appreciate serendipity and unexpected meetings.

Industries based on synthetic (engineering and problem-solving based) knowledge are i.e. IT and machinery industries. Companies active in these industries value the business climate of a location more than the people climate. These companies and their employees prefer physical proximity and mutual understanding between firms present in an area, but do not prefer dense and central locations.

Finally, industries based on symbolic (aesthetic and artistic based) knowledge are i.e. architectural or design industries. Companies and employees active in these industries value a lively and inspiring environment with urban facilities and room for serendipity. Working and living are not strictly separated, but instead mixed up in time and space. Table 13 gives an overview of these models and the matching location preferences of people and firms working in related industries.

Type of knowledge	Analytical	Synthetic	Symbolic
Source of knowledge	Science based	Engineering + problem-solving based	Aesthetic + artistic based
Knowledge creation + innovation	Rely on formalized processes Rely on application of universal scientific laws and know-why	Result from application of existing knowledge pieces Rely on know-how customization, problem-solving skills + innovation	Rely on interpreting external-to-the-company stimuli
Location preferences	Proximity to other scientists Proximity to state of the art laboratories Strict safety Confidential requirements	Physical proximity Mutual understanding Social proximity Value business climate more than people climate	Lively urban atmosphere Environments with a distinct urban identity Diversity, serendipity and buzz Working + living mixed up in time and space Urban facilities (as meeting spaces)
Incompatible with	Serendipity + unexpected meetings	Dense + central locations	-
Type of location	Large urban regions	Functional urban regions	Creative Districts

Table 13. Models of knowledge creation, based on (Asheim, 2007 in Van Winden & Carvalho, 2016, p.58).

### Location preferences of companies

A suitable location is of significant importance for the success of companies. As Mazzarol & Choo (2003 in Rymarzak & Sieminska, 2012, p.215) state, a suitable location can contribute to production capacity, additional profit, business expansion, better service to customers, increasing stockholders wealth, cost reductions, and a decrease in manufacturing lead time. Though, the suitability and effectiveness of a location differs per company. The suitability for example depends on the type of business operations and whether they are driven by market, employment, natural resources, transportation or environment (Rymarzak & Sieminska, 2012, p.220). Besides, the effectiveness of a location is influenced by the spatial arrangement of facilities and connections between them, which together form the spatial structure of a given branch of industry, retail trade or services (Rymarzak & Sieminska, 2012, p.220).

Tuselmann (1999 in Rymarzak & Sieminska, 2012, p.217) discusses that each possible location has a utility value, which is determined by factors of supply and demand. Factors on the demand side contain the number of consumers, their purchasing power, and transportation between customers and the site. Factors on the supply side are determined by a location's conditions that allow specific business to be conducted. These contain for example natural resources, human resources, technical facilities, raw materials and energy (Azevedo-Pereira et. al. 2010 in Rymarzak & Sieminska, 2012, p.217).

The specific demand and supply factors that are taken into consideration can thus differ per company. However, Rymarzak & Sieminska (2012, p.221) state that several factors, such as the flexibility of space distribution, the functional layout, the function and the neighbourhood will be considered by any company while choosing a business location. According to Cushman & Wakefield (2011 in Rymarzak & Sieminska, 2012, p.222), next to these 'standard' factors, nonmonetary location factors such as availability of qualified staff, telecommunications, quality of life for employees and freedom of pollution are getting increasingly important.

In their research, Rymarzak & Sieminska (2012, p.215) state decision processes of companies are dynamic as they allow for adjustments to changes in the company or in its environment, in the present and in the future. The processes consist of two phases: a rough indication of possible locations (the general location), and analytical work leading to the ultimate selection of a site (the exact location) (Rymarzak & Sieminska, 2012, p.216).

### Location preferences of employees

The location decision-making process of employees is different compared to the process of companies. Since employees are individuals, socioeconomic factors and factors as quality of life are significantly more important than the strategic and practical factors in the location decision-making process of companies. The decision making process of employees can in fact be better compared to the process of residents.

Employees are working for companies, and work at specific locations because the companies are located there. They thus do not choose locations themselves. However, employees can also be one-man companies or freelance entrepreneurs, which in fact choose locations very deliberately. Storper (2013 in Morisson, 2015, p.103) compares attracting skilled workers to a chicken-and-egg situation, arguing that although individuals and households do make a choice about where to locate, the choice is the egg, with the chicken being the location of jobs and opportunities to earn income.

Employees are in general attracted to places with a high quality of life (You & Bie, 2017, p.92+95), where they can meet colleagues and friends through either planned or coincidental encounters (Charnock & Ribera-Fumaz, 2011, p.625). Accordingly, natural amenities, social tolerance and openness are stated to determine geographical concentrations and mobility of creative people (Florida & Mellander, 2010; Florida, 2002 in You & Bie, 2017, p.92). Besides, creative people greatly value local amenities, which can represent cultural, natural, aesthetic and recreational aspects of the urban environment (You & Bie, 2017, p.92).

### Types of companies

Based on industries linked to analytical, synthetic, and symbolic knowledge, a distinction between three types of companies can be made. Two other types of sectors have been added in this distinction: the facilitator- and the services sector. These sectors are added because they are indispensable for the environment of urban innovation districts. In UIDs, facilitators are companies supporting people and firms active in industries related to one of the three types of knowledge. Services area considered amenities supporting the other four types of workers, including restaurants, grocery stores and local retail. As can be seen in Appendix I, consequently in total five types of sectors that companies can be active in are distinguished.

Another distinction of types of companies can be made based on the size of the company. The European Commission (2009, p.3) distinguishes small, middle-size and large companies. Next to these three sizes one-man businesses and start-ups have been added to this distinction, because these starting companies are often present in innovation districts. Herein, the category 'one-man businesses' is a special category, because since these companies are run by one person only, preferences of both companies and individual employees are applicable.

Matching the company sizes with the five types of sectors results in the differentiation of 25 sub-groups of companies (Appendix I).

### Types of employees

Five types of employees can be divided based on industries as well, because companies and employees active in the same industry have the same preferences regarding working environments. But, the size of the company is not that relevant for the division between types of employees. It makes more sense to make a division between types of employees based on life stage, just like the division between the six life stages that were used for residents. These are discussed in the next paragraph.

Matching the five types of industries with the six life stages, 30 sub-groups of employees can be distinguished, as is shown in Appendix II.

### 3.3.2. Residents

The presence of residents in UIDs is crucial for the liveliness and safety of the area. Residents make sure not only people are present during daytime, but at night as well. This results in the emergence of the feeling of safety and liveliness, positively influencing the attractiveness of the area.

#### Location preferences of residents

Locational preferences of residents are influenced by housing choice-, socioeconomic-, and employment characteristics. Herein housing choice characteristics include i.e. municipality jurisdiction, building type, dwelling size and tenure. Socioeconomic characteristics include gender, age, marital status, number of children, car ownership and monthly income.

Examples of employment characteristics are certified education level/degree, workplace location by municipal jurisdiction, spouse's workplace location by municipal jurisdiction, employment sector and employment status (Frenkel, Bendit & Kaplan, 2013a, p.36).

Besides these characteristics, the interrelation between residential location and workplace location happens to be important. However, this relation has changed as a result of upcoming ICT during the last decennia (Muhammad et al, 2007, p.342). Working from home or at coffee bars has become more common, and as a result the area in which people search for residential locations is enlarged. Besides, people locate more often at inner city locations, as urban living is re-associated with status, sophistication, open-mindedness, and the undeniable hip factor (Morisson, 2015, p.16).

Next to classical characteristics and the relation between residential location and working location, also activity patterns are of significant influence on the location preferences of all types of residents (Frenkel, Bendit & Kaplan, 2013a, p.39). Culture-oriented, sports-oriented, home-oriented and work-oriented activity patterns can be distinguished. Links can be made between these patterns and the preference for particular residential locations. For instance, culture- and sports-oriented activity patterns are linked with a preference for the metropolitan core and the inner ring, while home-oriented activity patterns are linked with a preference for the middle and outer ring. Work-oriented activity patterns happen to be not significantly linked with the preference for a particular residential location (Frenkel, Bendit & Kaplan, 2013a, p.37).

The need for physical space changes as households move through the life cycle. Their residential preferences in turn adjust to these changes (Bourne, 1981 in Lawton, Murphy & Redmond, 2012, p.48). But, although particular preferences differ per life stage and family structure, the importance of classic location factors (e.g. cost and size of residential dwellings, distance between home and work) is evident for all life stages (Lawton, Murphy & Redmond, 2012, p.54).

As a result of the upcoming ICT and global trends, the creative class has gained importance, which can be defined as *'people who are employed or engaged principally to develop new technologies, propose new solutions, design new products, and to any other forms of innovation work'* (Florida, 2002 in You & Bie, 2017, p.91). These people do not move for traditional reasons; they seek abundant high-quality amenities and experiences, and openness to diversity of all kinds, and above all else the opportunity to validate their identities as creative people (Florida, 2002 in Morisson, 2015, p.108+109). Creative millennials create their own identities according to where they live (Florida, 2002 in Morisson, 2015, p.103).

Although they have some typical preferences, the process of residential location decision-making for the creative class is not completely different in comparison with the process of other residents (Frenkel, Bendit & Kaplan, 2013a, p.33).

### Types of residents

As housing characteristics can be influenced (e.g. people looking for a dwelling can define by themselves what should be the minimum of square meters for a suitable dwelling), and socioeconomic characteristics cannot be influenced (people cannot influence their age), a differentiation between types of residents is made based on socioeconomic characteristics. Life cycle stages – incorporating age and household composition - have found to considerably influence locational preferences. For example for young people, housing costs and tenure are important factors in deciding where to live, while for people in the midlife stage, tenure, housing unit size and housing quality are the most important determinants (Hansen, 1959 in Muhammad et al, 2007, p.342). Therefore, a distinction between six life



stages has been based on Hill's (1986, p.21), eight stages of family development. Hill's stages have been clustered into five groups by combining some stages.

The starters in this differentiation represent the establishment stage (childless, newly married) as defined by Hill (1986, p.21). The young families distinguished represent the first parenthood (families with infants to 3 years), families with pre-school children (oldest 3-6 years) and families with school children (oldest 8-12 years) as distinguished by Hill (1986, p.21). The group of families matches with Hill's (1986, p.21) families with adolescent children (oldest 13-20 years). Empty nesters represent the families as launching center (leave taking of children) and families in middle years (post-parental empty nest) of Hill (1986, p.21). Lastly, the elderly in this division match with Hill's (1986, p.21) families in retirement (breadwinners in retirement). As students do not live with their family anymore, they are not considered part of family development stages. However, they have been added as a 6<sup>th</sup> life stage since they can be considered as a target group for housing in UIDs as well.

Next to life stages, in the distinction of user types income will be considered as well, since this is a factor of significant importance in the decision about a place to live that cannot be influenced. CBS (2016, p.24) distinguished five income groups within the Netherlands. This division is based on the 20% of the population with the lowest income, the 20% of the population with the highest income, and the three 20% groups in between. In the division of residents amongst sub-groups, four income levels are used, based on this differentiation. Low incomes include the incomes lower than the average income of the first 20% group, low middle incomes include incomes between the average income of the first and the second 20% group, high middle incomes include incomes between the average income of the second and the third 20% group, and high incomes include incomes higher than the average income of the fourth group.

Matching these income groups with the six life stages results in 24 sub-groups of residents, as is shown in Appendix III.

### 3.3.3. Visitors

Visitors are important in UIDs to connect the district to the surrounding areas. Visitors can visit the area for several purposes, in any case contributing to the liveliness of the area. By means of events, people from outside are attracted to the area and mix with the workers and residents that are there. They are also an important part of branding, as their experience of the area will probably be communicated to others, hence influencing the attraction of more visitors.

#### Location preferences of visitors

Visitors can have various purposes to visit an area, for example to eat, relax, shop, visit friends or because an event has been organised. In the research of Van Den Berg et al. (1995, in Ben-Dalia, Collins-Kreiner & Churchman, 2013, p.236) five elements have been listed that make a city a 'tourist city'. These are: (1) primary products, the attractions that are the main reasons for tourists to visit a city (e.g. historical sites, cultural sites, new recreational attractions and cultural events), (2) secondary products, the services that make visitors stay and enjoy primary products (e.g. catering, shopping, leisure), (3) external accessibility, which ensure easy access to the site (e.g. public transport, highway), (4) internal accessibility, conditions that make it easy to get around in a city or area (e.g. clear signs, maps) and (5) image, one of the most influential psychological factors at play when tourists decide where to travel (Urry, 1999 in Ben-Dalia, Collins-Kreiner & Churchman, 2013, p.236).

These factors (in a lighter form) can also be projected to innovation districts and how visitors are attracted to these areas. Although there are some general factors attracting people, many differ per individual.

### Types of visitors

Based on the purposes of visits as mentioned above, a distinction of visitors has been made. Lloyd & Auld (2002, p.52) have identified six categories of leisure activities: mass media (e.g. TV, newspapers), social activities (e.g. visiting friends, attending parties), outdoor activities (e.g. gardening, hiking), sports activities (e.g. fitness, golf), cultural activities (e.g. dancing, theatre) and hobbies (e.g. collections, needlework). Since mass media and hobbies often take place at home, these categories are not considered in the division. Social activities are represented by the purposes of visiting friends/family and food/drinks. Outdoor and sports activities are combined in the purpose of sports since they both concern active activities, cultural activities are represented by the purposes of entertainment and festivals/events. Hence, three categories of purposes can be distinguished.

Next to these three categories, two categories have been added. The first one is 'purchases', including the purposes of shopping and groceries, as consumption based amenities are often significantly important for metropolitan areas. The second one is 'attractions', including the purpose of viewing landmarks, as re-imagined areas often contain monumental buildings or newly built landmarks that attract visitors because of their physical appearance. Figure 10 provides an overview of the five categories and the eight purposes.

Besides, again a division based on age has been made. For this division, the life stages that were used for the sub-groups of residents are used, but have been reduced to four groups. Because it is likely that their preferences concerning leisure do not significantly differ, students and starters have been merged into one age group (18-30 years old) and young families and families have been merged into one age group (30-55 years old).

Matching the categories of leisure activity with age groups results in 20 sub-groups of visitors, as can be seen in Appendix IV.

### 3.3.4. Conclusion

The presence of workers, residents as well as visitors is essential for the attractiveness and the success of UIDs. Every user group contributes to the image of the district in its own way, and uses the district for different purposes. Although there are some factors that are considered in the location decision-making process of all types of users, the three groups have specific factors that play in a role as well. These are summarized in Table 14.

	Companies	Employees	Residents	Visitors
Factors influencing the location decision-making process	Sector Size of company	Socioeconomic characteristics Sector Life stage	Housing characteristics Socioeconomic characteristics Employment characteristics Activity pattern Cultural background	Socioeconomic characteristics Purpose of visit Cultural background

Table 14. Factors influencing the location decision-making process per user group (own illustration).

### 3.4. Attraction and retention of users in UIDs

In the previous paragraph, the user groups and sub-groups present in UIDs, and their location decision-making processes were discussed. This paragraph addresses the specific factors of attraction and retention for residents, workers and visitors.

The chapter starts with a paragraph about the attractiveness of places in general. Then, the factors of attraction and retention per user group are discussed. Finally the diversity of users in UIDs is discussed.

#### 3.4.1. Attractiveness of places

In the consideration of attractiveness, both hard and soft factors play a role. The combination of these factors results in a particular amount of urbanity and diversity, which Zenker (2009 in Dragin-Jensen, Schnittka & Akkil, 2016, p.56) considers the most important factor of citizen attraction. Urbanity is related to the fact that the majority of people want to live in big cities offering a wide range of opportunities. Diversity relates mainly to the choice of services and goods offered in the city (Kahn, 1995 in Dragin-Jensen, Schnittka & Akkil, 2016, p.56). Mulligan & Carruthers (2011 in Ballas, 2013, p.40) refer to these services and goods as amenities, and state that they make some locations particularly attractive for living and working. Ballas (2013, p.41) pointed out that high numbers of moves into a region based on quality of life considerations can result in an increased demand for goods and services. The supply of goods and services (amenities) and the attraction of people thus reinforce each other.

Mulligan & Carruthers (2011 in Ballas, 2013, p.40) differentiate natural amenities (e.g. climate and physical beauty) and social or human phenomena (e.g. theatres and restaurants). Ballas (2013, p.41) points out that natural amenities happen to be important in residential decisions and costs for housing, and that social or human phenomena influence the success of cities. Clark (2003 in Yigitcanlar, Baum & Horton, 2007, p.15) distinguishes the same two types of amenities, but refers to natural and constructed amenities.

public space, building level, accessibility

Whisler et al. (2008 in Ballas, 2013, p.44) addressed some characteristics that people find objectively pleasant (e.g. Hawaiian sunshine, Colorado scenery) and unpleasant (e.g. NYC traffic fumes). However, they state that from happiness point of view there will never be an optimal city, since for each individual particular characteristics have different values (Whisler et. al., 2008 in Ballas, 2013, p.44). Also, Darchen & Tremblay (2010, p.226) have defined factors that are generally considered attractive. The physical factors are density/urban form, green spaces, natural features, public transportation, cleanliness, weather, and location. The economic factor is cost and housing. The social factors are cultural diversity, a friendly welcoming environment, and open minded views. Besides, safety, pace of work on the social side, quality of life, and lifestyle are a combination of physical, economic, and social factors.

Quality of place, creating attractiveness, is a crucial condition to attract and retain talented people (Clark, 2004a, 2004b in Darchen & Tremblay, 2010, p.226). In research, significant attention has been paid to the quality of life factor. Florida (in Yigitcanlar, Baum & Horton, 2007, p.15) distinguishes three dimensions of quality of life: what's there (the combination of the natural and the built environment), who's there (diverse kinds of people) and what's going on (the vibrancy in an area).

Other researchers (Biel, 1993; Ezmale, 2012; Kaplanidou et. a., 2013; Zenker et. al., 2013b in Dragin-Jensen, Schnittka & Akkil, 2016, p.56) state that the supply of cultural and leisure opportunities –mainly part of the 'what's going on' dimension - significantly influences the quality of life and resident satisfaction. Accordingly, Harvey (1989 in Dragin-Jensen, Schnittka & Akkil, 2016, p.57) points out that this supply is important for city attractiveness

and attracting and retaining residents. Cultural and leisure opportunities are not only an 'extra' in attracting and retaining people, residents in fact have a certain level of expectation regarding the types and quality of events that a city should host (Dragin-Jensen, Schnittka & Akkil, 2016, p.57).

The mix of the three dimensions of quality of life can result in a certain degree of authenticity, perceived by Zukin (2009, 2010 in Lawton, Murphy & Redmond, 2012, p.50) as the search for urban idyll, where there is continuity between past and present through social ties (who's there and what's going on) and physical structure (what's there) of a city area.

It has been proven that people are even willing to pay more for dwellings when moving to a more attractive area (Korpi, Clark & Malmberg, 2011 in Ballas, 2013, p.41). Thereafter, the economic success of cities is directly connected to their ability to attract and retain talented creative people (Florida, 2002, 2005 in Lawton, Murphy & Redmond, 2012, p.47). The attraction of people and economic success are thus mutually dependent.

Since competition for talent has become increasingly apparent, city attractiveness has also found to be a key component for maintaining and strengthening urban competitiveness (Zenker & Gollan, 2010 in Dragin-Jensen, Schnittka & Akkil, 2016, p.60). Urban planners therefore continuously use strategies and means to make sure cities remain attractive. An example is the organisation of events as a strategic tool to showcase cities and to highlight the advantageous conditions they can offer (Westerbeek & Linley, 2012 in Dragin-Jensen, Schnittka & Akkil, 2016, p.57), resulting in the attraction of new residents (Ezmaie, 2012 in Dragin-Jensen, Schnittka & Akkil, 2016, p.60). Strategies and means used to attract and retain target groups will be further discussed in paragraph 3.4.

#### **3.4.2. Attraction and retention of workers**

As was mentioned before, several researchers have pointed at the importance of attracting and retaining talented people and companies to induce economic growth and urban or regional competitiveness (Yigitcanlar & Lönnqvist, 2013; Yigitcanlar, O'Connor, & Westerman, 2008 in Frenkel, Bendit & Kaplan, 2013a, p.33). In turn, employees and companies – and especially those of the creative class – are generally likely to be attracted to districts with increasing economic opportunities (companies) and high quality of life (employees) (You & Bie, 2017, p.92+95).

#### **Attraction and retention of companies**

It was stated before that factors of attraction and retention differ per company, as the suitability depends on i.e. the type of business operations and whether they are driven by market, employment, natural resources, transportation or environment (Rymarzak & Sieminska, 2012, p.220).

Generally, the availability of natural resources and human resources, technical facilities, location, flexibility of space distribution, functional layout, availability of qualified staff, telecommunications, quality of life for employees are considered important (Azevedo-Pereira et. al. 2010 in Rymarzak & Sieminska, 2012, p.217; Rymarzak & Sieminska, 2012, p.221; Cushman & Wakefield, 2011 in Rymarzak & Sieminska, 2012, p.222).

For starting entrepreneurs and creative companies that are often found in UIDs, creative milieus are the places that contain the necessary preconditions in terms of hard and soft infrastructure to generate a flow of ideas and inventions (Landry, 2008 in Morisson, 2015, p.109). These include for example the presence of other entrepreneurs, business support, variety of amenities, social tolerance, and business communities. Because of the interactions and learning possibilities offered by in these milieus, workers can acquire more skills. As such, these milieus improve productivity and innovation (Glaeser & Maré, 1994; Morisson, 2015, p.93).

### Attraction and retention of employees

As was explained before, attracting employees can be compared to a chicken-and-egg situation, arguing that although individuals and households do make a choice about where to locate, the choice is the egg, with the chicken being the location of jobs and opportunities to earn income (Storper, 2013 in Morisson, 2015, p.103)

Natural amenities, social tolerance and openness are stated to determine geographical concentrations and mobility of creative people (Florida & Mellander, 2010; Florida, 2002 in You & Bie, 2017, p.92). You & Bie (2017, p.94) also distinguish economic incentives as a determinant for creative class agglomeration. Charnock & Ribera-Fumaz (2011, p.625) state that talented people are attracted to places where they can meet colleagues and friends through either planned or coincidental encounters.

These researchers thus all appoint the importance of amenities and the social aspect for the attraction of creative people and companies. Earlier researchers (Bille, 2010; Florida, 2002; McGranahan, Wojan, & Lambert, 2011; Moretti, 2004; Shapiro, 2006; Suedekum, 2008) explain that creative people greatly value local amenities, which can represent cultural, natural, aesthetic and recreational aspects of the urban environment (You & Bie, 2017, p.92).

The importance of the social aspect is explained by Florida (2002 in You & Bie, 2017, p.92), stating that an open and tolerant environment is beneficial for the development of new ideas. Also, social diversity – defined as ‘heterogeneity in terms of lifestyle, ethnicity and sexuality’ – has proven to be important to lower social barriers, increase responsibility, increase social vibrancy and establish authenticity for sense of place (Harjoto, Laksmana & Lee, 2015; Li et. al., 2016; Thomas & Darnton, 2006; Zukin, 2011 in You & Bie, 2017, p.92).

### 3.4.3. Attraction and retention of residents

A significant part of the residents often present in UIDs are knowledge workers. These people are in general attracted to places with high quality of life, offering a variety of amenities, social tolerance and openness, and economic incentives. You & Bie (2017, p.95-99) link these factors of attraction to the preferences of creative class, in which a division has been made between the super creative core and creative professionals. The super creative core consists of occupations whose work has most intensive creativity, often including sectors as architecture & engineering, math, arts & design, education & training, entertainment & media and social science (You & Bie, 2017, p.93). Creative professionals are occupations whose work must have a high degree of creativity, but less than the super creative core. They are often active in finance, management, health care, business, legal and high-end sales (You & Bie, 2017, p.93).

Regarding amenities, they state that cultural, natural and physical amenities are positive determinants for the super creative core, while physical and recreational amenities are the main determinants for creative professionals (You & Bie, 2017, p.95). In comparison with the super creative core, classic location factors are valued more by creative professionals. Quality of place and social tolerance and openness are more important to the super creative core (You & Bie, 2017, p.97+99). In addition, Florida (2002 in Morisson, 2015, p.105) states that the urban attributes the creative class most values are social and cultural amenities, the street-level scene, a sense of anonymity, nightlife, friendliness, and natural and physical beauty.

In their research Yigitcanlar, Baum & Horton (2007, p.14) distinguish quality of life, urban diversity, social equity and quality of place as the four categories of factors of attraction and retention for knowledge workers.

The category of urban diversity is expressed in a cosmopolitan atmosphere, seen as an atmosphere that accepts strangers and with open channels for communication/knowledge exchange (Florida, 2002 in Yigitcanlar, Baum & Horton, 2007, p.14). Similarly, Clark et al. (2002 in Lawton, Murphy & Redmond, 2012, p.49) state that neighbourhoods associated with tolerance and diversity are often also oriented towards cosmopolitan forms of entertainment (e.g. restaurants, bars and consumption based amenities).

In line, also Morisson (2015, p.105) states that knowledge workers, millenials and creative workers want to live in diverse and interesting cities. Jacobs (1961 in Morisson, 2015, p.20) distinguishes four conditions that are considered necessary to generate urban diversity. She states that the district must serve more than one primary function, street blocks must be short in order to enable frequent turns, there must be a good balance of old and new buildings, and that the district should have a high population density.

The cosmopolitan atmosphere that contains this urban diversity attracts knowledge workers as they, next to classical location factors, emphasize intense urban environments that are rich in retail, with picturesque spaces, affluent activities and performance arts in their residential location choice (Yigitcanlar et. al., 2007 in Frenkel, Bendit & Kaplan, 2013a, p.33). Generally, knowledge workers tend to be attracted to locations in proximity to the metropolitan core, offering a variety of cultural and education facilities. They value places in proximity to their workplace location, with a highly educated population (Frenkel, Bendit & Kaplan, 2013a, p.37).

But, several researchers point out that in the end employment opportunities and social ties rather than social diversity turn out to be critical factors in the residential location decision of knowledge workers (Boren & Young, 2013; Frenkel et. al., 2013; Scott, 2010 in You & Bie, 2017, p.99). They further consider housing quality and affordability to be important factors (Frenkel, Bendit & Kaplan, 2013a, p.37).

#### **3.4.4. Attraction and retention of visitors**

Similar to other users, also for visitors factors of attraction differ per socio-economic group. For example cultural and recreational amenities are important for younger people, while older people instead value safety and accessibility (Whistler, Waldorf, Mulligan & Plane, 2008 in Ballas, 2013, p.41).

Following the five elements that make a city a tourist city, generally attractions, cultural sites, events, a variety of hospitality services and shops, accessibility, and image are considered factors of attraction for all visitors. Especially a mix of amenities and events are important to attract different types of visitors to the area.

As the creative class largely values social and cultural amenities, the street-level scene, a sense of anonymity, nightlife, friendliness, and natural and physical beauty, besides working and living in districts offering these attributes, the creative class is also likely to visit other comparable districts (Florida, 2002 in Morisson, p.105). This also matches with millenials wanting to be where the action is, and prioritizing a lifestyle that reinforces their own identities as creative people as well (Florida, 2002 in Morisson, p.103).

#### **3.4.5. Diversity of users**

One the one hand, firms in similar or adjacent related technology fields or industries may be most likely to benefit from each other (Boschma and Frenken, 2011 in Van Winden and Carvalho, 2015, p.20). On the other hand seemingly unrelated activities may also produce surprising combinations (Jacobs, 1969 in Van Winden and Carvalho, 2015, p.20). Especially since during the last decennia, technological development has become so fast and complex, progress can only be realized when innovators work together with others in multidisciplinary, often project-based teams (Ekstedt et al, 1999 in Van Winden & Carvalho,

2016, p.55). As a result, companies increasingly engage in networks to tap external sources of knowledge to create new products or services, instead of doing it only in-house (Chesbrough, 2003 in Van Winden & Carvalho, 2016, p.55).

The particular significance of social factors – including the density of social networks, opportunities for interaction and exchange, and the diversity of actors and groups – for New Economy firms in inner cities disclosure the saliency of social interaction and exchange to creative processes, to the production of cultural products and services, and to innovation in general (Hutton, 2004, p.92). Diversity of people and firms in UIDs is thus essential in order to facilitate a suitable environment for creativity and innovation.

But, too much diversity of people and firms can impede instead of stimulate innovation. Locations hosting tenants with too much different profiles and interests, might undermine the clarity of the location’s concept (Van Winden and Carvalho, 2015, p.7). As firms in similar or adjacent related technology fields or industries may be most likely to benefit from each other (Boschma and Frenken, 2011 in Van Winden and Carvalho, 2015, p.20), too much diversity might cause confusion and hamper innovation. Besides, when the concept and the image of an area are not clear because of too much diversity, the attraction of people and firms might be hindered.

So, instead of attracting as much different tenants as possible in order to create diversity, a specific tenant mix that helps to build the identity and reputation of the knowledge location as a place to be for specific types of firms may be more effective (Van Winden and Carvalho, 2015, p.7).

Morisson (2015, p.38+55) states that innovation districts must be designed with the goal of being as inclusive as possible, and that the ideal population breakdown of innovation districts as such contains 30% creative and knowledge workers, 10% entrepreneurs, 5% artist, 15% students, 30% employees (office, municipal and service workers), and 10% retirees and unemployed. He states that the ratio of entrepreneurs, creative, and knowledge workers compared to the rest of the people living in the district should be 1:1.

**3.4.6. Conclusion**

Urbanity and diversity are factors considered attractive by all types of users. These two factors result from a combination of specific factors such as safety, density, and amenities. Likewise, also quality of life results from a combination of other more specific factors. The ‘ideal degree of urbanity or density, or in the highest quality per life differs per user type, and can even differ per person. The composition of these concepts is thus created by different combinations of factors per user type.

Table 15 summarizes the most important factors that are considered important per user type.

	Companies	Employees	Residents	Visitors
Factors considered attractive	Presence of other firms Business support Business community Business events Economic incentives Variety of amenities Social tolerance Accessibility Flexibility of space Costs + quality of space Quality of life for employees	Variety of amenities Social tolerance Accessibility Presence of other employees Business community Business events Employment opportunities Interaction Social diversity Economic incentives	Variety of amenities Social tolerance + openness Urban diversity Accessibility Safety Cleanliness Liveliness Presence of other people Costs + quality of space Employment opportunities Friendliness	Variety of amenities Variety of events Accessibility Urban diversity Safety Attractions Variety of restaurants + shops Image

Table 15. Factors of attraction per user group (own illustration).

### 3.5. Steering on the attraction and retention of users in UID

Attractiveness of places, and the specific factors considered attractive by respectively workers, residents and visitors have been discussed in the previous paragraph. This paragraph provides an overview of the strategies and means used by area managers in order to attract and retain the three different user groups.

The concept of innovation districts emerged from the initiation of successful urban milieus, (Morisson, 2015, p.39). The districts create artificial reefs to nurture innovative ecosystems that make radical innovations possible (Morisson, 2015, p.2). Innovation districts thus do not occur spontaneously, but the city – together with other parties – plays an important role in the creation of these districts. Strong and smart leadership is required to transform depressed urban districts into self-sustaining innovation districts (Morisson, 2015, p.165). Area managers are thus well able to steer on the development of the district, and on the attraction, retention and creation of talented people (Morisson, 2015, p.41).

It is crucial that area managers continue steering on the development of innovation districts during later stages as well, as innovation districts have to constantly reinvent themselves to become more than mere districts (Morisson, 2015, p.119). The success of innovation districts in fact depends on their urban leaders' commitment to the development, as well as their ability to combine the right innovative processes during its construction (Morisson, 2015, p.164). Area managers should monitor key performance indicators to evaluate the success of their innovation districts (Morisson, 2015, p.120).

Managers of innovation usually include the city, real estate companies, entrepreneurs, private companies, and universities, which play different roles at each stage of development (Morisson, 2015, p.49-52).

As government policies define priorities, main directions for economic and social activities, and create specific conditions and principles for the functioning of businesses, they have significant influence on the attraction and retention of workers, residents and visitors (Mudambi, 2002 in Rymarzak & Sieminska, 2012, p.217). Research has also emphasized the importance of policy to enhance connectivity between places of working and living, and to ensure high quality and affordable housing, in turn contributing to the attraction and retention of the creative class and the promotion of more sustainable and liveable urban regions for the general population (Lawton, Murphy & Redmond, 2012, p.55).

For area managers especially branding their cities as knowledge cities and attracting knowledge workers is important, since they act as catalysts to the revitalization of urban areas, economic growth and competitiveness (Yigitcanlar, Baum, & Horton, 2010 in Frenkel, Bendit & Kaplan, 2013b, p.151). In line, Cortright (2005 in Morisson, 2015, p.103) states that millennials are the prized professionals to attract for urban policy makers, as they sustain competitive advantages.

Herein, understanding the preferences of knowledge workers is crucial in order to mitigate potential suburbanization effects while proposing policy measures (Frenkel, Bendit & Kaplan, 2013b, p.152). Another factor of importance is that knowledge workers' location decision-making process is considerably influenced by soft factors, which in turn depend on policies (Murphy & Redmond, 2009 in Lawton, Murphy & Redmond, 2012, p.55).

#### 3.5.1. Strategies and means to attract and retain workers

Cities implementing innovation districts aim to attract companies and individuals by providing what innovative companies and young professionals want, and not through fiscal and economic incentives (Morisson, 2015, p.11). Mommaas and Mould (2004; 2014 in



Morisson, 2015, p.111) address a strategy for the development of creative districts, containing three main actions. These include (1) the creation of favourable atmospheres for creative individuals to work, (2) the support of spin-offs and start-ups that will attract other creative workers, and (3) the promotion of trust, socialization, knowledge, inspiration, and incremental innovation in the creative industries characterized by risk and uncertainty.

Managers brand their cities and districts as the places to be for the creative class, entrepreneurs, innovative companies, and real-estate development companies (Morisson, 2015, p.52). For the attraction of the creative class and entrepreneurs, herein the focus should be on promoting quality of life, the easiness to create new ventures, and the spaces for collaboration that are present in the innovation district. The branding to attract innovative companies should aim to demonstrate the easiness of doing business in the innovation district, as well as the easiness to recruit talented and hardworking workers. Lastly, to attract real-estate companies the branding should focus on their core functions to experiment with new architectural approaches and build flagship projects that will give them worldwide recognition (Morisson, 2015, p.52+53).

Since both companies and employees consider business communities, -support, and -events important, area managers should stimulate this. The establishment of business communities can be stimulated by means of selecting companies based on certain concepts. Business support can be offered by for example landing platforms, where entrepreneurs become part of a start-up ecosystem as soon as they plug their computers into the co-working spaces specifically designed for them (Morisson, 2015, p.80). Business events can for example be organised by seed accelerators, start-up incubators, and venture capital companies. Hence, they form the necessary ecosystem to attract and retain entrepreneurs (Morisson, 2015, p.78).

As creative people value high-quality amenities and experiences, openness to diversity of all kinds, and the opportunity to validate their identities as creative people (Florida, 2002 in Morisson, 2015, p.108+109), also of amenities, social tolerance and openness should be stimulated and facilitated by area managers.

### **3.5.2. Strategies and means to attract and retain residents**

Managers should plan districts in a way that enhances its residents' quality of life. To generate a healthy creative milieu, area managers can for example provide low-cost licenses for operating food trucks and street kiosks; low-rent artist workshops; make available no-interest loans or low-rent spaces for independent coffee shops, bars restaurants, cinemas, bookshops and stores; build a performance centre and/or a museum; loosen regulations for street artists and performers, pup-up events and pup-up bars, restaurants, and stores; promote festivals and congresses; permit graffiti and street art, flying drones, and drinking in the streets; and promote the legalization of 'necessary evils' like recreational drugs (Morisson, 2015, p.112).

In order to attract residents, managers have to invest in cultural and leisure opportunities (Zenker et. al., 2013 in Dragin-Jensen, Schnittka & Akkil, 2016, p.59). City managers have to select the right types of events to support this. As events boost the confidence of local communities (Garcia, 2004 in Dragin-Jensen, Schnittka & Akkil, 2016, p.55), they can also contribute to the retention of residents. Vibrant and attractive event portfolios are needed to increase the perceived variety in life and quality of life and to ensure retention of residents (Dragin-Jensen, Schnittka & Akkil, 2016, p.59).

Besides effects on the attraction and retention of users, hosting events can as well result in the provision of new facilities and venues as well, contributing to the regeneration of neighbourhoods (Karadakis, Kaplanidou & Karlis, 2010 in Dragin-Jensen, Schnittka & Akkil, 2016, p.55).

### 3.5.3. Strategies and means to attract and retain visitors

To attract visitors to innovation districts, a frequently used tool is the organisation of events. An important aspect of hosting events is that it can showcase a city and highlight advantageous conditions it offers (Westerbeek & Linley, 2012 in Dragin-Jensen, Schnittka & Akkil, 2016, p.57), improving the sum of beliefs, ideas and impressions that people have of a particular location (Crompton, 1979 in Dragin-Jensen, Schnittka & Akkil, 2016, p.55). Hence, image and branding can be positively influenced (Xing & Chalip, 2006 in Dragin-Jensen, Schnittka & Akkil, 2016, p.55), possibly resulting in the attraction of more visitors, in turn increasing local resident expenditures and the attraction of investors (Dragin-Jensen, Schnittka & Akkil, 2016, p.55). Eventually, the city's competitiveness can be improved (Ritchie & Crouch, 2000 in Dragin-Jensen, Schnittka & Akkil, 2016, p.55).

Besides, also offering a variety of amenities is important for the attraction and retention of different types of visitors. Therefore, a combination of natural, aesthetic, and recreational amenities should be offered.

### 3.5.4. Conclusion

Planners thus play an important role in the attraction and retention of users to innovation districts. Some types of companies and visitors will be attracted by the identity already, but effort is needed in order to retain these people and to attract other workers, residents and visitors as well. Only then, ensure diversity, urbanity, and social tolerance can be ensured.

The strategies and means used to attract and retain residents, companies, employees and visitors are summarized in table 16.

	Companies	Employees	Residents	Visitors
Strategies and means to attract + retain users	Offer a variety of amenities Organisation of events + activities Branding + marketing Involve users in the development process Offer business support, -events, and -communities Selection based on sector	Offer a variety of amenities Organisation of events + activities Branding + marketing Involve users in the development process Offer business support, -events, and -communities	Offer a variety of amenities Organisation of events + activities Branding + marketing Involve users in the development process Selection based on commitment to area Invest in culture + leisure opportunities	Offer a variety of amenities Organisation of events + activities Branding + marketing

Table 16. Strategies and means to attract users (own illustration)

## 3.6. Conclusion

As a basis for the empirical research, the goal of this chapter was to gain insight in the types of users present in UIDs, their preferences, and strategies and means used by area managers to attract and retain them.

Users that are generally present in the different types of Urban Innovation Districts are residents, workers (companies and employees) and visitors. These main groups are divided in sub-groups, based on life stage and income (residents), life stage and sector (employees), company size and sector (companies), and life stage and purpose of visit (visitors). The overviews of the sub-groups can be found in Appendix I, II, III and IV.

The presence of all three groups is essential for the dynamics, attractiveness and the success of UIDs. Every user group uses innovation districts for different purposes, and contributes to

the identity of the district in its own way. Workers for a large part determine the identity of the district and give the liveliness of the district a boost during the day. Besides, residents ensure liveliness at night as well. And, visitors contribute to the diversity of people in the district, and the liveliness of the district during weekends, activities and events.

There are some factors that are considered necessary and attractive by all types of users, including urbanity, diversity, and quality of space. It however differs per user type by which combination of factors these concepts can be attained.

In order to create urbanity, diversity, and quality of space in an area, planners need to put effort in the attraction and retention of different types of users. Users can be attracted by several strategies and means. The organisation of events and activities, the supply of a variety of amenities, and branding and marketing are used for the attraction of all user types. Also some user-specific strategies and means were defined.

### Variables

These results can be translated into variables for users and variables for planners, which serve as the input for the empirical research that will be conducted amongst users and area managers of Strijp-S and M4H.

The variables for users are divided into variables related to physical, economic, and social assets. Physical variables have further been clustered into variables relating to amenities, public space, building level and accessibility. Economic variables have been split into a group of variables relating to costs and expenditures and a group relating to the economic environment, mainly of interest for workers. Finally, social variables have been divided in variables related to the atmosphere and variables related to interactions. Appendix V provides an overview of the variables relating to users.

The variables for planners are divided into variables related to vision, user groups, strategies and means to attract and retain target groups, user relations, and evaluation. 'Vision' is further divided into vision on the development of the area and vision on the way of developing the area. 'User groups' is split in target groups, present user groups, and future user groups. 'Means to attract and retain users' is further divided into strategies and means to attract users, and strategies and means to retain users. 'User relations' is further divided into user involvement, relations between users, and relation between users of the area and surrounding areas. Finally, 'evaluation' was for Strijp-S split in lessons learned and advice for future developments. For M4H it was split into potential and challenges. Appendix VI provides an overview of the variables relating to planners.



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# EMPIRICAL RESEARCH CASES

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## 4. STRIJP-S

To gain insight in the user types, -preferences and strategies used by area managers during the development of the area, at Strijp-S empirical research is conducted in the form of a survey, interviews, a focus group and two micro cases. The findings from this research are compared to the results from the theoretical framework, and subsequently used for the advice to the Merwe-Vierhavens.

The chapter starts with the case description, in which the history of the area, the goal of the development and the current development stage are discussed. Subsequently, the user types present in the area and their preferences are addressed, based on the survey, the focus group and the micro cases. Thereafter, the management of Strijp-S is discussed, including the vision on the development, target groups, strategies and means to steer on the attraction and retention of users, user relations, and an evaluation of the development process. The chapter ends with the conclusions, in which the findings are compared to theory, and success factors, factors of improvement, and lessons learned are defined.

### 4.1. Case description

Eindhoven is the fifth largest city in the Netherlands (Eurocities, 2015, p.1), and is part of two major international networks: Brainport and Brabantstad. These networks have the ambition to invest in knowledge infrastructure and to realise attractive business climates for both companies and employees. Strijp-S is positioned as the heart of the Brainport network (Enno Zuidema Stedenbouw, 2008, p.7).

Since 1892, Eindhoven has been the hometown of electronics company Philips. As Philips attracted many investors and companies to the city, the company was the facilitator for the development of Eindhoven as a major and technological hub (Eurocities, 2015, p.1). The Strijp-S area was developed in the early 20<sup>th</sup> century, because Philips grew fast and needed extra space. During the peak period, the area provided work for 15.000 to 20.000 workers. Due to the strict policy concerning accessibility, during this period Strijp-S was known as the 'Forbidden City' (Van Winden et. al., 2013, p.56).

A turning point occurred in the early 1990's, when Philips lost ground to new competitors from Asia and traditional competitors from the west. Philips needed to restructure and had to return to its core business. As a result, many production units were closed or relocated to few strategic locations, including the production units at Strijp-S (Van Winden et. al., 2013, p.56).

In 2002, the area became eligible for redevelopment when Philips transferred the area to Park Strijp Beheer: a public private partnership between the municipality and developer VolkerWessels (Van Winden et. al., 2013, p.56). The development strategy formulated includes the goal of giving the area a new identity as a 'creative city', actively fostering cultural innovation and creative entrepreneurship (Goulden, 2015).

In the meantime, Strijp-S is home to more than 700 companies with about 7000 employees. Over 1000 residents live at Strijp-S, and since the start of the development the area has attracted more than 1.3 million visitors (Park Strijp Beheer, 2017). As such, Strijp S has become the largest urban redevelopment area in the Netherlands (Eurocities, 2015, p.2).

#### *Goal of the development*

When the economic development of Eindhoven started growing again after the depression, the high-tech industry arose. The industry grew fast and needed more personnel and space. However, people considered Eindhoven particularly as a provincial city, while a metropolitan appeal is needed to attract and retain talented people (Sint Trudo, 2017).

Strijp-S has been assigned the location to create this missing metropolitan environment (KuiperCompagnons, 2008, in Van Winden et. al., 2013, p.55), characterized by a multitude of functions, high density, and a 24/7 culture that creates liveliness (Sint Trudo, 2017). As a multi-functional urban sub centre, it has to create the living and working conditions that increase the attractiveness of Eindhoven for international knowledge workers and artists (KuiperCompagnons, 2008, in Van Winden et. al., 2013, p.55).

Three central themes - technology, design and culture - were defined to keep the historical identity of the area alive (Van Winden et. al., 2013, p.69). In line with the strategy of the city, another aim of the development is to reinforce the role of art and culture and to further connect them with creativity, innovation, technology and science (Eurocities, 2015, p.1).

### *Development stage*

At the moment, more than 700 companies with over 2000 employees are housed at Strijp-S. Besides, in 2013 the first residents have moved to the area and now more than 1000 people live there. Since the opening of the area, also mover 1.3 million people have visited Strijp-S (Interviewee 1, 2017; Park Strijp Beheer, 2017).

In the meantime, the area has reached an advanced development stage in which most of the former Philips factories have already been redeveloped. Also significant part of the new buildings is built. Figure 10 shows the current development stage, and figure 11 shows how the area will look in 2030 according to the existing plans. In these figures the grey buildings are old buildings that are renovated, the white buildings are the new buildings, and the brown buildings are old buildings that will be demolished and replaced.



2017

Figure 10. Current development stage (Park Strijp Beheer, 2017).



2030

Figure 11. Strijp-S in 2030 (Park Strijp Beheer, 2017).

## 4.2. User types and preferences

This paragraph identifies the user groups present at Strijp-S, and their preferences and experiences. Therefore, first the vision on target groups is discussed based on existing documents. Thereafter, the findings from the survey, the focus group and the micro cases conducted amongst users of Strijp-S are discussed. Based on these findings, successful factors of attraction and retention, and points of improvement per user group can be distinguished.

### 4.2.1. Vision on target groups

In the strategy for Eindhoven 2020, three target groups for the city are defined: Bright talent, Tech starters, and City explorers (Eindhoven365, 2016, p.25).

*“Bright talent is Eindhoven’s core target group ... coming to Eindhoven because they believe it is the ideal place to realise dreams. They are innovators that have been trained on the basis of technological concepts and are fascinated by creative innovation. They move on the interface between technology and design and are looking for new opportunities here”* (Eindhoven365, 2016, p.25). When comparing this group to the user groups as defined in chapter 3, these people can be seen as young employees or residents, active in the synthetic or symbolic sector.

*“Tech starters regard Eindhoven as the ideal place to start a tech business. They are the entrepreneurs whose job is to ensure that the Eindhoven area works towards its next ASML. They are energetic perfectionists with the drive to put innovative products on the market ... and have the right combination of technology mindset and business skills”* (Eindhoven365, 2016, p.25). These people can be compared to starting employees or residents, active in the synthetic sector. As their focus is on creating new innovative products, it is assumable they will often work for start-ups.

*“City explorers in many cases visit Eindhoven for rather a shorter period... between 2 days and 2 weeks. They have an affinity with innovation or creativity and their objective as Early Adopters is to gain inspiration and then use this to come up with new ideas themselves ... They act as ambassadors for the city, while at the same time generating economic value by spending money in the city on hotels, restaurants, culture, retail etc.”* (Eindhoven365, 2016, p.25). These people can be compared to visitors from all ages, visiting the city for different purposes.

Regarding workers and residents, the city thus mainly focuses on the attraction of young people and starters active in synthetic or symbolic sectors. Regarding visitors, they aim to attract a variety of user types, but with an affinity with innovation or creativity. Concerning the different stages of adopting technologies, the focus is mainly on the attraction of innovators and early adopters. These people will set the scene and contribute to the attraction of more people.

At Strijp-S, in line with the vision to add the missing metropolitan area to the city, the main target groups consist of starters and people with a metropolitan lifestyle (Trudo, 2017). This counts especially for workers and visitors. Regarding visitors, the aim is to attract a variety of international, national, and local visitors (Bestuur en Adviesgroep Cultuurfonds Strijp-S, 2013, p.1+2). This includes people from different life stages and with different purposes for their visit.



#### 4.2.2. Findings from practice

The link to the online self-completion survey was sent to 1120 people living or working at Strijp-S. To reach the visitors of Strijp-S the link to the survey has been shared on LinkedIn and Facebook, and some people have been approached during the Dutch Design Week 2017 as well. The survey has been filled in by a total of 207 respondents. Based on the 1120 people with whom the link to the survey was shared, the response rate can be determined at 18.5%.

However, more people have seen the link on LinkedIn or Facebook. The exact number of people that saw the link is hard to determine though. Assuming that about 500 more people saw the link to the survey online, the response rate can be established at 13%.

The survey has been filled in by 63 workers, 72 residents and 75 visitors. But, there are also some people with multiple functions at Strijp-S. Therefore, a group of people both working and living at Strijp-S has been added for the analysis, since these are two strong and equivalent activities. This group is however very small (3%). People living at and visiting Strijp-S are included as residents and people both working at and visiting Strijp-S are included as workers, because in these combinations living and working are dominant activities. Figure 12 shows an overview of the characteristics of the respondents, next to their role also including their gender, life stage, education, sector and residence.

Next to the survey, information about user preferences was also gained by means of a focus group with 8 participants and 2 micro cases conducted with entrepreneurs active at Strijp-S.

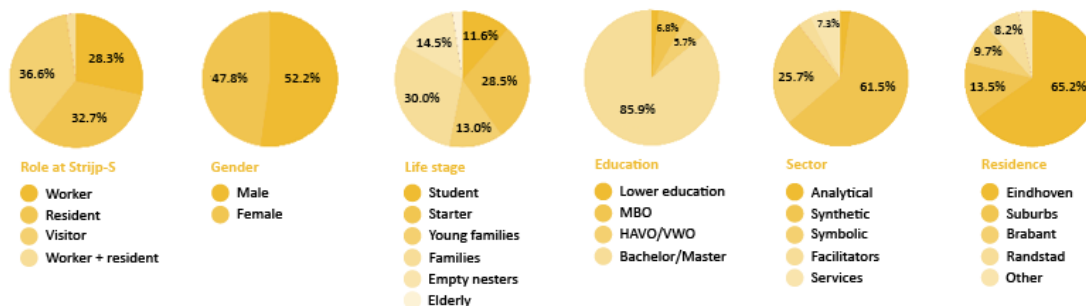


Figure 12. Characteristics of all respondents (own illustration).

#### Comparison of the preferences and experiences per user group

As can be found in Appendix X, the survey included questions with regards to people's motivation to choose for Strijp-S and their preferences and experiences. To identify the latter, some questions about the importance of certain factors and the quality of these factors at Strijp-S were included. People had to rate the importance by means of a five-point scale, in which 1 meant not important at all and 5 meant very important. People had to rate the quality of the factors by means of a five-point scale as well, in which 1 meant very low quality and 5 meant very high quality. Based on how the respondents filled in these questions, the preferences and experiences of the different user groups can be compared. The results can be found in Appendix XI.

Based on table A (Appendix XI), regarding the importance of the proposed factors it can be noted that:

- All groups find recreational amenities, accessibility with public transport, and openness and tolerance important.
- Workers find accessibility with private transport and the presence of other employees or companies more important than the other user groups.
- Compared to the other groups, people both living and working at Strijp-S find all types of amenities more important. They also find accessibility with public transport,

presence of other employees or companies, and openness and tolerance relatively important. On the other hand, they find private spaces in buildings, accessibility with private transport, presence of a suitable labour pool and planned interaction less important than other groups.

- Residents find shared spaces in buildings less important than workers and visitors.

Based on table B (Appendix XI), regarding the quality of the proposed factors at Strijp-S it can be noted that:

- The quality of natural and functional amenities at Strijp-S is overall poorly rated.
- The quality of cultural amenities, the accessibility with public transport and the location of Strijp-S is overall rated very high.
- Visitors rate the quality of costs for services and goods relatively low, pointing at things being too expensive. They assessed the quality of functional amenities higher than the other groups, but presumably use them less frequently. They further rate social diversity, openness and tolerance, and the quality of interaction – all related to social contacts - higher than the other user groups.
- People both working and living at Strijp-S rate the accessibility of the area with private transport and the costs for space and services or goods lower than the other user groups, also pointing at the costs being too high.

When combining these findings, factors that have been rated as very important (score >4, representing 'important') and of which the quality is assessed high as well (score >4, representing 'high quality'), can be seen as successful factors of attraction and retention. Factors that have been assessed as being very important (score >4) but of which the quality was assessed low (score <3, representing 'average'), or of which the quality is assessed more than 1 point lower than the importance can be seen as factors that need to be improved in order to attract and retain more users. Factors of which the quality was between 0.5 and 1.0 point lower than the importance can be seen as factors that could be improved in order to attract and retain more users. Table 17 summarizes the successful factors of attraction and retention and the factors of improvement at Strijp-S for the four user groups.

User group	Successful factors of attraction and retention (importance >4.0 and quality >4.0)	Factors that need improvement (quality more than 1.0 point lower than importance)	Factors that can be improved (quality between 0.5 and 1.0 point lower than importance)
General	Accessibility by public transport Location Openness and tolerance	Natural amenities Functional amenities	Costs for space Costs for services and goods
Workers	Accessibility with public transport Presence of other companies and employees Openness and tolerance	Functional amenities	Natural amenities Accessibility by private transport Internal accessibility Costs for space Costs for services and goods
Residents	Accessibility by public transport Location	Natural amenities Functional amenities	Recreational amenities Accessibility by private transport Costs for services and goods
Visitors	Cultural amenities Accessibility by public transport Accessibility by private transport Openness and tolerance	Natural amenities	Recreational amenities Functional amenities
Workers + residents	Cultural amenities Aesthetic amenities Accessibility by public transport Presence of other companies and employees	Natural amenities Recreational amenities Functional amenities Costs for services and goods Social diversity Openness and tolerance	Private spaces in buildings Internal accessibility

Table 17. Overview of successful factors of attraction, retention and improvement in general (own illustration).

From this table it can be concluded that for all user groups, accessibility by public transport is a successful factor of attraction and retention. The respondents have also indicated location, and openness and tolerance as successful factors of attraction and retention. The factors that need most improvement in order to better attract and retain users to Strijp-S are natural and functional amenities. All user groups have assessed the quality of these factors below average, while they assessed the importance above average. Factors that might be improved in order to attract and retain more users are the costs for space, services and goods. This implies the costs being too high.

For **workers**, also the presence of other companies and employees is a successful factor of attraction and retention. Workers have indicated accessibility with public transport and openness and tolerance as successful factors of attraction and retention. Next to natural and functional amenities, also accessibility with private transport, internal accessibility and costs for space, services and goods can be improved in order to attract and retain more workers.

For **residents**, next to accessibility with public transport, also the location of Strijp-S is one of the most successful factors of attraction and retention. Residents that work at Strijp-S as well are also successfully attracted and retained by cultural and aesthetic amenities. In order to attract and retain more residents, next to natural and functional amenities and costs for space and services and goods, recreational amenities and accessibility by private transport can be improved as well. Furthermore, people both living and working at Strijp-S have indicated that private spaces in buildings and internal accessibility could be improved.

For **visitors**, cultural amenities are the most successful factors of attraction and retention. They have further indicated accessibility by public and private transport and openness and tolerance as successful factors of attraction and retention. In order to attract and retain more visitors, besides natural and functional amenities also the recreational amenities can be improved.

The preferences and experiences of workers, residents and visitors will be discussed more in detail in the following paragraphs. Based on the survey, the user sub-groups present at Strijp-S can be identified. Since the survey was only filled in by a part of the users, next to the groups represented by respondents, other types of users might be present at Strijp-S as well. In this research the sub-groups represented by more than 10% of the respondents of the user group will be further analysed.

**Workers**

The survey has been filled in by a total of 63 workers, of which 58 people only work (and some also visit) at Strijp-S and 5 people both work and live at Strijp-S. The group of workers analysed in this paragraph consists of the 58 people only working at Strijp-S. Figure 13 shows the characteristics of the workers that filled in the survey. For the analysis of their preferences and experiences, the group of workers will be split in companies and employees.

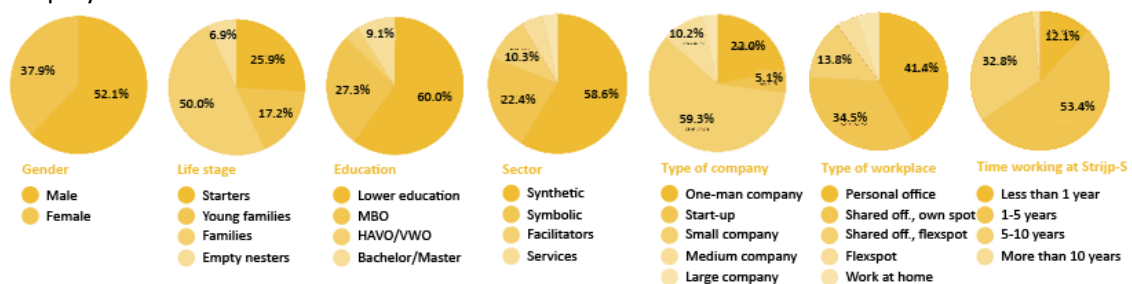


Figure 13. Characteristics of respondents that work at Strijp-S (own illustration).

### Companies

From Figure 14, it can be concluded that there are no analytical companies who filled in the survey. In combination with the target groups for Strijp-S – creative and technology related companies – it can be assumed that the amount of analytical companies at Strijp-S is negligible. Besides, there were also only few facilitating (3%) or service (7%) companies that have filled in the survey. It can however be observed that most companies that filled in the survey are active in synthetic (57%) or symbolic (33%) sectors.

Regarding the size of companies, it can be noticed that mostly one-man companies (25%) and small companies (56%) are present at Strijp-S. Therefore, especially the preferences and experiences of synthetic and symbolic one-man companies (resp. 10% and 13%) and synthetic and symbolic small companies (resp. 30% and 18%) will be further analysed.

But, since workers are the most important user group in UIDs, it is interesting to compare the preferences and experiences of these companies to those of the other types of companies as well. Therefore, although only few respondents work for start-ups, middle-sized companies or large companies – and their results are thus less reliable – these types will also be included in the analysis. They are mainly used to shape the context for the analysis of the preferences and experiences of one-man companies and small companies.

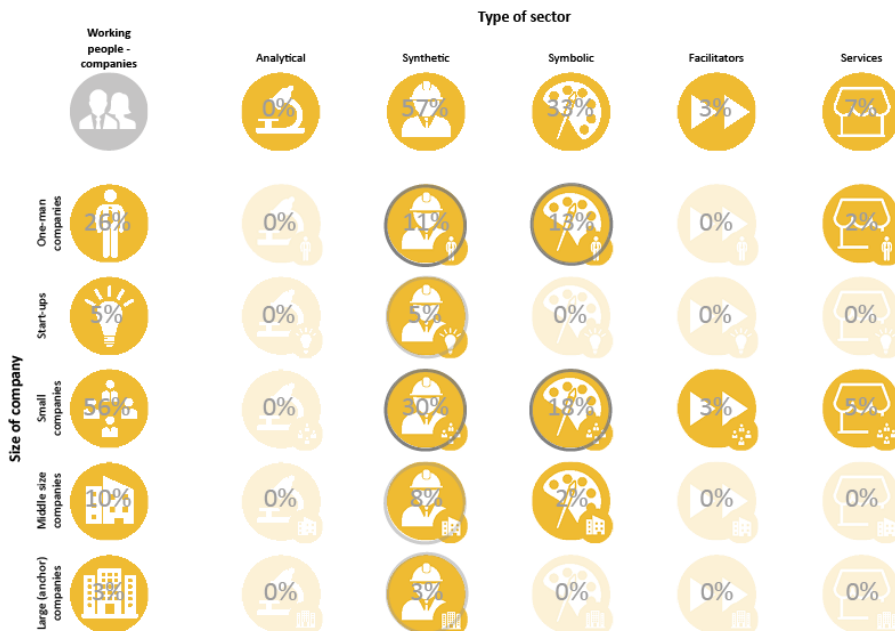


Figure 14. Distribution of companies amongst sub-groups (own illustration).

Table C (Appendix XI) shows the importance of the defined factors for the selected sub-groups. From this table, it can be concluded that:

- Generally seen, one-man companies find all types of amenities more important than the average of workers, and also more important than small companies. They also find meeting places in the public space and shared spaces within buildings more important than the average worker.
- One-man companies active in the symbolic sector find social diversity, openness and tolerance, and spontaneous interaction – all related to social contacts - more important than the average worker at Strijp-S.
- One-man companies indicate the presence of a suitable labour pool as not that important, which is logical because they do not need personnel.
- One-man companies in the symbolic sector rated accessibility by private transport and internal accessibility less important than the average worker. They however rated the importance of accessibility by public transport higher than average.

- Small companies rated the importance of internal accessibility higher than the average of workers.
- Small companies in the symbolic sector find accessibility with public transport the most important factor, while small companies in synthetic sectors find this factor less important than the average of workers. It seems like workers in the symbolic sector value accessibility with public transport more than workers active in the synthetic sector.
- Small companies in the symbolic sector find amenities more important than small companies active in the synthetic sector. Especially for cultural and aesthetic amenities this might have to do with their creativity-oriented focus.
- Companies active in the symbolic sector find openness and tolerance more important than companies active in the synthetic sector. Also, small companies in the synthetic sector find shared spaces in the public space and in buildings less important than companies active in the symbolic sector. This points at symbolic companies valuing social contacts more than synthetic companies.

Comparing these types of companies to larger companies, it can be noted that:

- Larger companies (middle-sized and large companies) have rated the importance of flexibility of space, accessibility with private transport, internal accessibility, and the presence of a suitable labour pool higher than smaller companies.
- They have conversely rated the presence of other companies, spontaneous interaction, and planned interaction – all related to social contact - less important than smaller companies.
- Furthermore, start-ups have rated the importance of private spaces in buildings, costs for space, and planned interaction higher than the other types of companies. They rated the importance of natural amenities, meeting places in the public space, and flexibility of space lower than the other groups.

Table D (Appendix XI) shows how the sub-groups of companies have rated the quality of the factors at Strijp-S. From this table, it can be concluded that:

- One-man companies in the synthetic sector have rated the quality of many factors below the average of workers, while one-man companies active in the symbolic sectors have rated many factors above the average of workers.
- One-man companies active in the symbolic sector have assessed the quality of all amenities (except for natural amenities), and all types of accessibility higher than one-man companies in the synthetic sector. They also rated the quality of the presence of other companies and spontaneous interaction significantly higher than one-man companies in the synthetic sector.
- One-man companies in the synthetic sector assessed the quality of meeting places in the public space and shared spaces in buildings lower than the other groups. They also assessed the quality of costs for space, services and goods lower than average. Furthermore, they have rated the quality of flexibility of space and the accessibility by private transport lower than the other groups of companies. Lastly, they also the quality of interaction between employees/companies, social diversity, openness and tolerance, and spontaneous interaction worse than the average group of workers.
- Both types of one-man companies assessed the quality of social diversity lower than the small companies. They however have rated the quality of cultural amenities higher than small companies.
- Both types of companies in the symbolic sector have rated the quality of accessibility with public transport higher than average, and also have rated this

factor as being very important. They rated the presence of other companies higher than average as well.

- Small companies have rated the quality of most factors not much different than the average of workers. However, it is noticeable that they rated the quality of all amenities, except for functional amenities, slightly higher than the average of workers. They rated the quality of functional amenities, private space in buildings, and flexibility of space in buildings slightly lower than the other groups.

Comparing these preferences to the preferences of larger companies, it can be noticed that:

- Middle-sized and large companies assessed the quality of cultural-, natural-, recreational-, and aesthetic amenities lower than smaller companies. They also marked the quality of costs for space and tenure relatively low.
- Large companies have rated most factors very positive. It is assumable that this is not representative for all large companies, because only few respondents working at large companies have filled in the survey.
- Additionally, start-ups rated the quality of shared spaces in buildings, internal accessibility, costs for space, services and goods, and social diversity higher than the other groups. They assessed the quality of cultural- and recreational amenities, accessibility with public transport, the presence of a suitable labour pool, and planned interaction lower than the other company types.

As was done for the comparison of the main user groups as well, by combining these findings, factors of which it has been indicated that they are seen as very important (score >4, representing 'important') and of which the quality is assessed high as well (score >4, representing 'high quality'), are seen as successful factors of attraction and retention. Factors that have been assessed as being very important (score >4) but of which the quality was assessed low (score <3, representing 'average'), or of which the quality is assessed more than 1 point lower than the importance can be seen as possibilities for improvement at Strijp-S. Table 18 summarizes these factors per sub-group.

Sub-group of companies	Successful factors of attraction and retention (importance >4.0 and quality >4.0)	Factors that need improvement (quality more than 1.0 point lower than importance)	Factors that can be improved (quality between 0.5 and 1.0 point lower than importance)
One-man companies in the synthetic sector	Accessibility by public transport Cultural amenities	Natural amenities Recreational amenities Functional amenities Meeting places in the public space Flexibility of space Accessibility by private transport	Internal accessibility Costs for services and goods Presence of a suitable labour pool Interaction between companies or employees Social diversity Spontaneous interaction
One-man companies in the symbolic sector	Aesthetic amenities Accessibility by public transport Accessibility by private transport Location Presence of other companies Spontaneous interaction	Natural amenities Functional amenities	Recreational amenities Meeting places in the public space Costs for space Costs for services and goods Social diversity Openness and tolerance
Small companies in the synthetic sector	Presence of other companies Openness and tolerance	Functional amenities Accessibility by private transport Costs for space Costs for services and goods	Natural amenities Recreational amenities Internal accessibility
Small companies in the symbolic sector	Accessibility by public transport Location Tenure Presence of other companies Openness and tolerance	Functional amenities	Natural amenities Recreational amenities Meeting places in the public space Accessibility with private transport Costs for space Costs for services and goods Spontaneous interaction

Table 18. Overview of successful factors of attraction and retention and points of improvement for companies.

### Employees

The distribution of employees amongst sectors is the same as for companies (Figure 15). Regarding life stage, the respondents are mostly distributed amongst the three groups of starters (28%), young families (21%) and families (44%). No students with a side job in one of the sectors have filled in the survey. The preferences and experiences of starting employees active in the synthetic sector (10%) and symbolic sector (13%), employees in the young family stage active in the symbolic sector (14%), and employees in the family life stage that are active in the synthetic sector (35%) will be further analysed.

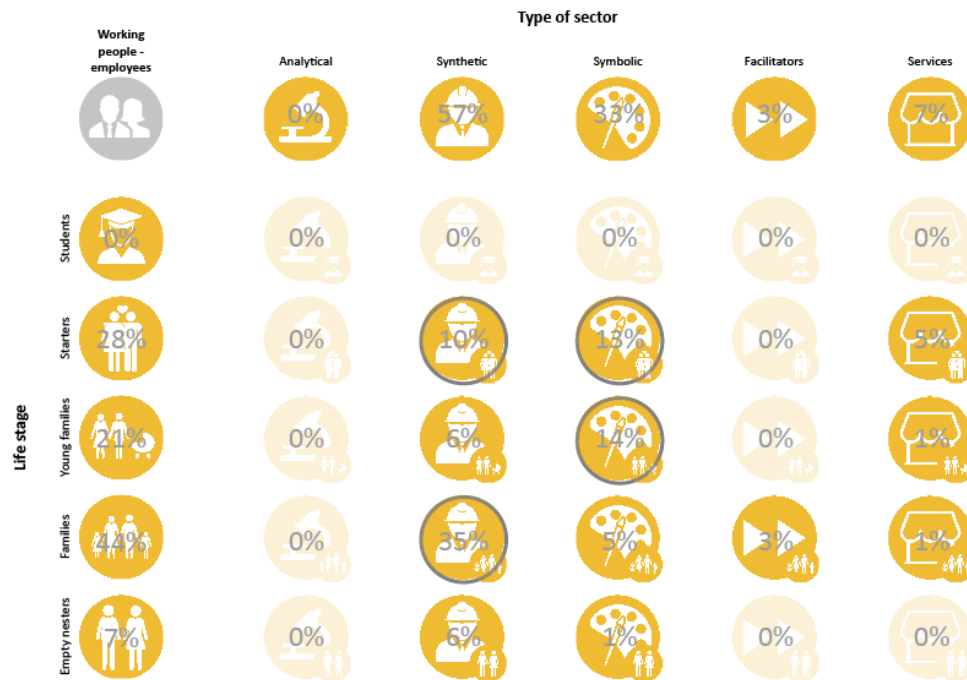


Figure 15. Distribution of employees amongst sub-groups (own illustration).

Table E (Appendix XI) shows the importance of the defined factors for the selected sub-groups. From this table, it can be concluded that:

- Overall, all four types of employees find functional amenities very important.
- Employees in the young family life stage find aesthetic amenities and meeting places in the public space more important than the other groups of employees and the average of workers.
- Employees in the 'families' life stage find shared spaces in buildings, private spaces in buildings, and flexibility of space relatively unimportant. On the contrary, they find costs for space significantly more important than the other groups of employees.
- Regarding starters, employees active in the synthetic sector find tenure and the presence of a suitable labour pool more important than employees active in the symbolic sector. They also find interaction between employees, social diversity, openness and tolerance, and spontaneous interaction – all related to social contact – more important than employees active in the symbolic sector. It is remarkable that they have not rated the importance of shared spaces in buildings high, although these spaces often stimulate interaction. This is in contrast with the results of companies, in which it seemed like companies in the symbolic sector value social contact more. The differences might be caused by the life stage 'starters'.
- Starters in the symbolic sector on the contrary value cultural amenities and accessibility with public transport more than starters in the synthetic sector.

Table F (Appendix XI) shows how the four sub-groups of employees have rated the quality of the defined factors at Strijp-S. From this table can be concluded that:

- Starters in the synthetic sector rate the quality of cultural amenities and flexibility of space in buildings lower than the other groups of employees. They do however rate the quality of aesthetic amenities, meeting places in the public space and shared spaces in buildings higher than the other groups.
- Starters in the symbolic sector rate the quality of accessibility by public and private transport higher than the other groups of employees. They rate the presence of other employees and social diversity relatively low.
- Employees in the ‘young family’ life stage assess the quality of cultural, recreational and aesthetic amenities higher than the other groups of employees. They further assess the quality of the tenure and the presence of other employees relatively high. Conversely, they have rated the quality of shared spaces in buildings, costs for services and goods, and planned interaction lower than the other employees.
- Employees in the ‘families’ life stage rate the quality of spontaneous and planned interaction relatively high, and rate the quality of private spaces in buildings relatively low.

Based on these findings, the most successful factors of attraction and retention and factors for improvement in the attraction and retention of employees can be distinguished. These factors are summarized per sub-group in table 19.

Sub-group of employees	Successful factors of attraction and retention (importance >4.0 and quality >4.0)	Factors that need improvement (quality more than 1.0 point lower than importance)	Factors that can be improved (quality between 0.5 and 1.0 point lower than importance)
‘Starters’ active in the synthetic sector	Presence of other employees and companies Openness and tolerance	Functional amenities Accessibility by private transport Tenure Interaction between employees or companies Spontaneous interaction	Natural amenities Recreational amenities Internal accessibility Costs for space Costs for services and goods Openness and tolerance
Starters’ active in the symbolic sector	Accessibility by public transport Location Openness and tolerance	Functional amenities	Natural amenities Recreational amenities Meeting places in the public space Costs for space
‘Young families’ active in the symbolic sector	Cultural amenities Aesthetic amenities Accessibility by public transport Presence of other employees	Functional amenities	Natural amenities Recreational amenities Meeting places in the public space Costs for services and goods Interaction between employees Social diversity Openness and tolerance
‘Families’ active in the synthetic sector	Location Presence of other employees Openness and tolerance	Functional amenities Recreational amenities Accessibility by private transport Costs for space	Internal accessibility

Table 19. Overview of successful factors of attraction and retention and points of improvement for employees.

Besides deducing factors of attraction and retention and potential points of improvement from how respondents rated the importance and quality of several given factors, they can also be deduced from open questions. At these questions, respondents had to fill in the three most important factors to choose for Strijp-S and to stay at Strijp-S. They were also asked to describe Strijp-S in three words and to fill in three factors missing at Strijp-S. In Appendix XII an overview of the results of these questions can be found.



It can be concluded that affordability, accessibility and a pleasant workplace are mentioned as being both important factors of attraction and retention by more than 10% of the workers. Other important factors of attraction are location, atmosphere, liveliness, image and interaction between firms. Important factors of retention are amenities, employment opportunities and events.

Regarding factors of improvement, practical amenities, especially a supermarket, was the factor that was most frequently mentioned in the open questions. This is in line with the functional amenities as deduced from the open questions. This factor was followed by affordable parking spots, an ATM, green, and variety of cafes and shops. Workers generally find Strijp-S lively and innovative.

In addition to the survey, a focus group was organised to get more insight in the experiences of users and to validate some results. During this focus group, participants were asked to write down their most important factors of attraction, retention and improvement. These factors, together with the results from the survey, were then discussed.

Table 20 shows the comparison between the factors of attraction and retention, and the factors of improvement deduced from the closed questions, the open questions and the focus group. It can be noted that the participants of the focus group confirmed accessibility, affordability, interaction between companies, and the presence of other companies as being important factors of attraction. They also added some factors, being diversity of people, architecture, activities for companies, and the presence of like-minded people.

The participants of the focus group confirmed functional amenities, natural amenities (green), and a variety of cafes and shops as factors needing improvement. They added opening hours, collaboration between companies, knowing what is there, and interaction beyond building level as well. About the latter, one of the participants working at Office-S stated: *“I think the problem of Strijp-S is that there is no cross-fertilization between the users of different buildings ... there is a lot going on within our building, but I have no idea what is going on in the Klokgebouw. And the people working in the Klokgebouw do no know is going on in our building”* (Participant 4 focus group, 2017).

In line with interaction beyond building level lies knowing what is there. It is currently not insightful which companies are located in the area and what their activities are. As a participant living at Strijp-S and working nearby stated: *“Our company frequently outsources tasks, such as app designs. We do want to outsource these type of tasks to companies located at Strijp-S, but it is hard to find which companies are there and what they do”* (Participant 1 focus group, 2017).

	Factors derived from closed questions survey	Factors mentioned in open questions survey	Factors mentioned in Focus group
Factors of attraction and retention	Accessibility Presence other companies Openness + tolerance Amenities Location Interaction	Accessibility Affordability Image Liveliness Innovativeness	Accessibility Affordability Interaction companies Presence other companies Diversity of people Architecture Activities for companies Like-minded people
Factors of improvement	Functional amenities Natural amenities Accessibility private transport Costs for space, services and goods	Functional amenities Green Affordable parking Variety shops and cafes	Functional amenities Green Variety shops and cafes Opening hours amenities Collaboration between companies Knowing what is there Interaction beyond building level

Table 20. Overview factors of attraction and retention.

### Residents

The survey has been filled in by a total of 72 residents, of which 67 people only live at Strijp-S and 5 people both live and work at Strijp-S. Figure 16 shows the characteristics of the residents that have filled in the survey.

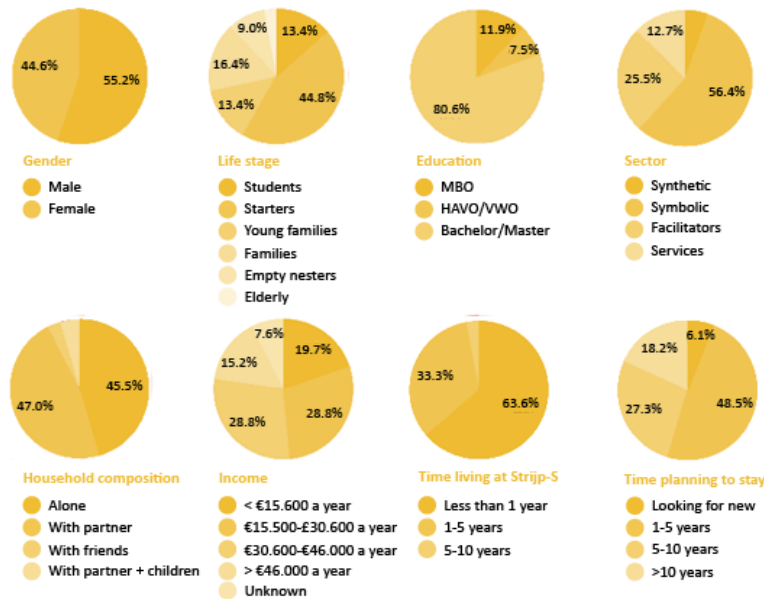


Figure 16. Characteristics of residents that filled in the survey (own illustration).

As can be seen in figure 17, for residents the group of starters is the largest group (44%), followed by young families (17%) and families (15%). Young people are thus well represented at Strijp-S, which is in line with the target groups defined in the vision of the city. The respondents are almost equally distributed amongst the four income groups: 21% low income, 30% lower middle income, 27% higher middle income, and 22% high income. Since they are represented by more than 10% of the respondents, the preferences and experiences of students with a low income (11%), starters with a lower middle (18%) or higher middle (17%) and families with a high income (10%) will be further analysed.

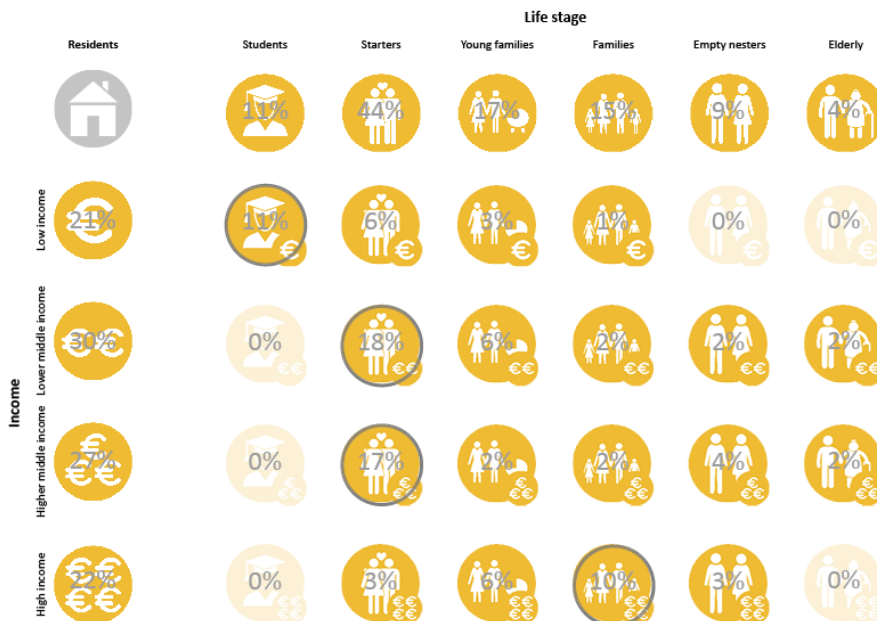


Figure 17. Distribution of residents amongst sub-groups (own illustration).

Table G (Appendix XI) shows how the four selected sub-groups have assessed the importance of the factors in the survey. From this table it can be concluded that:

- Students find functional amenities, flexibility of space, accessibility with public transport, internal accessibility and costs for space more important than the other groups of residents. The last factor is probably related to their low income. They find natural amenities, openness and tolerance, and spontaneous interaction less important than the other groups.
- Starters with a lower middle income value recreational and aesthetic amenities less than the other groups of residents. They slightly less value cultural amenities and meeting places in the public space as well. They do however find costs for space and tenure more important than the other residents, which has probably do to with their income.
- Starters with a higher middle income find many factors less important compared to other resident groups. They for example value functional amenities, accessibility, costs, tenure, social diversity and interaction less than the other three groups and the average of residents.
- Families with a high income find functional amenities, openness and tolerance, and spontaneous interaction relatively important. It is remarkable that it seems like older people value interaction, and openness and tolerance more than younger people.
- On the contrary, families with a high income find cultural amenities, shared spaces in buildings and flexibility of space relatively unimportant.

Table H (Appendix XI) gives an overview of how the four groups of residents have assessed the quality of different factors in the survey. It can be noticed that:

- Students have assessed the quality of functional amenities and private spaces in buildings at Strijp-S higher than the other groups. They however have assessed the quality of openness and tolerance lower than the other residents.
- Starters with a lower middle income have rated the quality of cultural and functional amenities, accessibility with private transport, internal accessibility, and the location lower than the other groups.
- Starters with a higher middle income have assessed the quality of costs for space and the tenure relatively low, but the quality meeting places in the public space relatively high in comparison with the other groups.
- Families with a high income have assessed the quality of accessibility with private transport, the internal accessibility, and openness and tolerance higher than the other residents. On the contrary, they have assessed the quality of recreational and functional amenities, flexibility of space, and interaction lower than the other groups and the average of residents.

Combining these findings, for each sub-group successful factors of attraction and retention and points of improvement can be defined. Table 21 gives an overview of these factors.

Sub-group of residents	Successful factors of attraction and retention (importance >4.0 and quality >4.0)	Factors that need improvement (quality more than 1.0 point lower than importance)	Factors that can be improved (quality between 0.5 and 1.0 point lower than importance)
Students with a low income	Accessibility with public transport Location	Accessibility by private transport	Natural amenities Shared spaces in buildings Internal accessibility Costs for space Costs for services and goods
Starters with a lower middle income	Accessibility with public transport Location Openness and tolerance	Natural amenities Functional amenities Accessibility with private transport	Aesthetic amenities Costs for space Costs for services and goods Tenure
Starters with a higher middle income	Location Openness and tolerance	-	Natural amenities Recreational amenities Functional amenities
Families with a high income	Accessibility with public transport Accessibility with private transport Internal accessibility Location Openness and tolerance	Natural amenities Functional amenities Spontaneous interaction	Recreational amenities Costs for services and goods

Table 21. Overview of successful factors of attraction and retention and points of improvement for residents.

From the results of the open questions (Appendix XII), it can be noticed that residents have rated location as the most important factor of attraction and retention. Especially as factor of attraction this factor has been filled in twice as often as the other factors. Other factors that have been mentioned frequently as factor of attraction and retention are home comfort, housing type, liveliness, atmosphere and amenities. In addition, possibilities in the area, architecture and affordability are mentioned as factors of attraction. These factors have not been mentioned frequently as factors of retention.

Regarding factors that could be improved, the majority of the residents have pointed at practical amenities, especially a supermarket. Also green in the area was frequently mentioned as a factor that could be improved. Practical amenities can be seen as the functional amenities as mentioned in the closed questions, and green is part of the natural amenities as mentioned in the closed questions. These factors were followed by an ATM, affordable parking spots, interaction in the public space, and variety of cafes and shops. Residents find Strijp-S lively, hip, in development, industrial, atmospheric, and innovative.

Like was done for workers, these factors were also discussed during the focus group. As can be seen in table 22, the participants of the focus group living at Strijp-S confirmed liveliness, amenities, accessibility, and atmosphere as being important factors of attraction and retention. Regarding liveliness and atmosphere, one of the participants stated: *“Being retired and living in a townhouse, I had to go out to meet other people. Being retired and living here, I constantly meet people, organise activities, am a volunteer in many fields, and am surrounded by nice people with whom I do lots of fun things.”* (Participant 2 focus group, 2017). Besides these factors, the participants also added diversity of people, interaction with neighbours, and uniqueness of the area as important factors of attraction.

In line with the results of the survey, the participants of the focus group also mention functional amenities, variety of shops and cafes, interaction beyond building level and affordable building as factors of improvement. In addition, they also added noise of festivals. Interaction beyond building level thus not only applicable to workers, but also to residents. One of the residents that participated in the focus group stated: *“People are mainly connected to the people living in the same building. I think this is because the buildings are very large, bringing 300 people to the area at once. These people automatically are connected because they enter the area at the same time”* (Participant 1 focus group, 2017).

Residents however would like to connect with people living in other buildings as well. As another resident stated: *“I would like to have a group of people with whom I play cards. Of course I can propose that in the Whatsapp-group of my building, but than again it remains within the building. I would like to meet other people as well”* (Participant 3 focus group, 2017).

	Factors derived from closed questions survey	Factors mentioned in open questions survey	Factors mentioned in Focus group
Factors of attraction and retention	Location Accessibility Openness + tolerance	Location Liveliness Amenities Atmosphere Home comfort Housing type	Accessibility Liveliness Amenities Atmosphere Diversity of people Interaction neighbours Uniqueness
Factors of improvement	Functional amenities Interaction Accessibility private transport Natural amenities	Functional amenities Interaction public space Affordable parking Green Variety shops and cafes	Functional amenities Interaction between users of different buildings Affordable parking Variety shops and cafes Noise of festivals

Table 22. Overview factors of attraction and retention.

### Visitors

The survey was filled in by 94 visitors, of which 75 respondents only visit Strijp-S sometimes and 19 respondents also work at Strijp-S. Figure 18 summarizes the characteristics of these people.

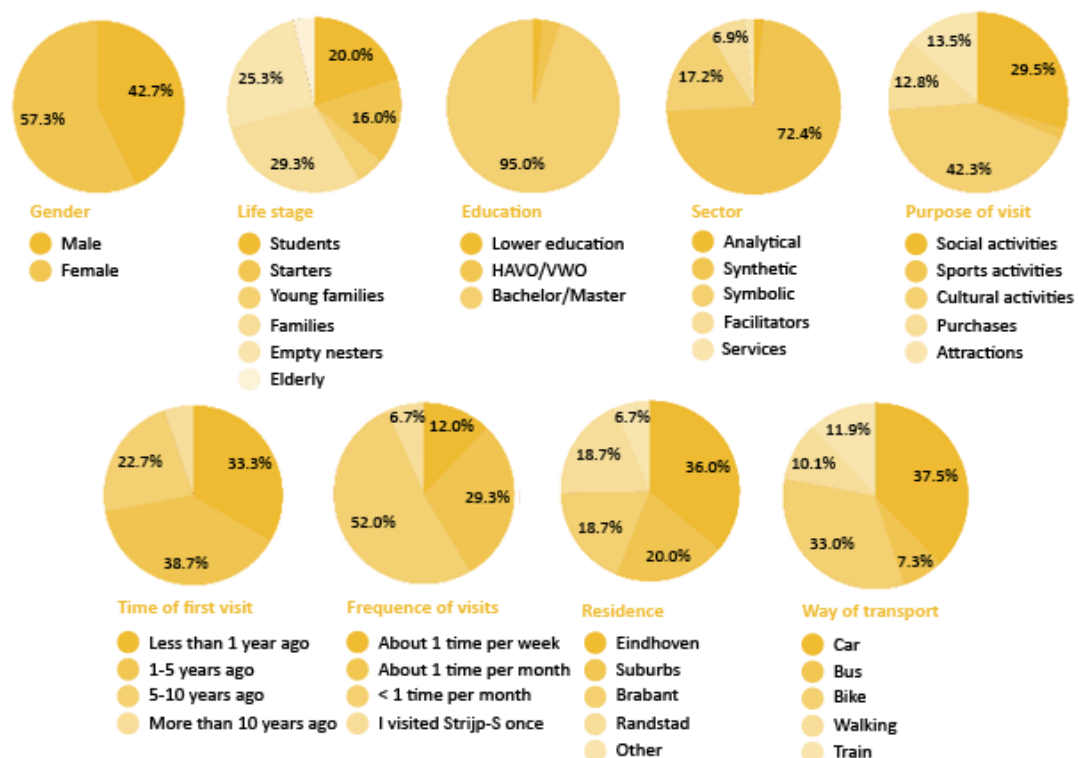


Figure 18. Characteristics of visitors (own illustration).

From figure 19 it can be concluded that the visitors of Strijp-S are, in line with the vision, very diverse. Most people visit Strijp-S for social (30%) or cultural (41%) activities. The activity attracting least visitors is sports (2%). People from all ages visit Strijp-S, but most

visitors are between 18 and 30 years old (38%) or between 55 and 70 years old (37%). The preferences and experiences of these age groups, visiting Strijp-S for social activities (resp. 13% and 10%) and cultural activities (resp. 15% and 15%) will be further analysed.



Figure 19. Distribution of visitors amongst sub-groups (own illustration).

Table I (Appendix XI) shows how the four selected sub-groups have assessed the importance of the factors in the survey. From this figure it can be concluded that:

- All four groups value spontaneous interaction more than the average of visitors.
- Visitors of the age 18-30 that visit Strijp-S for social activities find recreational amenities slightly more important than the other groups of visitors.
- Visitors of the age 18-30 that visit Strijp-S for cultural activities find accessibility with public transport slightly more important than the other visitors.
- Visitors of the age 55-70 value social diversity and both types of interaction more than visitors of the age 18-30. This is in line with the findings of residents, stating that older people value interaction, openness and tolerance more than younger people.
- Visitors of the age 55-70 that visit Strijp-S for social activities value natural and aesthetic amenities less than the other visitor-groups. They do however value accessibility with private transport and internal accessibility more than average and the other groups.
- Visitors of the age 55-70 that visit Strijp-S for cultural activities find social diversity more important than the average visitor.

Table J (Appendix XI) shows how the visitors of Strijp-S have rated the quality of the factors included in the survey. From this figure it can be noticed that:

- Overall, visitors rate the quality of cultural amenities and both types of interaction very high.
- Visitors of the age 18-30 have assessed the quality of aesthetic amenities, accessibility with public and private transport, and costs for services and goods higher than visitors of the age 55-70.
- Visitors of the age 18-30 visiting Strijp-S for social activities assessed the quality of accessibility with private transport slightly higher than the other groups of visitors.

- Visitors with the age 18-30 that visit Strijp-S for cultural activities have assessed the quality of spontaneous interaction slightly higher than the other groups.
- Visitors of the age 55-70 have assessed the quality of functional amenities, social diversity, and planned interaction higher than visitors of the age 18-30.
- Visitors of the age 55-70 that visit Strijp-S for social activities have rated the quality of the location better than the other visitors.
- Visitors of the age 55-70 that visit Strijp-S for cultural activities have assessed the quality of accessibility with public transport and the costs for services and goods lower than the other groups of visitors.

Based on the comparison of these findings, the most successful factors of attraction and retention and points of improvement for visitors can be distinguished. These factors are summarized per sub-group in table 23.

Sub-group of visitors	Successful factors of attraction and retention (importance >4.0 and quality >4.0)	Factors that need improvement (quality more than 1.0 point lower than importance)	Factors that can be improved (quality between 0.5 and 1.0 point lower than importance)
Age 18-30 for social activities	Cultural amenities Recreational amenities Accessibility by public transport Location Openness and tolerance Spontaneous interaction	-	Natural amenities Functional amenities
Age 18-30 for cultural activities	Cultural amenities Recreational amenities Accessibility by public transport Accessibility by private transport Internal accessibility Location Social diversity Openness and tolerance Spontaneous interaction	Natural amenities	Functional amenities
Age 55-70 for social activities	Cultural amenities Accessibility by public transport Accessibility by private transport Location Social diversity Openness and tolerance Spontaneous interaction	-	Natural amenities Costs for services and goods
Age 55-70 for cultural activities	Planned interaction Cultural amenities Social diversity Openness and tolerance Spontaneous interaction Planned interaction	-	Natural amenities Recreational amenities Meeting places in the public space Costs for services and goods

Table 23. Overview of successful factors of attraction and retention and points of improvement for visitors.

From the results of the open questions (Appendix XII) it can be concluded that amenities are the most important factor of attraction and retention for visitors. This factor is followed by events, atmosphere, and friends/family. Other important factors of attraction are curiosity to the development and architecture. More important factors of retention are innovativeness and diversity.

Regarding points of improvement, practical amenities, green and interaction in the public space are the factors that were most often mentioned in the open questions, followed by natural passage and openness. The first two are in line with the natural and functional amenities that came forward as factors that need improvement from the closed questions. Generally, visitors describe Strijp-S as being hip, innovative, and industrial.

As can be seen in table 24, the visitors that participated in the focus group confirmed events, amenities, accessibility, friends and family, atmosphere, architecture and interaction as being successful factors of attraction and retention. They also added the specific culture, architecture, unique shops and the inspiring environment to these factors. One of the visitors stated about environment: *“As a former Industrial Student I am always impressed by Strijp-S when I visit the area for the DDW or other events. They really show what they are doing in the area. It seems to me a very inspiring environment for creative businesses like mine”* (Participant 5 focus group, 2017).

Regarding factors of improvement, they confirmed functional amenities as an important factor. They further mentioned accessibility as a factor of improvement.

	Factors derived from closed questions survey	Factors mentioned in open questions survey	Factors mentioned in Focus group
Factors of attraction and retention	Amenities Openness + tolerance Location Social diversity Accessibility Interaction	Amenities Events Atmosphere Friends/family Architecture	Amenities Events Atmosphere Friends/Family Architecture Accessibility Interaction Specific culture Unique shops Inspiring environment
Factors of improvement	Functional amenities Natural amenities Costs for services and goods	Functional amenities Green Interaction public space Natural passage Openness	Functional amenities Accessibility

Table 24. Overview factors of attraction and retention.

### Micro cases: the experiences of two entrepreneurs at Strijp-S

Next to the survey and the focus group also two micro cases were conducted, aimed at gaining detailed information about the experiences of entrepreneurs located at Strijp-S, and the role Strijp-S played in the development of these enterprises. The protocol for the interviews can be found in Appendix VIII.

Two enterprises are compared: a technical enterprise active in the synthetic sector, and a creative enterprise active in the symbolic sector. In line with the results from the survey, their preferences and experiences prove to be different. Especially their position towards communities is significantly different. The technical enterprise active is doing their own thing instead of focussing on being part of a community and collaborating, while the community and collaboration are crucial in the development of the company for the creative enterprise. The community manager of Office-S confirms this is usual: *“Technical companies generally do their own thing, and are not that open to collaboration. Creative entrepreneurs and service providers conversely are; they want to get to know people, explore possibilities for collaboration, and develop their networks”* (Interviewee 2, 2017). Table 25 shows the comparison of the enterprises, based on several factors.



Enterprise	Westmore	Antonio media
Building	Videolab	Klokgebouw
Community [1]	Office-S	Founded by All
Start enterprise	2012	2010
Workplace at start	Vught	Home
At Strijp-S since	2015	2011
Sector	Synthetic	Symbolic
Activities	Technical secondment	Media design
Started as	Small company: 2 entrepreneurs	One-man company
Current size	Middle-sized company: 7 managers + 100 employees	Small company: 3 full-timers + 4 interns
Development stage	Growth stage: moved 4 times to a bigger unit within the Videolab	Growth stage: moved from Strijp-CS to the Klokgebouw
Reasons to choose for Strijp-S	Affordable workspace Accessibility Melting pot of starting entrepreneurs	Affordable workspace Inspiring environment Interaction with other entrepreneurs
Reasons to choose for building	Flexibility Scalability Shared facilities	Possibility to connect + collaborate with other enterprises, while also having an own workspace Scalability
Contribution of Strijp-S to company growth	No particular contribution, the entrepreneurs were already experienced managers	Felt like an 'Entrepreneurship school' (coaching from experienced entrepreneurs) Enlargement of network Acquirement of customers Acquirement of assignments Several collaborations 'Seal of approval' as being part of Founded by All Boost of self-esteem
Company's vision on community	Community seen as 'good neighbours' Rather do their own thing Concept would not add value for the type of company Sometimes outsource assignments within community (mainly supporting tasks)	Community seen as 'entrepreneurship family' Collaboration is key Concept attracts enterprises with adjacent skills → used for collaboration Networking and interaction occur daily and are crucial for development of company

Table 25. Comparison enterprises micro cases.

The communities the enterprises are part of differ a lot as well. Office-S is not based on a specific concept; all entrepreneurs open to collaboration and being inspired are welcome (Interviewee 2, 2017). The community is managed by a community manager that has been assigned via Park Strijp Beheer. This community manager actively creates links between entrepreneurs and has a strategic position in the community. The management is thus mostly top-down.

The director of Westmore (Entrepreneur 1, 2017) explained about the community of Office-S: *"The community is a nice group of people, but it is not a community with a common goal. The only thing binding in our community is housing, and a bit of cosiness."*

About the position of his company in the community Entrepreneur 1 (2017) stated: *"Unlike our company, only few companies here have a strategic ambition. People are doing well and want to grow, but they do not know how much and in which markets."*

Regarding interaction and collaboration he further stated: *"Some companies are more outgoing than others. Some are focussed on collaboration and interaction, while others close the door of their unit while working and you have no idea what they are doing"* (Entrepreneur 1, 2017).

<sup>[1]</sup> Communities point at the business communities of which the entrepreneurs became part by locating in the (multi-company) buildings. Office-S is an entrepreneurship association, Founded by All is an incubator.

On the contrary, Founded by All is an incubator community that coaches starting entrepreneurs. They support starting entrepreneurs to grow towards facilitators within three years. Entrepreneurs are selected based on sector, focus, activities and openness to collaboration. The community is thus built up around a concept. The community is set up as cooperation and is therefore mostly managed bottom up. A member council and several workgroups of which all entrepreneurs are part are created, and there is a board – formed by members of the community - that takes the community manager role (Entrepreneur 2, 2017).

About the community of Founded by All, the director of Antonio media (Entrepreneur 2, 2017) stated: *“The community is a self-sufficient cooperation in which the members bear all activities. The community is the foundation of our workplace.”*

New entrepreneurs are carefully selected to make sure the ecosystem of collaboration and helping each other when needed is preserved. Entrepreneur 2 (2017) compared the ecosystem to coral: *“it is beautiful and many different fish and plants live there, but it is also super fragile.”*

Unlike Entrepreneur 1, Entrepreneur 2 (2017) does see the added value of a community built up around a concept for his company: *“Because of the concept, members of our community have adjacent skills that can be used to take larger assignments together.”* Regarding interaction and collaboration he further stated: *“Because we continuously bump in to each other, conversations keep going, people get new ideas and try out new things together on a frequent basis”* (Entrepreneur 2, 2017).

Based on the results of the different methods used, for each user (sub-)group successful factors of attraction and retention, and factors of improvement could be identified. Although some factors are recurrent for several groups, there are also many specific factors for each user group.

At the end of the chapter, the results from this paragraph are compared with the results from the theoretical framework. Based on the conclusions from this comparison, input for the advice can be provided.

### 4.3. Steering on the attraction and retention of users

In the previous paragraph the user types present at Strijp-S, their preferences and experiences were discussed. This paragraph addresses how area managers from different parties steer on the attraction and retention of target groups at Strijp-S. This is done by means of interviews conducted with area managers of the most influential parties at Strijp-S: Park Strijp Beheer, the Municipality of Eindhoven, Trudo and Woonbedrijf. The protocol for the interview was based on the variables that were defined after the literature review (Appendix VII). The findings of the interviews will be discussed based on these variables.

#### Vision

The variable ‘vision’ was further divided into two sub-topics, being the vision on the development of Strijp-S and the vision on the way of developing Strijp-S. The first applies to the program and the role of Strijp-S in de city. The latter applies to the way in which the development of Strijp-S is managed.

#### *Vision on the development of Strijp-S*

Regarding the vision on the development of Strijp-S, the interviewees highlighted two points: the addition of a metropolitan lifestyle and the expansion of the city centre.

The addition of a metropolitan lifestyle to the city is especially important in order to better attract and retain knowledge workers. From the research Trudo conducted before the start of the development, it came forward that most people see Eindhoven as a ‘super village’;

Eindhoven is still a merger of eight villages that all have their own sub-centre. The lifestyle and the culture matching this 'super village' is still predominant in the city, but does not match with the international image that Eindhoven wants to achieve (Interviewee 5, 2017). In general, attracting knowledge workers to Eindhoven is not a problem, but retaining them is in fact a big problem. Many knowledge workers find Eindhoven boring. To change this image, a metropolitan area with a metropolitan lifestyle has to be added to the city (Interviewee 1, 2017; Interviewee 4, 2017; Interviewee 5, 2017).

According to the city's vision, the metropolitan lifestyle needs to be added at Strijp-S (Interviewee 5, 2017). The metropolitan area that Strijp-S needs to become complements the more commercial city centre of Eindhoven. Hence it expands the current city centre, which is important since the region of Eindhoven with its suburbs is in need of a larger city centre. The development of Strijp-S is therefore mainly an economical development (Interviewee 1, 2017).

#### *Vision on the way of developing Strijp-S*

At the start of the development, plans for the redevelopment of the area were made from a social engineering point of view. Interviewee 1 (2017) stated: *"Back then, it seemed logical to set up a vision that included the demolition of all buildings, except for the monuments, and build up a whole new program instead."* The master plan was translated into an urban development plan, in turn translated into a zoning plan, an image quality plan, and many additional plans. This approach was very much based on the classical way of development (Interviewee 1, 2017; Interviewee 4, 2017).

It was fortunate that Strijp-S provides many monumental buildings that had to be redeveloped anyway, and in order to receive rent from the start already these buildings were temporary rented out until they would be redeveloped. The temporary tenants were mainly young and creative people, which created an ecosystem in the area. Because the area managers noticed that this ecosystem was successful, the way of managing the development changed. From that moment on, temporariness was seen as something permanent and managers started to look differently at their rental concepts. Instead of the 'maker-role', area managers started to assume more facilitating roles. Also cultural identity became more important (Interviewee 3, 2017; Interviewee 1, 2017; Interviewee 5, 2017; Interviewee 8, 2017).

But although the way of managing the development of Strijp-S changed during the process, the spot on the horizon in the vision never changed. Interviewee 4 (2017) confirms: *"Everything is negotiable and flexible, except for the spot on the horizon. That spot contains the three identities and pillars of the area: media technology, design and urban culture/sports."*

Trudo played an important role in the change of the management strategy (Interviewee 5, 2017, Interviewee 3, 2017). When they got involved in the development in 2005, they started organising activities and conversations in order to find out what the city needed. They hence involved the city in the development of Strijp-S. During these activities and conversations it appeared that Eindhoven was seen as a 'super village', but also that there was a lack of affordable work- and studio space in Eindhoven. The city did not have any breeding places for starting entrepreneurs (Interviewee 5, 2017).

After this process of exploration, Trudo started a process of place making, in which they carried out several design contests. Their view was that place making is not producible, but can be facilitated very well. They did that by involving people and by offering pioneers cheap work spaces in the empty buildings (Interviewee 5, 2017).

### User groups

The variable 'user groups' was sub-divided into three topics: target groups, present user groups and future user groups. 'Target groups' concerns the types of users area managers aim to attract and retain at Strijp-S, 'present user groups' concerns the types of users that are currently actually using the area, and 'future user groups' applies to the types of users managers expect to be using the area in the future.

#### Target groups

Regarding target groups, the managers of Strijp-S together have defined directions per phase of development. To do so, they used the phases as defined by Florida (2002) – pioneers, early adopters, early majority and late majority - as a guideline. For each of these phases they defined a direction for the types of workers and residents they aim to attract, the type of events that will be organised, and the types of amenities that will be realised. For each phase also agreements about size of dwellings and rents were made. Hence, they try to retain a continuous balance between very low-priced, low-priced, mid-priced, expensive dwellings and dwellings in the free market (Interviewee 4, 2017).

Because the pioneers have shaped the image of Strijp-S and the soul that can still be experienced in the area every day, the managers try to retain this user group. Area managers also try to make sure new young creative people – who feel related to the pioneers - settle in the area. This is done for example by offering this user group affordable work places or dwellings (Interviewee 1, 2017; Interviewee 5, 2017). *"Although this is not profitable, we are willing to offer these spaces for low prices because it is beneficial for the city"* (Interviewee 5, 2017).

Strijp-S mainly serves young people, especially starters and re-starters on the housing market. Besides, it serves people that already have had a living-career and now again search for urbanity. Strijp-S less serves the middle group, since Eindhoven has already plenty of choice for this group (Interviewee 5, 2017). The apartments matching the metropolitan atmosphere of the area also attract these target groups in particular (Interviewee 6, 2017). The target groups for workers are comparable to those for residents. At the start of the development the area managers actively steered on the attraction of young creative people, often artists or graduates from Industrial design, Architecture or the Design Academy. This group has expanded, but is still the basis of the area. Most of the entrepreneurs at Strijp-S are still active in the sectors of design, technology, media, sports or marketing (Interviewee 4, 2017; Interviewee 5, 2017).

#### Present user groups

Part of the pioneers that settled at Strijp-S at the start of the development already has grown further at Strijp-S, and part has left the area because it has become too organised for them. In the mean time also new people that can be seen as the same type as the pioneers have entered the area (Interviewee 5, 2017). *"It can be already seen as an outcome of the development of Strijp-S that since 2007 more graduates are retained in Eindhoven"* (Interviewee 5, 2017).

It is notable that, in the case of Office-S, the companies currently present differ from the ones that were located there in the beginning of the development. At Office-S companies were not selected based on a concept. Many of the companies that joined Office-S when the temporary rental of office space started ten years ago, used Strijp-S as a stopover. These companies have now left the area. The companies that are currently located at Office-S in

general do have a long-term vision at Strijp-S. Most of the companies located at Strijp-S are small to medium sized companies with under 50 employees (Interviewee 2, 2017).

On the contrary, in the Klokgebouw where companies have always been selected based on a concept, it can be seen that less companies have left the area. Companies have grown and have sometimes moved to other buildings in de area, but companies did generally not see Strijp-S as a stopover. A strong concept can thus be a binding factor that contributes to a common vision and makes entrepreneurs more willing to contribute to that vision.

Regarding residents, the type of dwellings that first became available – lofts – attracted a young user group, typically under 30 years old. Since these people quickly get engaged, switch jobs, or have children, they move faster than average. The composition of the user group living in these lofts has thus changed, but still mainly young people are living at Strijp-S. In the meantime, a stage of development has been reached in which also the first young families and empty nesters settle at Strijp-S (Interviewee 1, 2017; Interviewee 4, 2017).

At SPACE-S, a project in which residents were involved in the design and development from the start, has a more mixed user group. Young people are still overrepresented, but there are also several older residents. Because of the set-up of the building process, people who feel engaged to Strijp-S and its activities have been attracted (Interviewee 6, 2017).

#### *Future user groups*

The most important point the interviewees stressed regarding future user groups is that it needs to be prevented that Strijp-S becomes a yuppies-district. In successful area developments it is often seen that at a certain moment a threshold is reached, resulting in only rich people being able to work or live in the area. According to the different managers, this needs to be prevented at Strijp-S (Interviewee 1, 2017; Interviewee 4, 2017). Interviewee 1 (2017) also stated: *“Next to an international leading innovation district, Strijp-S also needs to be an inclusive district”*. Besides, Interviewee 4(2017) stated: *“The biggest challenge is not to let the area function the way it does now, the challenge is to retain the current image and identity of Strijp-S in the future”*.

In order to make sure Strijp-S will not turn in to a yuppies-district, the parties involved are now together making sure the housing typologies will be safeguarded in a sustainable way. The same applies to workspaces and the plinths of the buildings (Interviewee 1, 2017; Interviewee 4, 2017). Interviewee 4 (2017) stated: *“This can for example be done by establishing an organisation that will rent out the most important places in the plinths. Hence, they can make sure the right functions are located at these places.”*

#### **Means to attract and retain target groups**

The variable ‘means to attract and retain target groups’ is further divided into the two topics of ‘strategies and means to attract users’ and ‘strategies and means to retain users’. For both topics, the strategies and means used to steer on the attraction and retention of the three user-groups are discussed.

#### *Strategies and means to attract users*

Several strategies and means used to steer on the attraction and retention of users are identified based on the interviews conducted. The most important ones are discussed, and at the end of the paragraph Table 26 gives an overview of the strategies and means and their applicability.

**Low rents & flexibility** – At the start of the development the two main ingredients for the attraction of users were low rents and flexibility. Interviewee 5 (2017): *“In the Klokgebouw, we offered spaces for €35, €65 and €95 per square meter, of which the latter two still proved*

*to be expensive for the target group. Therefore, later in the Apparatenfabriek spaces we offered spaces for €50 per square meter all in, which was a great success.*” The contracts with tenants were terminable on a monthly basis from both sides; at that time this was very unique. Starters that could not afford to rent a whole office by themselves hence got the possibility to rent a workplace and get their business started (Interviewee 1, 2017; Interviewee 5, 2017).

**Community management** – Although the attraction of users started with hard factors, soon soft factors became more important. In the end the community determines the image and the atmosphere of the area. Interviewee 1 (2017) stated: *“By knowing why people come to Strijp-S, how they can complement each other, and participating in that by means of community management, value can be added.”* As a result, other people want to become part of the community as well and hence more people are attracted (Interviewee 1, 2017; Interviewee 4, 2017).

**Facilitating entrepreneurship** – Because of the communities formed, the role of the management changed from facilitating space to facilitating entrepreneurship. By engaging community managers, entrepreneurs can be better understood. This results in entrepreneurs feeling connected to the community and become willing to think along with area managers about the future of the area (Interviewee 1, 2017; Interviewee 2, 2017).

**Steering on strong concepts** – In order to stimulate the establishment of communities, in some buildings managers defined concepts upfront. By actively programming, selecting new users at the front, stimulating and even subsidizing certain activities and developments, they steered on the realisation of these concepts. Area managers thus actively steered on the development of specific places and the organisation of specific events, assuming that this would trigger the development of more places and activities (Interviewee 1, 2017; Interviewee 4, 2017).

**A-cyclical investments & steering on magnets** – PSB and the municipality stimulated several amenities and hospitality to settle in the area before residents were present. This was mainly to stimulate interaction and liveliness in an early stage already (Interviewee 4, 2017). Furthermore, managing companies took place in several buildings to make sure the functions they aimed for could be realised at these places. At the front, they also actively steered on the realisation of cultural interventions that contributed to the image of the area (Interviewee 3, 2017).

**Activities & events** – Especially Trudo focussed on organising activities and events from the moment they got involved in the development. Interviewee 5(2017) stated: *“Since we are a housing association we cannot organise these events ourselves, but we can in fact direct that these events will be organised. Our vision is to organise events at three scale levels on a frequent basis: on the international (DDW, Glow, STRP Festival), national (music events) and local level (Corrie Konings, Philips Harmonie). Hence, events will serve all different user-groups.”*

**Cultural fund** – The main companies involved in the management of Strijp-S together established a cultural fund in the beginning of the development. This fund was established to support the launch of cultural initiatives contributing to the image of Strijp-S. The five parties all invested a ton per year, so annually 5 ton was available for these initiatives (Interviewee 5, 2017).

**Campaign & branding** – Another important mean of attraction was branding. Partly based on the history of the area, and partly on the attraction of young and creative people to the area, the ‘Strijp-S brand’ was created. The campaign ‘*Van oude roem naar nieuwe faam*’ (‘from old glory towards new fame’) contributed to the formation of this brand. In line, Interviewee 1 (2017) stated: “*Ever since Philips was located at Strijp-S, there has been a promise of a better future in the area*”. As a result of this brand a natural selection of new users is made; a specific type of users is attracted by the brand (Interviewee 1, 2017).

**New concepts** – Because of the public private partnership between VolkerWessels and the municipality of Eindhoven, PSB was capable of realising new rental concepts at Strijp-S that the market could not bear. As a result new types of spaces for living or working could be offered, attracting people to the area (Interviewee 1, 2017).

**Elevator model** – For both new entrepreneurs and residents the ‘elevator model’ was established, being a small and simple way of an ecosystem aimed at facilitating growth. The concept is based on three pillars: (1) there should always be space for starting entrepreneurs and residents, (2) growth must always be accommodated, and (3) there should always be a next level. This has to be translated in visitors and events as well. Although managers are currently actively steering on the first two points, the upper level is not yet offered in the area (Interviewee 1, 2017; Interviewee 2, 2017).

**Mats-points for assigning dwellings** – Dwellings are assigned in a way it is assured that large part of the residents is connected to the area. In this system people can earn points –mats-points – when they contribute to the development of area, by for example volunteering or organising activities. People with most points have the first choice for a dwelling (Interviewee 4, 2017; Interviewee 6, 2017).

**Programming the connection with the city** – The distance between the central station of Eindhoven and Strijp-S is approximately 1.5 kilometres. Although this is a walkable distance, currently it is not an interesting route. To attract more visitors to the area, it should be a nice walking route instead. Therefore, the municipality of Eindhoven is currently working on the development of this route (Interviewee 4, 2017).

Applicable to Strategies and means	Workers	Residents	Visitors
Steering on strong concepts	x	x	x
A-cyclical investments	x	x	x
Steering on magnets	x	x	x
Activities & events	x	x	x
Cultural fund	x	x	x
Campaign & branding	x	x	x
Offering flexibility	x	x	
Offering cheap space	x	x	
Community management	x	x	
New concepts	x	x	
Elevator model	x	x	
Facilitating entrepreneurship	x		
Mats points for assigning dwellings		x	
Programming the connection with the city			x

Table 26. Strategies and means used to attract users to Strijp-S.

### Strategies and means to retain users

Next to strategies and means to steer on the attraction of users, also strategies and means to steer on the retention of users are identified. Some of these are used for the retention of users as well, however there are also some strategies and means unique for the retention of

users. The most important ones are discussed, and at the end of the paragraph Table 27 gives an overview of the strategies and means and their applicability.

**Offering flexibility** – Next to an important factor of attraction, offering flexibility is also one of the main strategies to retain users. When starters working or living at Strijp-S want to move to larger places, flexible contracts offer them the possibility to easily do so (Interviewee 1, 2017; Interviewee 2, 2017).

**Community management & facilitating entrepreneurship** By listening to users and their needs and wishes, users feel understood and (community) managers can respond to changing needs and wishes, potential growth and problems. Hence, when preferences change, people know these can be accommodated within the area, and will be less likely to move to another area (Interviewee 1, 2017; Interviewee 2, 2017).

**Steering on strong concepts** – Because of the concepts based on which users were selected, people automatically feel connected to the community, and hence closer communities are created. As such, people active in areas related to the concepts will be less likely to leave the area. These concepts are maintained in the future, as it has been captured in the contracts that buildings are only sold including their concepts. In this manner, ecosystems can be preserved (Interviewee 1, 2017; Interviewee 2, 2017; Interviewee 4, 2017).

**Mats points for assigning dwellings** – Because residents are selected by means of this method, they generally feel connected to the area and are involved in the activities. As a result, they will be more likely to be retained (Interviewee 4, 2017; Interviewee 6, 2017).

**Involve users in the development** – By involving people in the development process, they start to feel connected to the area. When their needs and wishes are well translated into the building, they will also be likely to be retained (Interviewee 5, 2017, Interviewee 6, 2017).

**Accommodate growth of the existing community & elevator model** – “At the start of the development, we defined a clear policy stating that as much energy and means as possible should be invested in the growth of the existing community. From the beginning, several entertainment- and knowledge-related activities were organised on a regular basis to make sure the community remained active and innovative.” (Interviewee 2, 2017).

Also, in line with the elevator model, the policy at Strijp-S is to make sure there is always a next level and growth can always be accommodated. With the help of community managers, area managers are kept up to date about the wishes and needs of users and also guide users when they want to grow within the area (Interviewee 1, 2017; Interviewee 2, 2017).

**Activities & events** – Because of Trudo’s vision to realise monthly events at international, national and local scale, visitors will return to the area. Besides, many activities are being organised by the users themselves, contributing to the retention of workers and residents as well (Interviewee 5, 2017; Interviewee 4, 2017).

**Steer on the preservation of the identity of Strijp-S & retain the balance between cheap and expensive spaces** – It is a big challenge to preserve the current identity of Strijp-S in the future. However this is important in order to retain the users present in the area, and attract like-minded people to maintain the ecosystem. To achieve this, i.e. agreements are made about the size and costs for space. Hence, a continuous balance between different user groups can be maintained. In this manner, area managers try to prevent the area from



turning into a yuppies-district and realise a more inclusive district instead (Interviewee 1, 2017; Interviewee 4, 2017).

**Programming the connection with the city** – By programming the connection between Strijp-S and the city centre, natural passage is stimulated. As a result, more people will visit and return to Strijp-S. Eventually, this contributes to the area getting a spot in the mental map of the residents of Eindhoven and its suburbs (Interviewee 1, 2017; Interviewee 4, 2017).

**Provide room for initiatives** – Managers acknowledge the value of successful initiatives launched by users, and thus are willing to provide room for the development of these initiatives. *“Plug-In City is an example of a successful user-initiative. When their current place will be used for a new building project, we will make sure that the initiative can proceed at another place in the area”* (Interviewee 5, 2017).

Applicable to Strategies and means	Workers	Residents	Visitors
Steering on strong concepts	x	x	x
Involve users in development	x	x	x
Activities & events	x	x	x
Steer on the preservation of the identity of Strijp-S	x	x	x
Provide room for initiatives	x	x	x
Offering flexibility	x	x	
Community management	x	x	
Accommodate growth of existing community	x	x	
Elevator model	x	x	
Facilitating entrepreneurship	x		
Mats points for assigning dwellings		x	
Programming the connection with the city			x

Table 27. Strategies and means used to retain users to Strijp-S.

### User relations

The variable ‘user relations’ is further divided into three types of relations: the relation between users and planners (user involvement), the relation between users of Strijp-S, and the relation between users of Strijp-S and the surrounding areas.

#### *Relation between users and planners (user involvement)*

Users are being involved in the development in several ways, although some interviews stated that they are not being involved enough. As Interviewee 4 (2017) pointed out: *“Users are often mainly involved because enthusiastic young people living or working at Strijp-S manage it themselves”*. In line, Interviewee 8 (2017) stated that from his research it can be concluded that in most innovation districts everything around participation and involvement is initiated by the community itself. One of the participants of the focus group accordingly stated: *“In Anton & Gerard were I live, when we miss something we do not just wait until it is being organised, we just organise it ourselves”* (Participant 2 focus group, 2017).

Area managers do try to involve users by directing assignments for the development of the area to the companies present in the area. This is for example done with designs for parts of the area or events. Hence they try to create localised solutions in co-creation with users (Interviewee 3, 2017; Interviewee 4, 2017). Besides, now and then meetings with users are organised in order to discuss ‘what is next’. During these meetings managers are open to new ideas conceived by users (Interviewee 5, 2017).

The ultimate form of user involvement is used at SPACE-S, in which the building process was turned around. As the project director stated: *“At SPACE-S we started with a blank sheet and*

*based on a community composed through Facebook, a design was made and the project was built. It became one of our best-balanced projects” (Interviewee 6, 2017).*

#### *Relation between users at Strijp-S*

Relations between users of Strijp-S occur more at building level than at area level. This is mainly because the buildings at Strijp-S are very large, and therefore creating relationship at building level is already a challenge. Relationships are mostly built at floor-level and between one of the three user groups. Relations between workers, residents and visitors are thus limited.

The places where relationships are created and interaction takes place are mainly the public plinths and shared facilities (Interviewee 1, 2017; Interviewee 4, 2017). Area managers accordingly try to stimulate interaction in the public space and at shared facilities. This is done in three different manners: (1) by defining concepts, (2) by setting preconditions, and (3) by community management.

The concepts defined per building create a natural link between companies and employees in the building, because they are active in the same work field. Besides, interaction is stimulated by simple things as defining preconditions for companies that want to settle at Strijp-S. Interviewee 4 (2017) for example stated: *“It is not permitted to have an own company canteen. Hence, workers will have lunch at places where they can meet other companies and employees and in which interaction takes place.”* Finally, community managers actively create links between companies. They connect experienced entrepreneurs with new entrepreneurs in the same branch, and let them explore possible collaborations (Interviewee 1, 2017; Interviewee 2, 2017; Interviewee 4, 2017).

Regarding collaboration and interaction, differences between types of companies can be noticed. The community manager of Office-S stated (Interviewee 2, 2017): *“Technical firms do things their own way and are not that open to collaboration, while creative entrepreneurs and service providers are. The latter want to get to know many people in a short time, to explore chances for collaboration, and to develop their networks. Also a distinction can be made between one-man companies and SMEs, and entrepreneurs with personnel. One-man companies and fast growing SMEs are much more keen on creating opportunities, being visible for others and strengthening their networks.”*

#### *Relation between users of Strijp-S and surrounding areas*

Area managers try to steer on building physical, economic and social relations between Strijp-S and the surrounding areas. Herein, although it is expensive and takes a lot of time and effort, creating physical relations is relatively easy. These relations can be built by breaking the barrier between the areas, which at Strijp-S is mainly formed through the trail (Interviewee 1, 2017; Interviewee 4, 2017).

It is however more complicated to build socio-economic relationships between areas, especially because the social groups present at Strijp-S and in the surrounding areas – for example Woensel West - are very different. Besides, the urban structure of the city, including eight parts with their own sub-centres, complicates the establishment of relations between areas. This is mainly because of the lack of natural routing between these areas. By means of organising activities such as the Feelgood market and the DDW people from surrounding areas are attracted to Strijp-S, though occasionally. In order to make the socio-economic relation between the areas work, the relation should be reciprocal (Interviewee 1, 2017; Interviewee 4, 2017; Interviewee 8, 2017).

Area managers steer on that relation mainly programmatically, in which the advantage is that Trudo also owns large part of Woensel West. Hence, they can steer on people

interested in Strijp-S also settling in Woensel West, in which young people willing to contribute to the area have priority. After ten years of development the attractiveness of Strijp-S is so big, people also want to live in the areas around Strijp-S (Interviewee 5, 2017; Interviewee 8, 2017).

Also some entrepreneurial students from the Design Academy have been placed in Woensel West, giving that area a boost as well. As Interviewee 5 (2017) from Trudo stated: *“In the first place residents of Woensel West did not get what these students were doing in their neighbourhood, but later on they started to accept them and even see the added value for the neighbourhood ... Now, even some residents of Woensel West are starting their own enterprises.”* In this manner, the socio-economic relation between neighbourhoods can be (partly) facilitated (Interviewee 1, 2017; Interviewee 5, 2017).

### Evaluation

The variable ‘evaluation’ was divided into ‘lessons learned’ and ‘advices for future developments’. The prior specifically refers to the evaluation of the development process at Strijp-S, while the latter refers to thing to take into account in the development of innovation districts in general.

#### *Lessons learned*

When asked about lessons learned from the development process, several interviewees pointed at the structure of the development process. The development process started in a classical and linear way, in which everything was determined and there was barely any flexibility. Plots were sold based on the urban plan in which everything is built-up. As a result, parties can decide to build no or less square meters, but the price they have to pay for the plot is still based on the old plan. Hence, flexibility is possible, but made very difficult (Interviewee 1, 2017; Interviewee 4, 2017; Interviewee 5, 2017).

The interviewees indicated that it is good to have a plan and stick to that plan, but that it should in fact contain flexibility. Instead of linear, the process should be more cyclical and organic (Interviewee 1, 2017; Interviewee 4, 2017; Interviewee 5, 2017).

As a result of the linear plan, many buildings have been demolished at the start of the development. Looking back at the development, managers would not have demolished (all) these buildings, as they determine the identity of the area. They also have significantly contributed to the attraction of young and creative entrepreneurs to the area. Besides, communities seem to be often formed as a result of the existing real estate (Interviewee 1, 2017; Interviewee 3, 2017; Interviewee 4, 2017; Interviewee 5, 2017).

Regarding communities, the ones for which a concept has been defined at the start and that have attracted entrepreneurs based on that concept are more successful. At Office-S, where no concept has been defined and the variety of sectors is thus very large, entrepreneurs do not collaborate fundamentally. Entrepreneurs do however collaborate fundamentally in for example the Klokgebouw and the SX building, where the communities are built around concepts and managed more bottom-up (Interviewee 4, 2017). The entrepreneurs interviewed for the micro-cases, of which one is settled at Office-S and one it settled in the Klokgebouw, confirm this (Entrepreneur 1, 2017; Entrepreneur 2, 2017).

#### *Advice for future developments*

Some of the lessons learned at Strijp-S can also be applied to other areas and can, together with some additional points, be translated into five points of attention for future developments.

**(1) Cyclical and organic development process** – Interviewees advised to follow a cyclical and organic instead of a linear development process from the start. Herein goals and the plan should be clearly defined, but there should be room for flexibility. In doing so, the plan can be adjusted based on the initiatives launched, the developments going on in the area, and the current market demand. Hence, an optimal ecosystem with maximum added value can be achieved (Interviewee 1, 2017; Interviewee 4, 2017; Interviewee 5, 2017).

**(2) Existing real estate to establish communities & (3) build communities around concepts** – Interviewees also advised to preserve old (monumental) buildings as much as possible, since communities are established partly thanks to existing real estate. The buildings attract specific types of users, hence creating a natural link between these people. This link can be strengthened even more by building up communities around pre-defined concepts. Communities built up around concepts prove to generate more fundamental collaborations than communities not built up around concepts (Interviewee 1, 2017; Interviewee 3, 2017; Interviewee 4, 2017).

**(4) Appoint essential places and connections** – Interviewee 5 (2017) gave the advice to appoint essential places and connections in an area, develop these, and let the market respond to it. At these places, the expected quality for the rest of the area should be showed. By actively attracting functions to the area and investing in essential places and connections, identity is created.

**(5) First place making, than profit** – Interviewee 5 (2017) also highlighted the importance of investing in place making, before focussing on profit. His approach is based on the Whiskey Distillery in Toronto, where the developing party's goal for the first ten years was just to make the area lively again with minimal investments. Only after these ten years it would be decided which buildings would be demolished and which new buildings would be added. During the first ten years the only focus was thus place making. Because of this approach, the identity of the area is secured very well.

Regarding Strijp-S, Interviewee 5 (2017) stated: *“We use a similar approach here. During the first 15 years we rent out the lofts in the Anton & Gerard buildings for relatively low rents - social housing – and focus on place making by for example organising events. The lofts will be sold after 15 years, when their value has significantly increased because of the identity and the popularity of the area. Hence, we contribute to shaping identity, while also gaining profit on the long term”* (Interviewee 5, 2017).

During the interviews, the vision on the development of Strijp-S, user groups, strategies and means used to steer on the attraction and retention of users, user relations, and an evaluation of the current situation were discussed. Some lessons learned that could be used in the development of future innovation districts can be defined based on this information. The findings from these interviews will, together with the findings from the survey, micro cases, and focus group be compared to theory in the next paragraph.

#### 4.4. Comparison theoretical framework and empirical research

In this paragraph the results from the empirical research are compared to the theoretical framework. Both factors of attraction and retention, and strategies and means used by area managers to steer on the attraction and retention of users will be compared. The remark should be made that the theoretical framework is based on part of the existing literature. Therefore, the selection of factors of attraction and retention deduced from the theoretical framework is based on the literature reviewed, and does not give a complete overview.

### Factors of attraction and retention

Table 28 gives an overview of the factors of attraction and retention deduced from theory and empirical research. The bold factors are mentioned both in theory and practice, the others were only mentioned in theory or practice. ‘Variety of amenities’ is the only factor mentioned by all types of users, in both theory and practice. Openness, tolerance, and location were mentioned by all user types in practice, but not by all user types in theory.

User group	Factors of attraction and retention deduced from theory	Type asset P: physical E: economic N: networking	Factors of attraction and retention deduced from empirical research	Type asset P: physical E: economic N: networking
Workers	<b>Presence of other companies/ employees</b> Accessibility <b>Business community</b> <b>Business events</b> <b>Variety of amenities</b> Social tolerance Costs for space Size of space Business support Economic incentives Flexibility of space Meeting possibilities	E  P N E P N E P E E P N	<b>Presence of other companies/ employees</b> Accessibility <b>Interaction companies</b> <b>Activities for entrepreneurs</b> <b>Amenities</b> <b>Openness and tolerance</b> <b>Affordable space</b> Location Image Liveliness Innovativeness Diversity of people Aesthetic amenities Like-minded people	E P N E P N E P PEN PEN PEN EN P EN P
Residents	<b>Variety of amenities</b> Social tolerance Social openness Urban diversity Liveliness <b>Presence of other people</b> Size of housing Costs for housing Safety Cleanliness	P N N PEN PEN N P E PN P	<b>Amenities</b> <b>Openness and tolerance</b>  <b>Diversity of people</b> Liveliness <b>Interaction with neighbours</b> <b>Housing type</b> Accessibility Location Atmosphere Home comfort Uniqueness	N  N PEN N P P P PEN PEN PEN P
Visitors	<b>Variety of amenities</b> <b>Variety of events</b> <b>Accessibility</b> <b>Urban diversity</b> <b>Safety</b>	P P P PEN PN	<b>Amenities</b> <b>Activities and events</b> <b>Accessibility</b> <b>Social diversity</b> <b>Unique shops and cafes</b> <b>Openness and tolerance</b> Location Interaction Atmosphere Friends/family Architecture Culture Inspiring environment	P P N P N P N PEN N P PEN PEN

Table 28. Overview factor of attraction and retention theory and practice.

It can be concluded that for **workers**, the most important physical factors of attraction and retention are accessibility and a variety of amenities. The most important economical factors of attraction and retention are the presence of other companies, business events and costs for space. In addition, the most important social factors of attraction and retention are interaction between companies/employees, openness and tolerance. These factors were mentioned in the theoretical framework as well as during the empirical research.

Regarding **residents**, it can be concluded that a variety of amenities and size of housing are the most important physical factors of attraction. The most important social factors of attraction and retention are openness and tolerance, diversity of people, and interaction with neighbours. Also some factors that are a combination of physical, economical and

networking assets prove to be important factors of attraction and retention. These include urban diversity and liveliness of the area. All of these factors were mentioned in both the theoretical framework and the empirical research. It can be noticed that most factors relate to networking assets, hence social interaction proves to be very important for residents.

Lastly, it can be concluded that for **visitors** the most important physical factors of attraction and retention are a variety of amenities, activities, events, and accessibility. Another important factor of attraction and retention is the urban diversity, which is a combination of physical, economical, and networking assets. These factors were mentioned in the theoretical framework as well as during the empirical framework. It can be noticed that the factors are mostly physical assets.

### Strategies and means to steer on the attraction and retention of users

Concerning strategies and means used by area managers to steer on the attraction and retention of users, in addition to the ones mentioned in the theoretical framework some more came forward during the empirical research. Table 29 gives an overview of the strategies and means deduced from theory and practice. Community management, organising events and activities, involving users, accommodating growth, branding and marketing, and investing in culture and leisure were mentioned in both the theoretical framework and the empirical research. In addition, offering business support was mentioned in theory. This factor can be compared to the elevator model, as this model includes supporting the growth of starting entrepreneurs. Also offering amenities, as was mentioned in the theoretical framework, was mentioned in the empirical research, though not literally. Offering amenities is part of a.o.t. steering on magnets and make a-cyclical investments. These strategies and means are a mix of physical, economic, and networking assets.

In addition to these strategies, some more came forward during the empirical research. The strategies and means related to physical assets concern steering on magnets and programming the connection with the city. The strategies and means related to economical assets are offering affordable space, facilitating entrepreneurship, making a-cyclical investments, and establishing a cultural fund. The strategies and means related to all three types of assets include offering new rental concepts, steering on the preservation of the identity, and providing room for user initiatives. Lastly, offering affordable space relates to both physical and economical assets, and steering on strong concepts relates to both economical and networking assets.

Strategies and tools deduced from theory	Strategies and tools deduced from empirical research
<ul style="list-style-type: none"> <li>Selection communities</li> <li>Organise events and activities</li> <li>Involve users</li> <li>Offer possibilities to grow</li> <li>Branding and marketing</li> <li>Offer business support</li> <li>Investing in culture and leisure</li> <li>Offer amenities</li> </ul>	<ul style="list-style-type: none"> <li>Community management</li> <li>Organise events and activities</li> <li>Involve users</li> <li>Accommodate growth of existing community</li> <li>Campaign and branding</li> <li>Elevator model</li> <li>Make a-cyclical investments in amenities</li> <li>Steer on magnets</li> <li>Offer affordable space</li> <li>Offer flexibility</li> <li>Facilitate entrepreneurship</li> <li>Steer on strong concepts</li> <li>Establish cultural fund</li> <li>Offer new rental concepts</li> <li>Program connection with city</li> <li>Steer on preservation identity</li> <li>Provide room for user initiatives</li> </ul>

Table 29. Overview strategies and means theory and practice.

#### 4.5. Conclusions: lessons learned from Strijp-S

In this chapter, the user types present at Strijp-S and their preferences and experiences have been discussed. By means of the different methods used, for each user type successful factors of attraction and retention, and factors of improvement have been identified. Besides, also the management of the development was discussed. Hence, the strategies and means used by area managers to steer on the attraction and retention of users at Strijp-S could be identified. These results were compared with the theoretical framework of chapter 3 in the previous paragraph.

Based on the findings from this chapter, success factors of Strijp-S, remarkable results, and factors of improvement for Strijp-S can be identified. These are discussed and translated into lessons learned, which could be used as input for an advice to future innovation districts.

##### Success factors of Strijp-S

Based on the analysis of user preferences and strategies and means to steer on the attraction of users, success factors of Strijp-S can be identified. Some factors are applicable to other cases – such as M4H – as well.

##### Factors of attraction and retention

Regarding user preferences it can be concluded that when looking at all user groups in the same way, accessibility by public transport, openness and tolerance, and location are the most successful factors of attraction and retention at Strijp-S. These factors were mentioned by all four user groups. Also liveliness, cultural- and aesthetic amenities, and spontaneous interaction are important success factors, as these were mentioned by three out of four user groups. Table 30 gives an overview of these factors.

However, the importance of the presence of the four user groups should be weighted differently, as the area has a different meaning for the respective user groups and the user groups in turn have a different function in the area. This influences the factors concerned most important for the attraction and retention of users at Strijp-S.

First, there is a difference between the groups of workers and residents and the group of visitors. While visitors mainly care about activities on the short term, companies, employees and residents care about activities on the long term. They thus value the functions and activities the area provides differently. Therefore, in view of the long term emphasis should mainly be placed on the attraction and retention of companies, employees and residents. Considering the importance of these groups, the most important factors of attraction and retention are accessibility by public transport, openness and tolerance, location, and liveliness. All three groups mention these factors as being successful factors of attraction and retention.

Second, with regards to the main aim of innovation districts – innovation – there is a difference between the groups of workers (companies and employees) and the groups of residents and visitors. Since the groups of workers are the most important user groups for the process of innovation, with regard to this aspect workers should be seen as crucial user groups to attract and retain. Residents and visitors can be seen as supporting user groups to attract and retain with regards to the process of innovation.

Therefore, in this respect emphasis should be placed on the attraction and retention of companies and employees. As such, the most successful factors of attraction and retention include accessibility by public transport, openness and tolerance, location, liveliness, cultural- and aesthetic amenities, spontaneous interaction, the presence of other companies, affordability, image and innovativeness.

Factors of attraction + retention	Long-term		Short-term	
	Crucial for innovation		Supporting for innovation	
	Companies	Employees	Residents	Visitors
Accessibility public transport	X	X	X	X
Openness and tolerance	X	X	X	X
Location	X	X	X	X
Liveliness	X	X	X	
Cultural amenities	X	X		X
Aesthetic amenities	X	X		X
Spontaneous interaction	X	X		X
Presence other companies	X	X		
Affordability	X	X		
Image	X	X		
Innovativeness	X	X		
Internal accessibility			X	X
Accessibility private transport			X	X
Atmosphere			X	X
Housing type			X	
Social diversity				X
Planned interaction				X
Events				X
Friends/family				X

Table 30. Overview most successful factors of attraction and retention per user group.

All factors can be influenced by area managers, except for location. Besides, accessibility by public and private transport are outside the scope of the area, hence it might be more complicated to influence these factors. But, by collaborating with other parties these factors can be influenced as well. All other factors can be managed or facilitated by area managers.

### Strategies and means

Regarding strategies and means to steer on the attraction of users, the successful ones have been identified in paragraph 4.3. The strategies and means can be divided in three groups: strategies that should be used in the beginning of the development process, strategies that should be used in a later stadium of the development, and strategies that should be used during the whole development process. Table 31 gives an overview of this division.

Phase of development process	Strategies and means
Start of the development process	<ul style="list-style-type: none"> <li>Campaign and branding</li> <li>Steer on magnets</li> <li>Offer affordable space</li> <li>Offer flexibility</li> <li>Steer on strong concepts</li> <li>Make a-cyclical investments</li> <li>Establish a cultural fund</li> <li>Program connection with the city</li> </ul>
Later in the development process	<ul style="list-style-type: none"> <li>Accommodate growth</li> <li>Steer on the preservation of the identity</li> </ul>
During the whole development process	<ul style="list-style-type: none"> <li>Community management</li> <li>Organise events and activities</li> <li>Involve users</li> <li>Elevator model</li> <li>Facilitate entrepreneurship</li> <li>Steer on strong concepts</li> <li>Offer new rental concepts</li> <li>Provide room for user initiatives</li> </ul>

Table 31. Division strategies and means amongst time in development process.

### Factors of improvement for Strijp-S

Next to success factors of Strijp-S, based on the analysis of user preferences and strategies and means to steer on the attraction of users, also factors of improvement at Strijp-S can be identified. Table 32 gives an overview of these factors, as indicated by the different user-



groups. The large crosses indicate factors that need to be improved for the attraction and retention of concerning user groups. The small crosses indicate factors that can be improved to better attract and retain the concerning user groups.

Factors of improvement	Long-term			Short-term
	Crucial for innovation		Supporting for innovation	
	Companies	Employees	Residents	Visitors
Functional amenities	X	X	X	x
Natural amenities	X	x	X	X
Recreational amenities	X	X	x	x
Costs for services and goods	X	x	x	
Costs for space	X	X	x	
Accessibility by private transport	X	X	X	
Internal accessibility	x	x	x	
Spontaneous interaction	x	X	X	
Meeting places in the public space	X	x		x
Social diversity	x	x		
Openness and tolerance	x	x		
Interaction between companies	x	X		
Tenure		X	x	
Flexibility of space	X			
Presence of a suitable labour pool	x			
Shared spaces in buildings			x	
Aesthetic amenities			x	

Table 32. Factors that need improvement in order to better attract and retain users.

When looking at all user groups in the same way, it can be concluded that functional-, natural-, and recreational amenities need most improvement to attract and retain more users. All user groups have assessed the quality of these factors at Strijp-S relatively low, while they assessed their importance relatively high. These factors can be improved by increasing the amount of amenities, or by enlarging the variety of amenities.

Also for the factors of improvement, the importance of the presence of the four user groups should be weighted differently. With regards to the division between long-term and short-term visions, emphasis should be placed on improving the factors mentioned by the groups of companies, employees and residents as these have a long-term vision for the area. These groups all indicated functional-, natural-, and recreational amenities, costs for services, -goods, and -space, accessibility by private transport, internal accessibility, and spontaneous interaction as factors of improvement at Strijp-S.

The three types of amenities can be improved by increasing the amount of amenities or by enlarging the variety of amenities. Costs for services, -goods, and -space are presumably seen as factors of improvement because users experience costs as being too high. This can be improved by offering more variety of prices, so the affordable part is better represented. Accessibility by private transport and internal accessibility can be improved by i.e. increasing the amount of parking spots, lowering the parking costs, and improving bicycle- and pedestrian areas within the area. The amount of spontaneous interaction can be increased by i.e. adding meeting places in the public space and in buildings, increasing the amount of activities, and shaping interesting routes through the area that stimulate interaction.

With regards to the importance of the user groups for the process of innovation, emphasis should be placed on improving the factors seen as factors of improvement by companies and employees. These factors include – next to the factors of improvement as mentioned above – meeting places in the public space, social diversity, openness & tolerance, and interaction between companies.

In order to better attract and retain companies and employees, improvements thus need to be made in the field of social connections. These factors can be improved by adding meeting

places, increasing the amount of activities, and shaping routes through the area. In addition, also increasing transparency could improve social connections, since this contributes to people being aware of what is there and what is going on in the area. Hence, people will be able and more likely to approach others.

### Remarkable findings from the analysis of preferences per sub-group

Based on how the four user groups assessed the importance and the quality of several given factors, some remarkable findings came up. Four main remarkable findings, around the themes of satisfaction, interaction, accessibility, and amenities will be addressed.

The first interesting finding is that **symbolic companies seem to be much more satisfied at Strijp-S than synthetic companies**, while both types are well represented in the area. One-man companies and small companies active in the symbolic sector assessed the quality of almost all factors significantly higher than the ones active in the synthetic sector.

This might have to do with entrepreneurship communities mainly focussing on companies active in the symbolic sector. The themes of media, marketing and design, around which some communities are built, are more related to symbolic companies than to synthetic companies. Hence, companies active in this sector are able to collaborate more with other entrepreneurs, since for them there are more companies with adjacent skills. Besides, they can better make use of the events organised, as these presumably are more in their field than in the field of synthetic companies.

The second remarkable finding is that interaction seems to be more important for certain groups than for others. As such, **smaller companies seem to value interaction more than larger companies**. One-man companies, small companies, and start-ups have assessed the importance of the factors related to interaction – including meeting spaces in the public space, shared spaces in buildings, the presence of other companies, interaction between companies, social diversity, openness and tolerance, spontaneous interaction, and planned interaction – generally higher than middle-sized and large companies.

An explanation for this might be that at larger companies employees interact more with each other. These companies often have different departments, and therefore they have many skills in-house. They do thus not often need other companies. Because smaller companies have fewer employees and in-house skills, they need to interact with other companies when in need for certain skills or information.

It is also striking **that interaction seems to be more valuable to older people than to younger people**. While analysing the results of companies, it occurred that companies in the symbolic sector find interaction more important than companies in the synthetic sector. However, during the analysis of the experience of employees, it turned out that starting employees in the synthetic sector rated the importance of the factors related to interaction higher. The difference might thus have to do with the life stage of the employees.

When looking at the experiences of the residents and visitors, this note was confirmed. Residents in the 'families' life stage rated the importance of meeting places in the public space, openness and tolerance, and spontaneous interaction higher than the younger residents. During the analysis of the experiences of visitors, it also appeared that visitors between 55 and 70 years old assessed the importance of the factors relating to interaction significantly higher than the group of visitors between the age of 18 and 30.

An explanation for this might be that younger people are more focussed on social media. Therefore, in comparison with older people they are more connected to others online. Although this is not the same type of contact, as a result physical interaction might become less important for younger people.

The third remarkable finding is that user groups have different preferences regarding accessibility. **Younger people seem to find accessibility by public transport more important, while older people seem to find accessibility with private transport more important.** This applies for residents, where the youngest group – students – rated the importance of accessibility by public transport highest, while the oldest group – families – rated the importance of accessibility by private transport higher. Also in the analysis of the preferences of visitors it turned out that visitors of the age 18 to 30 assessed the importance of accessibility with public transport higher, and visitors of the age 55 to 70 in turn assessed the importance of accessibility with private transport higher.

This might have to do with the rise of transit-oriented development, including mixed-use areas intended to maximize access to public transportation (Holmes & Van Hemert, 2008, p.4). As a result of this development, people are less bound to private transport, are more flexible, and their area of activity has been enlarged. The concept is relatively new, and since generally young people adapt easier to new concepts and are more flexible, the concept might be more part of the mind-set of younger people. Also, older people might be more used to travelling by car, and might be less likely to change that.

Regarding accessibility, it is also noteworthy that **companies and employees active in the symbolic sector seem to prefer public transport, while companies and employees active in the synthetic sector seem to prefer private transport.** One-man and small companies active in the symbolic sector have both rated the importance of accessibility by public transport higher than the same companies active in the synthetic sector. In turn the companies active in the synthetic sector have rated the importance of accessibility with private transport higher. This also applies to employees, where starters and young families in the symbolic sector rated public transport more important, and starters and families in the synthetic sectors private transport.

There is no obvious explanation for this observation. However, it might have to do with creative people being more open to alternative (transportation) options, and being more sustainability-oriented.

The last interesting finding is that **companies and employees active in the symbolic sector seem to value amenities more than companies and employees active in the synthetic sector.** Especially cultural amenities, and to a lesser extent also aesthetic- and functional amenities are rated more important by companies and employees in the symbolic sector.

An explanation for this might be that for employees and companies active in the symbolic sector these amenities are a source of inspiration or even part of their work. On the contrary, for the ones active in the synthetic sector they are presumably more complementary to their work.

#### **Lessons learned that could be used in the advice**

For several user groups and sub-groups successful factors of attraction and retention and factors of improvement have been identified. Dependent on the target groups and the user groups present in other areas – in this research M4H – points of attention can be determined based on these factors.

Herein, the successful factors of attraction and retention, and factors of improvement for some groups are considered more important than the factors for other groups. As such, it is important to mainly focus on the factors mentioned by workers and residents, since these groups have a long-term vision in the area. Emphasis should especially be placed on the factors mentioned by workers, as this group is crucial for the process of innovation while the other groups are supporting.

Just like the importance of the different user groups for the process of innovation, also a division of factors of attraction and retention can be made based on their importance for the process of innovation. A distinction can be made between factors crucial for innovation and factors supporting innovation. Table 33 gives an overview of the division of these factors.

Factors crucial for innovation mainly include factors related to interaction and diversity, which are directly related to the process of innovation. Factors supporting innovation include factors related to amenities, and factors related to accessibility, costs and space, which are indirectly related to the process of innovation. Herein, the factors crucial for innovation can be considered most important for companies and employees.

The factors supporting innovation can be further divided into two groups. One group includes practical factors related to space, costs, and accessibility, which can be seen as conditions for people to settle in an area. I.e. when spaces are too expensive for a company, it will not settle in the respective area. Since workers and residents are the groups settling in an area, the factors are most important to these groups.

The second group includes factors related to amenities, which make an area pleasant for users. I.e. the presence of recreational amenities will not often be a condition for companies to settle in an area, but it makes an area more pleasant and interesting for a company's employees. As these factors make areas pleasant and interesting, these factors are important for workers, residents, as well as visitors.

Category	Sub-category	Important for	Factors
Factors crucial for innovation	-	Workers	Meeting places in the public space Shared space in buildings Presence of other companies/employees Interaction between companies/employees Social diversity Openness and tolerance Spontaneous interaction Planned interaction
Factors supporting innovation	Practical factors	Workers Residents	Location Accessibility with public + private transport Internal accessibility Costs for space, services and goods Private spaces in buildings Flexibility of space in buildings Tenure Presence of a suitable labour pool
Factors supporting innovation	Pleasant factors	Workers Residents Visitors	Cultural amenities Recreational amenities Natural amenities Aesthetic amenities Functional amenities

Table 33. Factors of attraction and retention per category

In order to create successful innovation districts, area managers should especially focus on the factors crucial for innovation. However, factors supporting innovation for large part determine the atmosphere and the liveliness of the area, and therefore should be taken into account by area managers as well.

Concerning strategies and means to steer on the attraction and retention of users, which could be applied depends on the management structure, the phase of development, and the target groups for the concerning area. The strategies and means used at Strijp-S were deployed by different parties, and not all of them can be used by every party. The

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municipality can for example not rent out dwellings, and developers need the municipality to program the connection with the city. It should thus be arranged which party deploys which strategies.

Besides, some strategies and means are especially useful in early stages of development, while others are more useful in a later stage of development (table 11). Depending on the development stage, it should be determined which strategies and means could be effective.

Lastly, not all strategies are effective in attracting all target groups; some are especially useful for the attraction of a specific target group. For example facilitating entrepreneurship is only useful for the attraction and retention of workers. It therefore depends on the target groups and the groups for which extra effort in the attraction and retention is necessary, which strategies and means are useful.

## 5. Merwe-Vierhavens

In this chapter the case of the Merwe-Vierhavens (M4H), to which the advice will be applied, is discussed. To be able to write this advice, first some things about the case of M4H need to be framed and clarified. As such, first the history of the area, the goals of the redevelopment, and the development stage will be discussed. Subsequently, the user types present in the area are investigated based on existing documents and analyses. The management of the development will be discussed based on an interview conducted with area manager of M4H, existing documents and analyses. Finally, in the conclusions an overview of the current situation will be given, being the basis for the advice.

### 5.1. Case description

The city of Rotterdam is known because of its harbour; Port of Rotterdam is the largest port of Europe. However, due to globalization, the increasing scale of shipping, and changing perception towards environmental requirements, recently port-related industries were reoriented out of the city centre downstream the Maas river. As a result, raw port areas near the city centre full of iconic industrial buildings - the Stadshavens - became available for new urban functions (Stadshavens Rotterdam, 2015, p.22). The Stadshavens exist of four harbours, being RDM-Heijplaat, the Waal-Eemhaven, the Rijn-Maashaven, and the Merwe-Vierhaven (Deloitte, 2015, p.9).

The Municipality of Rotterdam, together with Port of Rotterdam and market players, aims to realise innovative living and working in the Stadshavens in order to strengthen the economic structure of Rotterdam and its port (Stadshavens Rotterdam, 2017a). Therefore, in 2015 Stadshavens Rotterdam launched the Rotterdam Innovation District (RID): an area fully aligned with the dynamics of the Next Economy (Stadshavens Rotterdam, 2016, p.1).

The RID consist of two sub-areas: M4H on the northern bank and RDM-Heijplaat on the southern bank (Figure 20). RDM-Heijplaat used to be home to the Rotterdam Dry-dock Company, the largest shipbuilding and repair company in the Netherlands (Stadshavens Rotterdam, 2015, p.22). M4H is the only area that is still being used for port-related activities; it is one of the biggest fruit-ports in the world (Stadshavens Rotterdam, 2015, p.22). However, the fruit- and juice companies will also slowly move out of M4H. Hence space for new developments will become available.

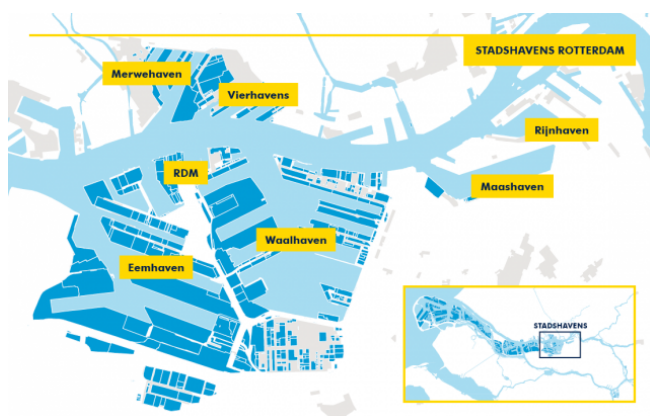


Figure 20. Map of the Stadshavens Rotterdam (Port of Rotterdam, 2015).

#### Goal of the redevelopment

The development of the Stadshavens area has resulted from the socio-economic urgency to make the city and its port future-proof, and to increase its competing powers (Stadshavens Rotterdam, 2017b). Managing company Stadshavens Rotterdam (SR) – a collaboration

between the Municipality of Rotterdam and Port of Rotterdam – defined two main goals for the development: (1) to strengthen the economy, by broadening and improving the sustainability of the Mainport, and (2) to realise an attractive city, by focussing on the development of the river banks (Municipality of Rotterdam, 2011, p.9).

Besides, an important social goal of the development of the Stadshavens is to contribute to a more balanced population composition, create support for amenities, and create a better-educated workforce with more chances at the labour market (Municipality of Rotterdam, 2011, p.26).

The Rotterdam Innovation District is meant to become the innovation breeding ground of Europe, where start-ups and scale-ups active in technology-, water- and energy industries meet and surprising combinations are possible because of the innovative ecosystem (Stadshavens Rotterdam, 2017a). This is facilitated by a wide variety of companies, research institutes and universities, providing platforms for direct access to talent, money and ideas. Hence, multinationals will connect to incubators, accelerators and start-ups and they will all be able to connect to the regional innovation ecosystem (Stadshavens Rotterdam, 2016, p.2).

A programmatic division is made between RDM-Heijplaat and the M4H. RDM-Heijplaat provides ample space for prototyping and research, whilst M4H will provide entrepreneurs with the necessary space for full-scale production (Stadshavens Rotterdam, 2016, p.2). This makes the RID home to all stages of the innovation life-cycle (Deloitte, 2015, p.35).

At RDM-Heijplaat, educational institutions, technical companies and manufacturing industries reinforce each other (Municipality of Rotterdam, 2011, p.9). In the meantime the largest part of RDM has been redeveloped, and is now home to the RDM Campus: a range of private sector, education and research initiatives resulting in a mix of working and education (RDM Rotterdam, 2017; Municipality of Rotterdam, 2011, p.37).

M4H is still in an earlier development stage, and is being developed as an international testing ground for innovative energy supply and water management for both housing and businesses. At this testing ground, scientists, consultants and engineers will share their knowledge, and experiment with new concepts. Because port-related activities are still in operation in the area, it provides an inspiring environment for pioneers, artists and entrepreneurs in the manufacturing industry. The industrial heritage is very convenient for their ateliers and workplaces (Municipality of Rotterdam, 2011, p.31).

### Development stage

The development of the RDM-Heijplaat is divided into two periods: a period until 2015 and a period between 2015 and 2025. During the period before 2015, several colleges and companies have located at RDM-Heijplaat. In the period between 2015 and 2015, the transformation of the RDM-terrain and Heijplaat is continued and completed (Municipality of Rotterdam, 2011, p.62). RDM is thus already in an advanced development stage.

The development of M4H is divided into three periods: a period until 2015, a period between 2015 and 2025, and a period after 2025. In the period until 2015, the first plots of the port were transferred to the city, and pre-investments were done to attract pioneers to the area. A strategy was developed for the transformation of the area, ensuring the start of mixing housing and urban economy after 2015 (Municipality of Rotterdam, 2011, p.57).

Between 2015 and 2025, the piers in the Merwehaven will become available for development, and the transformation of the area can really get started. Investments in innovative ways of living, slow-traffic connections and public space are made and the first living labs for innovative energy transition and water management arise (Municipality of Rotterdam, 2011, p.56).

After 2025, the site on the 'Van Udenstrook' will become available, making the basins available for floating programs. This will induce trendsetters and trend-followers following the pioneers that have been attracted to the area earlier. Also, investments are made in public space, services and accessibility (Municipality of Rotterdam, 2011, p.57). During the development period, the available banks, buildings and plots that will be transformed later in the process are being used temporarily for trend setting (Municipality of Rotterdam, 2011, p.9).

Figure 21 shows a map of the M4H in which the buildings that have already been redeveloped are marked. It can be noticed that only small part of the area has been redeveloped. It can be noticed that the development is still in an early stage.



Figure 21. Current stage of the Merwe-Vierhavens (based on Stam, 2016).

## 5.2. User types and preferences

In this paragraph, the user types present in M4H are investigated. This is done by means of reviewing existing documents and analyses. When the target groups and user groups currently present in the area are known, these can be compared to the user groups present at Strijp-S and it can be determined which factors manager should pay attention to in order to attract and retain them. First the vision on target groups in the city and the particular area will be discussed, afterwards the user groups currently present in the area will be addressed.

### 5.2.1. Vision on target groups

The Stadshavens are being developed for entrepreneurs, businesses, residents, and visitors. The area must offer entrepreneurs an inspirational environment, businesses an attractive working environment, residents a variety of living environments, and visitors an exiting area (Municipality of Rotterdam, 2011, p.21).

In the structural document for the Stadshavens, three target groups for the area were defined: pioneers, trendsetters, and trend-followers. The goal is to attract these groups in line with the three development stages of the area (Municipality of Rotterdam, 2011, p.21).

According to the structural document, **pioneers** include starting entrepreneurs, artist collectives, and private customers for dwellings. These people determine and create their own conditions and need space and freedom. They appreciate public space and real estate with a rough look as well as and flexible amenities and services (Municipality of Rotterdam, 2011, p.21).



When matching this target group with the sub-groups that were defined in the theoretical framework, the target group includes companies, employees, residents as well as visitors. The group will mainly include one-man companies, start-ups, and small companies that can be active in all sectors. Regarding employees it can include people from all life stages (except for elderly) and all different sectors. It is presumable that the residents in this group mainly include people with a low or middle income, though from all life stages. Finally, visitors it can include people from all ages as well, but as a result of the functions present in the area in an early stage presumably mostly people that visit the area for landmarks, purchases or cultural activities.

**Trendsetters** include new living communities, small entrepreneurs, committed volunteers from the surrounding neighbourhoods, and entrepreneurs in the second stage of company-development. These people need a first small concentration of amenities in the area (Municipality of Rotterdam, 2011, p.21).

When projecting this target group to the sub-groups defined, it includes one-man companies, start-ups, small-, and medium companies that can be active in all sectors. Also all types of employees can be included. The residents in this target group will mainly have a low or middle income, and can be of any age as well. The visitors in this target group can be of any age, and will visit the area for attractions, purchase, cultural- or social activities.

Finally, **trend-followers** include entrepreneurs and residents more focussed on services, and that find status more important. This group also includes active young and urban people looking for an attractive work-, learn- and leisure environment. These people want to settle in an area that has been 'prepared' for them (Municipality of Rotterdam, 2011, p.21).

When comparing this group with the sub-groups defined before, the companies will mainly be small-, medium- and large companies, supplemented with some one-man companies and start-ups. These companies will mostly be active in the synthetic sector and services, and to a lesser extent also in analytical and symbolic sectors. The same applies to employees, which can be of any life stage (except for elderly). Also the residents and visitors can be of any life stage. Herein the residents will mostly be people with middle or high incomes, and visitors will visit the area for all different purposes.

In addition, in line with the social strategy for Rotterdam, in the Stadshavens the focus is on attracting and retaining the 'social strong ones' and offering possibilities to the 'social vulnerable ones' (Municipality of Rotterdam, 2011, p.26). Therefore, SR aims to attract middle- and high-income groups to the city and to strengthen the basis for facilities in the surrounding neighbourhoods (Municipality of Rotterdam, 2011, p.67).

Concerning the M4H, the perspective is to become an international breeding ground for housing and business, where researchers, consultants and engineers can combine their knowledge and skills. Besides, other pioneers such as artists, urban farmers and entrepreneurs in manufacturing industries have to be attracted to the ateliers and workplaces in the area (Municipality of Rotterdam, 2011, p.31).

Pioneers should not only be attracted as workers, but also as residents. Two living milieus will be realised in the area, attracting different types of residents. In the Merwehavens a 'quiet urban living' milieu will be realised, while in the Vierhavens a 'mixed and urban living' milieu will be realised (Municipality of Rotterdam, 2011, p.31). Eventually, a district offering 4500 to 6000 houses, and a wide variety of companies and amenities should be realised (Municipality of Rotterdam, 2011, p.31).

Translating this into the sub-groups as defined before results in a combination of different types of companies active in analytical, synthetic, and symbolic sectors. Besides, some

companies focussing on services and facilitators can be part of the target group. The same applies to employees, who can be of any age. Regarding residents, in general the older residents with higher incomes will be attracted to the 'quiet urban living' milieu. On the contrary, the mixed and urban area will presumably attract students, starters, and empty nesters in particular, with more variety of incomes. The variety of visitor-types will be large as well. However, nothing was mentioned about sports facilities within the area, so this will not be a main purpose of visiting the area.

### 5.2.2. Present user groups

In the previous paragraph, the target groups for the Stadshavens and the M4H in particular have been discussed. This paragraph identifies the user groups actually present in the area. Based on this overview, it can be distinguished which groups are missing and should still be attracted, and for which groups it is more important to focus on their retention.

#### Companies

In comparison to the other user-types, workers are currently best represented in the area. Next to large harbour-related companies that are still located in the area, also many start-ups and entrepreneurs have entered the area. These pioneers are mostly small and creative entrepreneurial companies, finding a workplace in one of the multi-company buildings in the area (Stam, 2016, p.63+67). These multi-company buildings all have their own identity, resulting in a large variety of sectors (Interviewee 7, 2017).

For example the *Keilewerf* is focussed on entrepreneurs active in crafts or art, *Gusto 45* houses several small cultural and creative entrepreneurs, at *Marconistraat 52* several small interior designers and -builders are located, *Soundport* is focused on music and media, *Kunst & Complex* focuses on arts, the *Vertrekhal Oranjelijn* houses entrepreneurs active in the food-sector and some design companies, the *SuGu club* offers space to creative entrepreneurs that really need space to create things, and the medical sector is located in the *Rotterdam Science Tower* (Stam, 2016, p.69).

From this overview it can be concluded that many one-man companies, start-ups, and small companies active in analytical, synthetic and symbolic sectors are present in the area. Also some large companies, such as the Rotterdam Fruit Wharf and Opticool, are present in the area. However, these are traditional harbour-related companies that are not part of the rising innovative milieu (Stam, 2016, p.65). Since it is not part of the vision to retain these companies, they are not included in the overview of target groups and present user groups.

Next to the companies active in the analytical, synthetic or symbolic sector, the area also houses some incubators and accelerators. The largest one is the Erasmus Centre for Entrepreneurship (ECE), located in one of the Marconi towers. This is a facilitator for start-ups, coaching and stimulating starting entrepreneurs and start-ups by means of an academic background and a network of experienced entrepreneurs. Currently over 50 companies are part of this incubator (Stam, 2016, p.71; Interviewee 7, 2017). The SuGu club, housed in the old power station, also established a program to support the entrepreneurs housed in the building. In addition, in 2015 the Port of Rotterdam launched the 'Port XL' program: a program focused on coaching and supporting the most promising start-ups in the area (Stam, 2016, p.71; Interviewee 7, 2017).

Also some restaurants are present in the area, such as *Eten Uit Je Eigen Stad* and *Fruitvis*. In addition, the area houses two supermarkets in the shopping centre BigShops, and DIY-store Praxis that provides materials for small innovative manufacturing industry. However, in general the amount of service-companies is still very limited (Interviewee 7, 2017; Interviewee 8, 2017; Stam, 2016, p.75). Figure 22 gives an overview of the types of companies present in M4H.

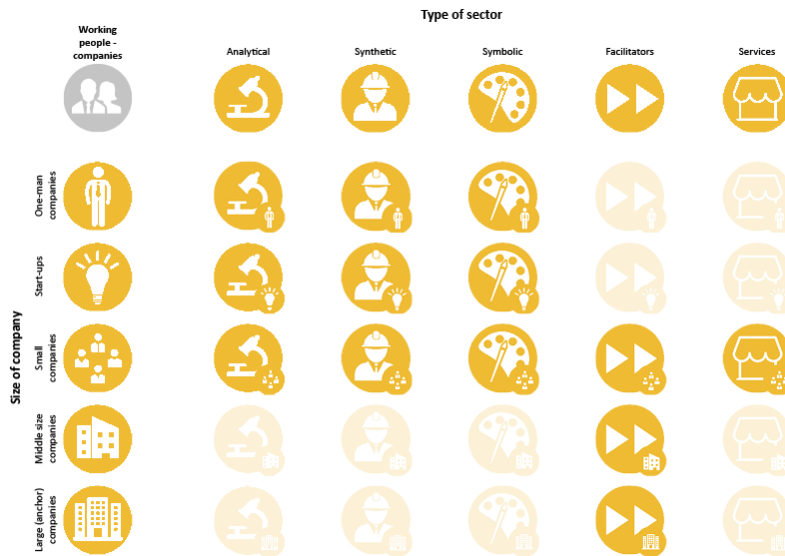


Figure 22. Types of companies present in M4H (own illustration).

### Employees

In line with the variety of sectors companies are active in, the variety of sectors employees are active in is large as well. Employees from different life stages active in the analytical, synthetic, and symbolic sector are present in the area. Besides, also some employees work for the incubators, facilitators or services can be found in the area.

At the moment the background and education of employees is quite different. The harbour-related companies in the area have many employees that live in the surrounding neighbourhoods and are relatively low educated, while the employees working at the ECE have a bachelors- or masters degree and live at different places in the country (Interviewee 8, 2017). Figure 23 shows an overview of the types of employees present in the area.

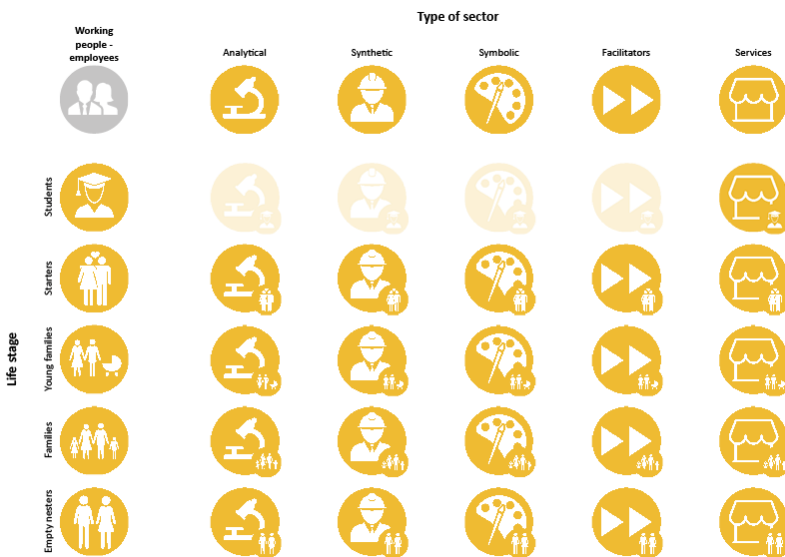


Figure 23. Types of employees present in M4H (own illustration).

### Residents

Currently, there are no residents present in the area yet. According to Interviewee 7 (2017) there are however many entrepreneurs at the M4H that would like to live in the area. She states: "Entrepreneurs often ask if it would be possible to live here as well. However, at the moment we cannot fulfil that wish yet" (Interviewee 7, 2017). According to the vision,

structural housing will be only realised in the area after 2025. Before 2025 there is however space for experimental housing (Stadshavens Rotterdam, 2014, p.16).

The area has to serve the residents of the surrounding areas – especially Delfshaven – as well. Delfshaven has over 75.000 residents, of which roughly 20% is younger than 18 years old, 70% is between 18 and 65 years old, and 10% is older than 65 years old (OBI, 2017, p.1). Of these people 22,6% is unemployed. 62% belongs to the lower income group, 28% to the middle-income group, and 11% to the higher income group. Regarding education, 42% is low educated, 35% is mid-educated, and 24% is high educated (OBI, 2017, p.1). Generally, these residents can thus be considered a vulnerable group.

### Visitors

Although the area does not attract many visitors on a regular basis yet, the amount of visitors is increasing. Since the M4H is still an undiscovered piece of the city, people are curious for the development. Therefore, for example at the Wereldhavendagen many people visited the area, and increasingly requests for excursions are done (Interviewee 7, 2017).

Most people currently visit the area for the events organised in the Ferro Dome, a large event location. There are also some smaller event locations in the area, mainly focusing on innovation and stimulating contacts between the creative class (Stam, 2016, p.72). In addition, some cultural and recreational amenities are located in the area. For example *Uit Je Eigen Stad*, *Fruitvis* and *OBA restaurant* are restaurants located in the area (Interviewee 7, 2017).

However, although the goal is to create activity and buzz in the area, currently that is just an ideal. The amount of amenities attracting visitors is still limited (Interviewee 8, 2017).

Lastly, some visitors are attracted by the BigShops shopping centre and the DIY stores that were already located in the area before the start of the redevelopment. Figure 27 gives an overview of all visitor types present in the area.



Figure 27. Types of visitors present in M4H (own illustration).

Although not all types of users part of the target groups are present in the area yet, the amount of users is increasing. At the moment, the area mainly serves companies and employees as well as some visitors. The variety of workers and visitors has to be enlarged though, and residents have to be attracted to the area as well.

### 5.3. Steering on the attraction and retention of users

In the previous section the target groups and user groups present in the M4H have been identified. This section will discuss the management of the development of the area, on the basis of existing documents and interviews conducted according to some pre-defined variables. As such, the vision on the development of the area and the way of developing the area will be discussed as well as the user groups, strategies and means to steer on the attraction and retention of users, user relations and an evaluation of the development process so far.

#### Vision

The variable vision was further divided into two topics: vision regarding the development of the area and vision on the way of developing the area. The former points at the program and the function of the area in the city, the latter points at the management of the development process.

#### *Vision regarding the development of the M4H*

The main goal of the development of the M4H is to stimulate the New Economy. By providing space for start-ups and larger companies, together they should work on renewing the economy of the harbour and the city (Interviewee 7, 2017). In the city of Rotterdam, two innovation milieus can be recognised: a business milieu around the city centre and a medical milieu around the Erasmus Medical Centre. By developing the Rotterdam Innovation District, a third milieu is added, focussing on innovative manufacturing (Stam, 2016, p.60; Interviewee 7, 2017).

Within the RID, by focusing on large-scale urbanisation at M4H, the RID can become a stronger innovation district. Small entrepreneurs and start-ups at RDM are scaling up production and growing, and M4H can provide the space needed to accommodate this growth (Stam, 2016, p.88). In the development of M4H, Stadshavens Rotterdam focuses on a mix of strengthening on-going business, attracting new entrepreneurs, and accommodating temporary initiatives (Stadshavens Rotterdam, 2014, p.28).

#### *Vision on the way of developing M4H*

The development of M4H proves to be complex. Although many vision- and policy documents and revisions to these documents have been published, little has been done in the area. The launch of small-scale developments can be owed to the pioneers in the area. They made the Next Economy visible in the area, even though large-scale port industries are still dominating the M4H. Providing space for these pioneers has thus been proven to be a successful strategy (ShR, 2015a in Stam, 2016, p.87).

In the development strategy, the municipality appointed five focus-points. These include: (1) the Vierhavenblok, as the manufacturing quarter mixing small and large companies, (2) the Europoint towers, being the medical hotspot of the area, (3) Uit Je Eigen Stad, providing space for experiments and temporary initiatives, (4) the old power station – now SuGu club – being the production campus of the area, and (5) the Ferro, as the event location in the area (Stadshavens Rotterdam, 2014, p.40; Interviewee 7, 2017).

All of these buildings are existing buildings, which is in line with the strategy that states most historical buildings will be preserved. The area houses many monumental buildings, such as the HAKA building, the *Katoenveem*, and the *Citrusveiling*. It is however a challenge that some are in poor conditions. Renovating these buildings will require large investments, which can hardly be recouped by the rents paid by creative entrepreneurs (Interviewee 7, 2017).

Currently, the urban plan is still very general. Therefore, recently an urban planning agency was selected to set up a spatial framework for the area. This framework however will not become a master plan in which everything is fixed, but will be made to provide direction in the development process. Interviewee 7 (2017) stated: *“We concluded that at the moment very little has been captured, and in order to give the development a boost this needs to be done on a short-term”*.

In the structural vision for M4H flexibility is important. A moment of choice regarding housing is included in 2025, when several real estate contracts will end at the same time. For three different scenarios, a plan for the amount and type of housing is made. Depending on the market in 2025, it will be determined which plan will be followed. Hence, area managers are able to respond to the changing market (Stadshavens Rotterdam, 2014, p.16).

### User groups

The variable ‘user groups’ was further divided into three topics. These concern (1) target groups, addressing the groups managers aim to attract to the area, (2) present user group, addressing the groups currently present in the area, and (3) future user groups, addressing the user groups that will be present in the area in the future. The present user groups have however already been identified in the previous paragraph, and will therefore not be discussed separately.

### Target groups

Next to the user groups already present in the area, there are as well some target groups that area managers aim to attract but are not present yet. For workers this mainly contains larger manufacturing- and production companies for which innovation is key (Interviewee 7, 2017). The aim is to not only attract high-educated knowledge workers, but also to involve the vulnerable ones (Interviewee 8, 2017).

Besides, more service-companies have to be attracted to the area, especially in the form of hospitality companies. These will be able to serve other companies and visitors, and in a later stadium residents as well (Interviewee 7, 2017).

Regarding residents, on the short-term housing will be realised in one of the Marconi towers. These houses are mainly meant to attract starters and expats, hoping this will attract amenities that are interesting for these people to the area. In turn, this can as well be a spin-off for more employment (Interviewee 8, 2017).

In a later stadium, when the real estate contracts on the western piers of the area will end, large-scale housing will be realised. The Maas banks are especially suitable for living environments with a character typical for Rotterdam: robust, raw, fascinating, and filled by maritime activities (Municipality of Rotterdam, 2011, p.8). Here, the two living milieus that were introduced earlier will be realised, attracting a larger variety of residents to the area. Hence, the inner-city housing problem for middle- and high-income groups in the city can be partly solved (Municipality of Rotterdam, 2011, p.89; Interviewee 7, 2017).

It is however a challenge how living and working can be mixed within the area, since manufacturing companies often produce a lot of noise. As the vision is to retain these companies, also the existing noise restrictions need to be sustained. This might however clash with the realisation of housing in the area (Interviewee 7, 2017).

More hospitality and cultural amenities should be attracted to achieve a wider variety of visitors and create more buzz in the area. Hence, the social purpose will be stimulated, and the cultural purpose will be strengthened (Interviewee 7, 2017; Interviewee 8, 2017).

### *Future user groups*

When the area reaches a further development stage in which more user types are present, it is important that the different price levels can still be offered. Interviewee 7 (2017) stated: *“Because housing is being realised in one of the Marconi towers, which we do welcome, the rental prices of the other towers will go up as well. As a result, later on some start-ups might not be able to afford a space in the buildings anymore. It would therefore be good to preserve the different price levels in the area, which I expect we can for the time being.”*

### **Means to attract and retain target groups**

The variable ‘means to attract and retain target groups’ is split into strategies and means to attract users and strategies and means to retain users. Currently it is however priority to attract users, in order to create the critical mass that is needed for interaction and the attraction of more amenities to the area (Interviewee 7, 2017).

### *Strategies and means to attract users*

Based on the interviews conducted and existing documents, an overview of the strategies and means used to steer on the attraction and retention of the target groups can be identified. The most important ones will be shortly discussed. At the end of the paragraph, table 34 gives an overview of the strategies and means, and their applicability.

**Flexibility & shared facilities** – The manufacturing companies managers aim to attract are mostly not based on mass production. They often have custom made assignments instead. Therefore, they need spaces with a flexible layout. Shared facilities can be interesting for these companies as well, as these can for example concern shared machines (Interviewee 7, 2017). In line with flexibility of space, also matching flexible contracts are attractive for manufacturing companies. Flexibility is thus offered in different ways (Interviewee 7, 2017).

**Room for experiments** - Entrepreneurs are attracted to M4H by simplified legislation for experiments (Stadshavens Rotterdam, 2016, p.1). Experimenting space will also be offered at the Marconistrip, a former marshalling yard of 30.000m<sup>2</sup> that will be redeveloped into a public experimental space for innovating entrepreneurs, employees and residents (Stam, 2016, p.77).

**Being a matchmaker** – It is important to bring new companies and employees in contact with the existing network and other companies present. Hence, new companies get the possibility to offer their concepts or products as service-providers or suppliers. To facilitate that, area managers take the ‘matchmaking’ role between companies (Interviewee 7, 2017).

**Steer on concepts** - To make sure companies and employees that are committed to the area are attracted, a selection of entrepreneurs is made (Interviewee 7, 2017). Managers make these selections based on the goals that were formulated. Hence, mostly companies willing to work with others, the surroundings, sustainable area development, or the social component are being selected. Interviewee 7 (2017) states: *“We are still searching for sustainable criteria based on which we can select companies. However, it should not be forgotten that as a result of a variety of companies also interesting crossovers can occur”.*

**Excursions and events** - At RDM, excursions an events area being organised to attract visitors to the area. This is essential since the area is located quite remote (7 km from the central station); people do not just cross the area by accident. Although the location of M4H is better than the RDM (3,5 km from the central station), increasingly excursions and events are being organised to attract visitors to the M4H as well (Interviewee 7, 2017).

**Marketing** - To brand the city of Rotterdam as a manufacturing city on an international level, the municipality, the Erasmus University, Port of Rotterdam and the Rotterdam Partners together use the slogan 'Rotterdam, Make It Happen' (Stam, 2016, p.79).

To directly attract people to M4H, the marketing and sales department of Stadshavens Rotterdam focuses on tapping networks, creating new contacts, and establishing relations with companies (Interviewee 7, 2017).

**Business support** - Business support is offered to starting entrepreneurs. This is for example done by Port XL, a program launched by Port of Rotterdam that is focused on coaching the most promising start-ups in the area (Stam, 2016, p.69). Also the incubators and facilitators present in the M4H coach and facilitate starting entrepreneurs to develop and quickly grow further (Interviewee 7, 2017).

Furthermore, Venture Café supports entrepreneurs by connecting them to talent, money and ideas. Venture Café is an overarching networking platform in which several parties participate to foster an entrepreneurial culture and strengthen the innovation ecosystem in the Rotterdam region (Stadshavens Rotterdam, 2015, p.40).

**Steering on magnets** - The focus-points included in the strategy are seen as the most promising places in the area, and their development will in turn attract more people to the area. These include the Vierhavenblok as the manufacturing quarter mixing small and large companies, the Marconi towers being the medical hotspot of the area, Uit Je Eigen Stad, providing space for experiments and temporary initiatives, the old power station – now SuGu club – being the production campus of the area, and the Ferro as the event location in the area (Stadshavens Rotterdam, 2014, p.40; Interviewee 7, 2017).

<p>➤ Applicable to</p> <p>▼ Strategies and means</p>	Workers	Residents	Visitors
Steer on concepts	x	(x)	x
Marketing	x	(x)	x
Steer on magnets	x	(x)	x
Provide space for experiments	x	(x)	x
Offer flexibility	x		
Offer shared facilities	x		
Be a matchmaker	x		
Offer business support	x		
Organise excursions and events			x

Table 34. Strategies and means used to attract users to the M4H.

#### *Strategies and means to retain users*

Since at M4H the focus is currently mainly on attracting the critical mass to the area, the focus is more on strategies of attraction than on strategies of retention. Some strategies for the attraction of users can however be used to retain users as well. These strategies will first shortly be discussed, and after that table 35 gives an overview of the strategies and means and their applicability.

**Flexibility** – When companies grow and have changing need for space, it is beneficial if this space can be provided in the area and can be arranged easily. Hence, companies will be more likely to be retained in the area.

**Being a matchmaker** – When companies have become part of a community as a result of a matchmaker, crossovers and connections with other companies can be created. Because of the network companies become more committed to the area, and will be less likely to leave than when working alone.



**Steer on concepts** – When companies are selected based on specific concepts they will automatically have a connection. Fundamental collaborations between companies with adjacent skills can take place, resulting in more and larger assignments for these companies. This can be an important reason of retention.

**Business support** – When offering business support, companies are coached during their development process. Managers listen to their needs and wishes, and guide them when in need of specific connections, information, larger spaces, or activities. Hence, companies can focus on their core business and growth and will be less likely to leave the area.

► Applicable to ▼ Strategies and means	Workers	Residents	Visitors
Steer on concepts	x	(x)	x
Offer flexibility	x		
Be a matchmaker	x		
Offer business support	x		

Table 35. Strategies and means used to retain users in the M4H.

### User relations

The variable ‘user relations’ is divided into three types of relations: relations between area managers and users (user involvement), relations between users of the M4H, and relations between users of the M4H and users of surrounding areas.

#### *Relation between users and planners (user involvement)*

Currently, users are not yet being involved in the development on a structural basis. Sometimes meetings with users are organised. These are for example the *Keiletafels*, being meetings organised by Stadshavens Rotterdam aimed at updating users about the development plans and let them get in touch (Stam, 2016, p.74).

Users will however be involved more while deploying the spatial framework for the area. (Interviewee 7, 2017). *“We aim to involve the users in the development of the spatial framework. We are planning to organise this by planning tours through the area together with the users, during which we can discuss their needs and wishes”* (Interviewee 7, 2017).

#### *Relation between users at the M4H*

Relations between users in the area are still mainly created by area managers, companies with an intermediary role, and incubators. The critical mass is too little for users to actively focus on creating links themselves (Interviewee 7, 2017). There is an entrepreneurship association, and sometimes entrepreneurship meetings are being organised. However, these meetings are mainly focused on the development plans for the area and to a lesser extent on innovation (Interviewee 7, 2017).

Companies with an intermediary role (SuGu club and Venture Café) organise events and meetings for entrepreneurs in order to let them get in touch. But according to Interviewee 7 (2017), this could be developed better. *“We are currently exploring if it is possible for them to once in a while organise events that are more focused on the local manufacturing district”* (Interviewee 7, 2017).

Incubators and facilitators include i.e. the start-up facilitator ECE. Although this facilitator is very large and successful, the link with the rest of the area is not that strong (Interviewee 7, 2017). Furthermore, links are created as a result of the shared spaces and facilities in multi-company buildings (Stam, 2016, p.70).

However, as a result of the large amount of multi-company buildings that all have their own concepts and networks, relations mostly arise at building level and not really on area level. As such, entrepreneurs sometimes do not know which companies are in the area, next to

the companies located in their building. *“In order to improve transparency and awareness, we try to connect people by means of events or developments like the Venture Café. [...] I however expect that when the mass of users increases, more often relations at area level will occur as well”* (Interviewee 7, 2017).

#### *Relations between user of the M4H and surrounding areas*

Physical relations with surrounding areas are weak. The Vierhavenstraat and the Dakpark form a physical barrier between M4H and the surrounding areas. In addition, the Maas river forms the physical barrier with RDM. These barriers are an important reason for the lack of buzz in the area. Interviewee 8 (2017) stated: *“During the interviews I conducted in M4H, it occurred that people see these barriers as a main reason for the development of the area as innovation district lagging behind.”* According to Interviewee 7 (2017) it is part of the ambition to improve the physical connection between M4H and the surrounding areas.

The economical and social relation between M4H and the surrounding areas is much better. Residents of the surrounding areas are mostly people distanced from the labour market, but who can and should participate in the Next Economy. Manufacturing companies in the area are stimulated to create links with those people. In addition some social companies were founded in M4H, which focus on connecting with residents of the surrounding areas as well (Interviewee 7, 2017; Interviewee 8, 2017). It has been proven that employment relevant for the residents of surrounding areas has in fact been created in M4H (Interviewee 8, 2017). In line, in the area Delfshaven, the *Delfshaven Corporation* is active. This organisation creates links between initiatives and business. It focuses on social innovation, and stimulating people to participate in the Next Economy (Interviewee 8, 2017).

Regarding the relation with RDM, area managers try to stimulate crossovers between the two areas. Fast growing entrepreneurs at RDM that are in need for more work space can be offered space at M4H, and the other way around (Interviewee 7, 2017). To strengthen the success of RDM, a complementing program should be realised at M4H. At the same time, the development of M4H should take advantage of the success of the RDM campus (Stam, 2016, p.88). To overcome the physical barrier between the two areas, a ferry would be useful. Critical mass is however needed for feasibility (Interviewee 7, 2017).

#### **Evaluation**

The variable evaluation is further divided into the current development stage and potential for further development of the area.

#### *Current development stage*

The development of the area is a complex challenge. Old infrastructure is still present, port-related companies are still located in the area, and some parts of the area deal with long-term leaseholds ending after 2025. As a result, currently the redevelopment can start only in a small part of the area (Interviewee 7, 2017). M4H is at the moment still an industrial area used for port-related activities, where small-scale innovative initiatives arise (Stam, 2016, p.60).

The municipality's fickle policy confirms the complexity of the development. Several plans and visions for the area were made, but there is no distinct party investing in the development on a continuous basis. There is only a very general plan of approach for the coming fifteen years, while taking into account the waves of innovation in fact a clear plan for a phase of 10 to 15 years should be established (Interviewee 8, 2017).

The area still looks like the industrial area it used to be. A lot is going on, but that is visible only within the buildings. There, it can be seen that actually a lot has already been done.

However, the step to a larger scale of development still has to be taken (Interviewee 7, 2017).

The area was branded as an innovation district in 2015, though until now it is mostly wishful thinking (Interviewee 8, 2017). One of the reasons for the development of the area as innovation district lacking behind are the physical barriers, impeding the creation of buzz. Furthermore, while an innovation district can be a catalyst for amenities, only few can be found in the area so far. More buzz can be created by means of cultural amenities and hospitality, but these have not been attracted to the area yet (Interviewee 8, 2017).

Lastly, the critical mass crucial for the further development of the area is still missing. Although there are some large companies located in the area, they are not involved in the rising innovative milieu. The milieu is built around small entrepreneurs and start-ups instead (Stam, 2016, p.76). A critical mass is however essential, as it results in more interaction, better connections with the city, more support for initiatives, and more support for interventions to improve physical relations with surrounding areas (Interviewee 7, 2017).

#### *Potential*

Although some crucial things are not present or organised in the area yet and the development proves to be complicated, M4H has a lot of potential. M4H offering plenty of space for developments makes it the ideal redevelopment location, and a very suitable location for innovative manufacturing companies. As such, M4H can also complement RDM, by offering the possibility to house fast-growing entrepreneurs. Hence an innovation district that can accommodate entrepreneurs during all stages of the innovation life cycle will arise (Stadshavens Rotterdam, 2015, p.35).

M4H has also a lot of social potential. As the area houses many social companies that try to involve the residents of the surrounding neighbourhoods and focus on social innovation, the redevelopment of M4H boosts the surrounding areas as well. Interviewee 8 (2017) states: *“The power of the M4H innovation district might come from the community instead of from the other assets. M4H could become a social innovation district”*.

#### 5.4. Conclusions: challenges at the Merwe-Vierhavens

This chapter discussed the target groups and the user groups present in the area. The target groups that are not present in the area yet can be seen as groups that need to be attracted. Users currently present in the area that are also seen as target groups can be seen as groups that need to be retained.

The present user groups include mostly companies and employees, and some types of visitors. Residents are not present in the area yet, although housing will be realised on the short term. The target groups mainly include larger production companies with a focus on innovation, a variety of middle- and high-income residents, and several types of visitors.

Regarding the management of attracting and retaining users, the focus is mainly on the attraction of a critical mass to the area. Several strategies and means used by area managers were identified. Most of these are aimed at attracting and retaining companies and employees, and some at attracting and retaining visitors. Since at the moment the demand for housing cannot be fulfilled in the area, no strategies for the attraction and retention of residents are used yet. However, as on the short term housing will be realised in one of the Marconi towers, managers can soon start using some strategies for the attraction and retention of residents as well. These for example include marketing and steering on concepts.

### Successes and potential of M4H

The successes and potential of the development of the Merwe-Vierhavens can be summarized in four main points. These include: incubators, social innovation, space for development, and living labs.

The area houses several incubators and multi-company buildings in which many small entrepreneurs and start-ups are settled. These buildings are set up around concepts, contributing to the establishment of entrepreneurship communities. Within these buildings interaction takes place between companies and employees, and at incubators/facilitators starting entrepreneurs are being supported as well.

Another potential of M4H is the social component. So far, this component has been developed very well. The area houses several social companies that focus on involving the residents of surrounding areas, which often are distanced to the labour market. The social relation with surrounding areas is thus strong.

Also the social component within the area is well developed, as the user community has established several small initiatives hence stimulating organic development. As such, the M4H has the potential to become a social innovation district.

The third potential of the area concerns space for development. In the city of Rotterdam space for development is very scarce, however the M4H area offers plenty of space. The area can serve manufacturing and production companies that need a lot of space, hence contributing to the image of Rotterdam as manufacturing city.

Besides, the area offers space for new developments. When the western piers in the area become available around 2025, housing can be realised there to partly solve to the inner-city housing problem for people with middle- en high incomes.

The last potential regards living labs. Plenty of public experimenting space will be offered in the area, enabling entrepreneurs, residents and visitors to experiment, innovate and learn, and at the same time discover the area. In this manner, it is shown what is going on in the area and also outsiders can see the innovation.

### Challenges for M4H

The area has thus a lot of potential to become an inspiring and successful district. However, the current situation also knows some big challenges that are hampering the development. The challenges can be summarized in four themes: existing infrastructure, plan of approach, presence of a critical mass, and liveliness and interaction. Each of these themes is discussed shortly.

#### *Existing infrastructure*

As the area is still used for port-related activities, the development has some functional limitations. The infrastructure in the area is based on the port industry, and thus includes roads designed for trucks and little space for cyclists and pedestrians. Furthermore, at some parts of the area port-related companies have long-term leasehold, which is ending only after 2025. Until 2025, therefore a relatively small part of the area can be developed. Lastly, also the lack of a clear plan of approach is hampering the further development of the area.

As a result of the existing infrastructure, also the mix of working and housing in the area will be a challenge. As the area houses many manufacturing companies that produce noise, there are strict noise regulations that clash with the regulations for housing. It will thus be a challenge to realise housing while the area is still in use for harbour-related activities.

The existing infrastructure also concerns the physical relation between the area and surrounding areas. Although the social and economical relations are well developed, the physical relations lack behind. The area is quite isolated because of the Maas River, the Dakpark, and the Vierhavenstraat, impeding the creation of buzz in the area. Some people even see the physical barriers as one of the main reasons for the lagging behind of the development as innovation district.

#### *Plan of approach*

Although several visions and strategies have been written for the area, there is no clear plan of approach for the coming years. To give the development a boost, specific actions that need to be taken have to be defined. These actions should be divided amongst parties, so it is clear who is responsible for which part and who should invest in which part. As the community plays a strong role and has established some organic developments, users should be involved in the plan.

#### *Critical mass*

The critical mass of users that is needed to take the development to the next level is missing. Several small entrepreneurs are present in the area, which is a good basis, but the diversity of users should be enlarged. Next to small companies also middle-sized and large companies, residents and a variety of visitors should be attracted. A critical mass is essential as it creates support for initiatives and interventions (such as a ferry between M4H and RDM), and increases the liveliness of the area.

#### *Liveliness and interaction*

A lot is going on within the buildings in M4H, however this cannot be seen on the outside. From the outside the area still looks like the industrial area it used to be before. The diversity of users is currently not very large, and only few amenities are located in the area. As a result, from the outside the area is not experienced as being a lively area.

Although interaction takes places within the many multi-tenant buildings, at area level interaction proves to be very limited. There is unfamiliarity between entrepreneurs in different buildings: they do not know who their neighbours are, what they do, and where they are located. In order to create a lively and inspiring area, and an innovation ecosystem, interaction on area level is essential though.





R E S U L T S

## 6. Advice

In the previous chapters the cases of Strijp-S and M4H were discussed. For both case the target groups and the present user groups in the area have been identified, as well as the strategies used by area managers in order to steer on the attraction and retention of users. At Strijp-S the preferences and experiences of the different types of users were addressed, and translated into successful factors of attraction and retention, and factors of improvement. Together with the successful strategies and means used by area managers, these factors form the lessons learned from Strijp-S. These lessons are the input for the advice, together with the four challenges for the development of M4H as innovation district.

First, the input for the advice is discussed more extensively in paragraph 6.1. The comparability of the cases of Strijp-S and M4H is discussed, including some important similarities and differences. Besides, for each specific development challenge at M4H it is defined how the lessons learned from Strijp-S can be applied to deal with these challenges. In paragraph 6.2 the actual advice for the development of M4H as innovation district is presented, including focus points and potential strategies and means.

### 6.1. Advice input

This paragraph discusses the comparability of Strijp-S and M4H, based on some important similarities and differences between the cases. As the socio-economic characteristics of an area might influence the effectiveness of the advice, the focus is on these characteristics. Hence, the boundaries and limitations for the advice to M4H are set.

Subsequently, on the basis of the four development challenges for M4H it will be discussed how the lessons learned at Strijp-S can be applied to these specific challenges. As such, the target groups and present user groups in both cases are compared to identify overlapping user groups. For these groups an advice can be given based on the preferences and experiences distinguished for these users at Strijp-S. Besides, the strategies and means used in the different stages of development of Strijp-S can be used in the advice for M4H.

#### 6.1.1. Comparability Strijp-S and M4H

Strijp-S and M4H have several similarities and differences that make Strijp-S a suitable case to distract lessons learned from and M4H a suitable case to apply lessons learned to. Both areas are i.e. considered re-imagined urban areas following the definition of Katz & Wagner (2014), have a similar position in a mainport, and have several similar target groups. Differences that make Strijp-S suitable as a basis for an advice for M4H are the different development stages and the different user groups present. As a result of these differences, the advice can still be useful during the development of M4H.

However, there are also some important differences between the areas that should be taken into account while writing an advice for M4H based on the findings from Strijp-S, as they might influence the effectiveness of the advice. The main differences can be clustered in three groups, relating to history, location and demographics.

#### History

Both Strijp-S and M4H used to be industrial areas before they were being redeveloped as innovation districts. All buildings at Strijp-S used to be factories for the technological company Philips, while M4H used to be – and still partly is – a harbour area housing multiple industrial companies. As a result, the way in which the areas became available for redevelopment is different as well.



When Philips relocated their factories, the contracts for all buildings ended at the same time, and the whole area became available for redevelopment at once. However, since the buildings at M4H are owned by different companies, the buildings become available for redevelopment one by one. Therefore, only some parts of the area can currently be redeveloped, and the redevelopment of M4H will take longer than the redevelopment of Strijp-S.

The history of the areas thus influences the way in which the areas can be developed as innovation districts. The situation at M4H is however more representative for reality, as the buildings in most areas are not owned by one single party. This difference should be taken into account in the advice for M4H.

### Location

Although Strijp-S and M4H (together with RDM) have similar functions in the mainports of Eindhoven and Rotterdam and have similar position in their cities, regarding location there are important differences between the areas that will influence the effectiveness of the advice as well. First, the sizes of the cities significantly differ; Rotterdam is much larger than Eindhoven. Eindhoven has a surface of 89 km<sup>2</sup> and 226.868 inhabitants, while Rotterdam has a surface of 320 km<sup>2</sup> and 634.660 inhabitants (CBS, 2017; Wikipedia, 2017a; Wikipedia, 2017b).

Secondly, although the locations of the areas in the cities – at the border of the centre – are similar, because of the difference in city size these distances are quite different as well. The distance between the central station of Eindhoven and Strijp-S is about 1,6 km, which can be considered a walking distance. The distance between the central station of Rotterdam and M4H is about 3,5 km, which can be considered a cycling distance. This has large consequences for the natural passage and inflow of users to the areas, and should thus be taken into account in the advice for M4H as well.

### Demographics

Even though Strijp-S and M4H have several similar target groups, regarding demographics there are some important differences between the areas as well. Firstly, while regarding workers and visitors the target groups for both areas are quite similar, the target groups for residents differ. Strijp-S mainly serves starters and empty nesters – people without children – with middle-incomes. When housing will be realised at M4H, this area will serve a broader group of residents, including (young) families as well.

Next to the demographics of the target groups for the residents of Strijp-S and M4H, the demographics of the residents of the adjacent neighbourhoods are also different. The adjacent neighbourhoods at Strijp-S are Philipsdorp and Woensel West, which house mostly lower- and middle-income starters and (young) families. In these neighbourhoods respectively 70% and 50% is autochthonous (Weetmeer, 2017a; Weetmeer, 2017b). The adjacent neighbourhoods at M4H are Delfshaven and Oud Mathenesse, which house mostly starters, (young) families and empty nesters with lower incomes. In these neighbourhoods respectively 42% and 39% is autochthonous (CBS, 2017; Municipality of Rotterdam, 2017).

The age groups of the residents of the surrounding neighbourhoods at both areas are thus quite similar, however the surrounding neighbourhoods of M4H house more immigrants with lower incomes. These residents can be seen as a more vulnerable group, making social inclusion at M4H harder but more important for the success of the area as an innovation district on the long term as well.

Regarding social inclusion, both areas use a very different approach. Although social inclusion is essential for the success of both districts on the long term and area managers at

both areas mentioned social inclusion as a goal for the development, it is currently much better organised at M4H.

Strijp-S currently serves mostly high-educated starters and empty nesters with middle- and higher incomes. While the development of the area as innovation district is already in an advanced stage, the connection with the residents of surrounding neighbourhoods proves to be still weak. Residents of surrounding neighbourhoods are being involved in activities that take place at Strijp-S, though sporadically. With regards to the companies and entrepreneurs settled in the area, very little focus on the involvement of these residents in their businesses.

On the contrary, M4H houses several 'social companies' that very much focus on involving the residents of surrounding neighbourhoods – people with a distance to the labour market – in their businesses. So, although the development of M4H as an innovation district is still in an early phase, social inclusion has already been managed better than at Strijp-S. The challenge is though to maintain this during more advanced development stages.

The themes of the districts might have contributed to the difference in the degree of social inclusion in both areas. The themes around which Strijp-S is being developed are 'media technology, design and urban culture/sports' (Interviewee 4, 2017), mostly attracting middle- or high-educated entrepreneurs and companies related to these themes. The theme around which M4H is being developed is 'manufacturing' (Interviewee 7, 2017), being more linked to activities that can be performed by lower- and middle-educated people – and especially former harbour workers that currently live in surrounding neighbourhoods.

However, these themes are only partly contributing to the degrees of social inclusion. The strategies and means deployed by area managers, and the opportunities for user involvement created by area managers for the largest part determine the degree of social inclusion. In that regard, there have been some shortcomings in the management of Strijp-S so far. On the other hand M4H already created a solid basis for social inclusion, which can be built upon during the further development stages of the area.

There are thus some important differences between Strijp-S and M4H around the themes of history, location and demographics, which are likely to influence the effectiveness of the advice. Therefore, these differences should be taken into account during the writing of the advice.

### 6.1.2. Applicability lessons learned to main challenges for M4H

In the previous paragraph important differences between Strijp-S and M4H regarding the history, location and demographics of both areas were discussed. In this paragraph the comparability of the two areas regarding the four main challenges that were identified for the development of M4H as an innovation district is discussed. Herein, the differences regarding history, location and demographics will be considered as well.

#### Existing infrastructure

The challenge of the existing infrastructure is threefold. For each sub-challenge, the situation at M4H will be shortly compared with the situation at Strijp-S. Hence it can be distinguished if lessons learned at Strijp-S can be used to deal with the challenge at M4H.

- (1) The **actual infrastructure** at M4H is based on industry, and is thus mainly designed for trucks. There is little space for cyclists and pedestrians, which is in fact important for the internal accessibility and interaction in the area.

**Similarities between Strijp-S and M4H:** At the start of the redevelopment, the infrastructure at Strijp-S was based on industry as well. It was designed for Philips' trucks and cars, and there was little space for slow traffic.

**Difference between Strijp-S and M4H:** As a result of the different history of both areas (one vs. multiple owners), at Strijp-S the infrastructure of the whole area could be improved at once. Due to the harbour companies still active in M4H (which should be easily accessible for industrial traffic), the infrastructure can be adapted only in parts of the area.

**Lessons learned from Strijp-S:** A bus lane through the area has been constructed, new car roads and parking spots have been realised, and new slow traffic lanes have been added.

**Applicability lessons learned to M4H:** The way in which the infrastructure is improved at Strijp-S can be used at M4H as well, however the planning should be adapted to the situation at M4H.

- (2) The **physical relation with surrounding areas** is bad. M4H is quite isolated because of the River, the Dakpark and the Vierhavenweg. This impedes natural passage and the creation of buzz in the area.

**Similarities between Strijp-S and M4H:** At the start of the development, the physical relation between Strijp-S and the surrounding areas was bad as well. Strijp-S was surrounded by fences, and had been isolated for years.

**Differences between Strijp-S and M4H:** With regards to history, the physical relation between Strijp-S and its surroundings was worse than the physical relation between M4H and its surroundings. As Strijp-S was fully owned by Philips, they could close the area for the public. As M4H was owned by multiple owners, this area was not closed for the public.

With regards to location, Strijp-S has a more advantageous location for natural passage; it is located at walking distance from the city centre. M4H is located at cycling distance from the city centre, which makes natural passage less likely.

**Lessons learned from Strijp-S:** Area managers try to create physical relations with the surrounding areas by developing the boundaries of Strijp-S, though still a lot has to be done. Area managers focus on stimulating natural passage by programming the connection with the city. Investments in solutions to overcome the barriers formed by the trail and roads will be made in the future.

**Applicability lessons learned to M4H:** The strategies and means used to create physical relations with surrounding areas at Strijp-S can be used at M4H as well. However, another strategy should be used to stimulate natural passage because of the distance between M4H and the city centre.

- (3) **Harbour-related companies are still active in the area**, and therefore strict (noise) restrictions are applicable. These restrictions clash with the regulation for housing. It is therefore complex to realise working and living next to each other.

**Differences between Strijp-S and M4H:** As a result of the difference in history (one vs. multiple owners), Strijp-S became available for redevelopment at once while M4H is becoming available for redevelopment piece by piece. Therefore, Strijp-S has not dealt with the challenge of realising housing next to industrial companies.

**Applicability lessons learned to M4H:** No lessons learned from Strijp-S can be used to deal with this challenge at M4H, as the situations were very different.

### Plan of approach

The challenge of the plan of approach is twofold. For both sub-challenges, the situation at M4H will be shortly compared with the situation at Strijp-S. Hence it can be distinguished if lessons learned at Strijp-S can be used to deal with the challenge at M4H.

- (1) Although several strategies and vision documents were published, **no clear plan of approach** including specific actions for the coming months or years is determined. This will however be needed to take the development to the next scale level.

**Difference between Strijp-S and M4H:** As a result of the different history of both areas (one vs. multiple owners), Strijp-S became available for development at once and a development plan could be made in which the ‘best’ locations would be developed first. Because M4H is becoming available piece by piece, the development plan has to be adapted to that. As a result, the locations that can be developed first are maybe not the ‘best’ locations.

**Lessons learned from Strijp-S:** At the start of the development a clear urban plan was made for the development of Strijp-S. This plan however proved to be too clear, providing little space for flexibility. Area managers now realise that the plan was too linear and fixed, and that a plan including circular processes is more effective. As a result, the current plan and approach have been (partly) changed.

**Applicability lessons learned to M4H:** Although the situations were quite different, the lessons learned by area managers at Strijp-S should be taken into account while making the urban plan for M4H.

- (2) **There is not one clear investing party.** The municipality, Port of Rotterdam and their collaboration Stadshaven Rotterdam are all involved. There is however no a clear division of tasks and investments between these parties, and market parties as well.

**Difference between Strijp-S and M4H:** As a result of the different history of both areas (one vs. multiple owners), Strijp-S became available for redevelopment at once and was sold based on a tender. As such, it was sold to one party. Since M4H is becoming available for redevelopment piece by piece, investing parties have to buy all newly available plots one by one. As such, investing parties are less clear.

**Lessons learned from Strijp-S:** VolkerWessels – the winner of the tender – together with the Municipality of Eindhoven entered into a public private partnership and hence became the main investing parties. Later on, housing corporations Trudo and Woonbedrijf became involved as well. Together they form the ‘Board of Inspiration’, among which tasks and investments are clearly divided.

**Applicability lessons learned to M4H:** The situations are quite different, but since the management is very well organised at Strijp-S, lessons learned about the management should be taken into account in the advice for M4H.

### Critical mass

Attracting a critical mass is a big challenge at M4H. Several types of companies and employees are present in the area, but more (diversity of) users are needed to create support for initiatives and interventions, and to create a more lively area during both day and night. With only companies and employees being present in the area, at night M4H is still deserted. The sub-challenges are therefore **to attract workers, to attract residents, and to attract visitors.**

**Similarities between Strijp-S and M4H:** As the redevelopment of Strijp-S started from being a forbidden terrain, a critical mass of workers, residents and visitors had to be attracted from scratch here as well.

**Difference between Strijp-S and M4H:** As a result of the different history of both areas (one vs. multiple owners), Strijp-S became available for redevelopment at once and M4H is becoming available for redevelopment piece by piece. As such, residents cannot be attracted at M4H yet, while at Strijp-S they could be attracted from the start already.

With regards to location, Strijp-S has a more advantageous location for attracting a critical mass. Strijp-S is located on walking distance from the city centre, while M4H is located on cycling distance from the city centre. Therefore, natural passage will be better at Strijp-S, attracting more people to the area.

**Lessons learned from Strijp-S:** Starting from nothing, Strijp-S now serves over 700 companies with more than 2000 employees, over 1000 residents, and 1.3 million visitors.

**Applicability lessons learned to M4H:** Keeping in mind the differences in history and location between the areas, lessons learned regarding the ways of attracting and retaining people at Strijp-S can be used in the advice for M4H as well, as Strijp-S has proven to be quite successful in attracting and retaining people.

### *User (sub-)groups*

An overview of the present user (sub-)group and target (sub-)groups at Strijp-S and M4H can be found in Appendix XII. Appendix XIV shows the types of workers, residents, and visitors at M4H for which focus points regarding attraction and retention can be defined based on the lessons learned at Strijp-S. Based on these figures, it can be defined for which user groups the focus will be on attraction, and for which groups the focus will be on retention.

As such, for the larger **companies** in the synthetic sector, middle-sized companies in the symbolic sector and one-man companies in the service sector the focus will be on attraction. For the smaller companies active in the synthetic-, symbolic-, and service sector the focus will be on retention.

For **employees**, the focus will be on retention for starters-, young families-, or families active in the synthetic-, symbolic- and services sector, empty nesters active in synthetic- or symbolic- sectors, and e families active in the facilitators- or services sector. For none of the groups the focus will be on attraction, since there are no groups that are not present yet in M4H and that are present at Strijp-S.

For **residents**, focus points regarding attraction and retention can be defined for starters, young families, families, empty nesters and elderly with middle- or high incomes. As no residents are present in M4H yet, for all types of residents the focus points will be defined for their attraction.

Lastly, for users of all age groups **visiting** the area for social activities or purchase the focus will be on attraction. For people of all age groups visiting the area for cultural activities or attractions the focus will be on retention.

### **Liveliness and interaction**

The challenge of liveliness and interaction is threefold. For all sub-challenges, the situation at M4H will be shortly compared with the situation at Strijp-S. Hence it can be distinguished if lessons learned at Strijp-S can be used to deal with the challenge at M4H.

- (1) Although interaction takes place within the multi-company buildings in the area, **interaction does not yet take place on area level**. As a result from the outside it cannot be seen that actually a lot is going on in the area.

**Similarities between Strijp-S and M4H:** The buildings at Strijp-S are all very large, hence interaction takes place more on building level than on area level as well.

**Difference between Strijp-S and M4H:** As a result of the different history (available at once vs. available piece by piece), at Strijp-S the whole area is available for interventions stimulating interaction on area level. On the contrary, at M4H only some parts of the area are available for interventions stimulating interaction.

**Lessons learned from Strijp-S:** Area managers try to stimulate interaction in the public space by designing places for interaction and organising activities and events. This is successful to a certain extent, however users indicated that the amount of interaction between users of different buildings still needs to be improved.

**Applicability lessons learned to M4H:** Although at Strijp-S interaction at area level still needs to be improved as well, the strategies and means area managers deploy to stimulate interaction – especially the organisation of activities and events – can be used in the advice for M4H.

- (2) **There is currently little transparency** of which companies and amenities are present in the area, what they do, and when people can come visit them. Transparency would in fact contribute to interaction and the liveliness of the area.

**Similarities between Strijp-S and M4H:** Strijp-S also deals with the challenge of transparency. It turned out that it is not always clear for both people working and living at Strijp-S and people from outside what is present in the area and what is being organised.

**Difference between Strijp-S and M4H:** As at M4H the critical mass still needs to be attracted, it is even more crucial to update people about what is there and what is going on.

**Lessons learned from Strijp-S:** Events and activities are promoted in and around the area, so in that sense there is transparency. However, users indicated that they often do not know what is going on in other buildings. Also workers indicated that it is hard to find which companies are present in the area and what they focus on.

**Applicability lessons learned to M4H:** Although at Strijp-S transparency still needs to be improved as well, the (few) strategies and means area managers deploy to stimulate transparency can be used in the advice for M4H.

- (3) Activities and events are organised for the companies located in certain buildings, and events are organised at the Ferro Dome, but **few activities are organised in the public space**. This would however attract more people to the area, resulting in interaction and liveliness.

**Similarities between Strijp-S and M4H:** At the start of the development at Strijp-S area managers had to set up the organisation of activities and events from scratch as well.

**Difference between Strijp-S and M4H:** As a result of the different history of both areas (available at once vs. available piece by piece), at Strijp-S the whole area is available for activities. On the contrary, at M4H only some parts of the area are available for activities.

**Lessons learned from Strijp-S:** On a frequent basis activities and events are organised at Strijp-S. At international, national, as well as local level area managers have initiated and facilitated the organisation of these events.

**Applicability lessons learned to M4H:** Taking in mind the consequences of the different history of the areas, lessons learned regarding the organisation of activities and events at Strijp-S can be well used in the advice for M4H.

## 6.2. Advice to the Merwe-Vierhavens

Based on the similarities and differences between Strijp-S and M4H, and the applicability of the lessons learned from Strijp-S to the main challenges defined for M4H, the advice for the development of M4H as an innovation district can be written. For each sub-challenge focus points that should be taken into account by area managers to deal with the challenge are defined. For each focus point, also potential strategies and means are proposed. These focus points, strategies and means are based on the lessons learned at Strijp-S. Finally, also the sequence of actions will be addressed.

### Existing infrastructure

The sub-challenges of the existing infrastructure of M4H were determined to be the actual infrastructure, physical relation with surrounding areas, and realisation of housing next to harbour companies should be dealt with. To improve the actual infrastructure, the focus should be on giving slow traffic a place in the area. To improve the physical relation with surrounding areas, the focus should be on the development of the boundaries of M4H and on the accessibility and connection with the city centre. To realise housing next to the harbour companies that are still active in the area, the focus should be on experimenting with (temporary) housing. The potential strategies and means that can be used to improve these focus points are summarized in table 36.

Sub-challenge	Focus points	Potential strategies and means
Actual infrastructure	Slow traffic	Construct slow traffic lanes in and to the area, to improve walkability and bikeability. Create interesting routes for cyclists and pedestrians. Herein the location of the area along the water could be used.
Physical relation with surrounding areas	Development of the boundaries of the area	Create amenities or functions at the boundaries of M4H where activities interesting for residents of surrounding neighbourhoods as well take place.
	Accessibility/ connection city centre	Create connections with bus, metro or tram between the city centre, surrounding areas and M4H, in order to improve accessibility with public transport. Create connection by car with the city centre, surrounding areas and M4H, in order to improve accessibility with private transport. Besides, make sure the area provides enough and affordable parking spots. Create interesting cycling routes between the area and the city centre.
Realise housing next to harbour companies	Experimental housing	While housing still cannot be realised on a large scale, where possible experiment with (temporary) housing to improve the liveliness of the area at any time of the day.

Table 36. Focus points and potential strategies and means to deal with the existing infrastructure.

### Plan of approach

The sub-challenges for a clear plan of approach for the development of M4H as an innovation district were determined to be a clear plan of approach and a clear investing party. To set up a clear plan of approach, area managers should focus on determining directions and actions, and on involving users in the development of the plan. To clearly manage the investing parties, the focus should be on dividing the tasks, risks, investments and responsibilities among parties. The potential strategies and means that can be used to improve these focus points are summarized in table 37.

Sub-challenge	Focus points	Potential strategies and means
Clear plan of approach	Determine directions and actions	Define directions for the long-term development, and actions for the short-term development. Hence, the plan will remain flexible and can be adjusted to the current situation.
	Involve users in the development of the plan	Reflect on the plan on a frequent basis, and adjust the next actions to the current priorities and needs. Organise brainstorm sessions with users, and ask them what they need, want, and what is next according to them. Outsource parts of the plan to companies present in the area.
Clear investing party	Divide tasks, risks, investments and responsibilities	Establish a 'Board of Inspiration', including the main investing parties. Preferably involve both private and public parties. Divide tasks, risks, investments and responsibilities among the members of the 'Board of Inspiration'.

Table 37. Focus points and potential strategies and means to deal with the lack of a clear plan of approach.

### Critical mass

To attract a critical mass to M4H, several types of users should be attracted and retained. The sub-challenges of attracting a critical mass are to attract workers, to attract residents, and to attract visitors. For the attraction of all user groups, the focus should be on improving accessibility and the connection with the city centre, the creation of amenities, and the creation of openness and tolerance.

To deal with the sub-challenge of attracting workers, the focus should – next to the general focus points – be on attracting a diversity of companies, and stimulating interaction between companies. To deal with the sub-challenges of attracting residents and visitors, area managers should focus on stimulating interaction on area level. Lastly, to attract residents, the focus should also be on stimulating interaction on building level. Potential strategies and means for the improvement of these focus points are summarized in table 38.

Sub-challenge	Focus points	Potential strategies and means
Attract workers, residents and visitors	Accessibility/ connection city centre	Create connections with bus, metro or tram between the city centre, surrounding areas and M4H, in order to improve accessibility with public transport. Create connection by car with the city centre, surrounding areas and M4H, in order to improve accessibility with private transport. Besides, make sure the area provides enough and affordable parking spots. Create interesting cycling routes between the area and the city centre.
	Recreational-, functional- & cultural amenities	Make a-cyclical investments, by investing in amenities already before residents are present in the area. Provide space for user initiatives. Establish a cultural fund in which the managing parties invest, to support cultural initiatives.
	Openness and tolerance	Offer a variety of working places, dwellings, price ranges, events, activities, and amenities to attract a diversity of workers, residents and visitors.
Attract workers	Diversity of companies	Steer on concepts or sectors in the attraction of companies and employees (community management). Offer a variety of workspaces to attract a diversity of workers.
	Interaction between companies	Steer on concepts or sectors in the attraction of companies and employees (community management). Initiate business events for several types of companies and employees. Create shared facilities and spaces where people can meet.
Attract residents	Interaction on building level	Establish a residents association. Organise activities and events for residents. Create shared facilities and spaces where people can meet.
Attract residents and visitors	Interaction on area level	Organise area-wide activities and events for different types of users. Create transparency of activities going on in other buildings. Create meeting places in the public space where people can meet. Create recreational amenities that stimulate interaction.

Table 38. Focus points and potential strategies and means to deal with the attraction of a critical mass.



### Liveliness and interaction

The sub-challenges for the creation of liveliness and interaction are determined to be interaction on area level and transparency of present people, activities and places. To create interaction on area level, area managers should focus on creating shared spaces, and offering a diversity of activities and events. To increase transparency of present people, activities and places, area managers should focus on creating transparency both within and outside the area. The potential strategies and means that can be used to improve these focus points are summarized in table 39.

Sub-challenge	Focus points	Potential strategies and means
Interaction on area level	Shared spaces	Create shared spaces in the public space where people can meet. Make all building plinths publicly accessible, so people can see by themselves what is going on in the buildings.
	Activities and events	Organise area-wide activities and events for different types of users. Provide space for user initiatives. Establish a cultural fund in which the managing parties invest, to support cultural initiatives.
Transparency of present people, activities and places	Transparency within the area	Create an app or website that gives a complete overview of the people (i.e. companies, entrepreneurs), activities (i.e. festivals, exhibitions) and places (i.e. amenities, meeting places) in the area. Organise area-wide activities and events for different types of users.
	Transparency outside the area	Use social media to update people about the people (i.e. companies, entrepreneurs), activities (i.e. festivals, exhibitions) and places (i.e. amenities, meeting places) in the area. Organise activities for residents of surrounding areas and other people interested in the development to update them about what is going on in the area.

Table 39. Focus points and potential strategies and means to deal with the lack of liveliness and interaction.

### Sequence of actions

Although all focus points are important in order to deal with the challenges of the development of M4H as an innovation district, some actions have priority above others. As such, to be able to deal with the other challenges, first a plan of approach needs to be made. This plan of approach contains directions and actions needed to deal with the other challenges.

When the plan of approach is made, area managers need to start focussing on improving the existing infrastructure. Well-organised infrastructure can be seen as a precondition for the attraction of a critical mass of users to the area, and hence for liveliness and interaction as well. For the attraction and retention of users different types of amenities should be offered, serving several types of users. Hence openness and tolerance are stimulated. The attraction of a critical mass to the area, together with stimulating interaction and organising events, results in liveliness, which will in turn result in the attraction of more users.

It is important to point out that the challenges should not be seen as separate steps that need to be dealt with one by one, but as organic processes instead. During the development, the plan of approach needs to be adjusted based on the current situation and demand in the area. Also the challenges of infrastructure, a critical mass, and liveliness and interaction are intertwined; they could not be dealt with without organising the other challenges as well.





CONCLUSIONS

SHAM

## 7. Conclusions

This chapter will address the answers to the research sub-questions and the main research question in the first paragraph. Subsequently, some recommendations for practice and further research are discussed in paragraph 2. The chapter ends with a theoretical and personal reflection on the research project and process.

### 7.1. Conclusions

The main goal of the research was to define possible improvements in the attraction and retention of users in UIDs, in order to contribute to the realisation of optimal innovation ecosystems, improvement of urban competitiveness and partial closure of the gap in literature about user preferences. The goal was divided into three sub-goals: (1) to understand the users of UIDs, (2) to gain insight how area managers steer on the attraction and retention of users, and (3) to improve the alignment between users and area managers. These goals were achieved by constructing a theoretical framework (Ch.3) and conducting empirical research in the case of Strijp-S (Ch.4); an innovation district that is considered successful. The results from this case study were compared to the theoretical framework, and were subsequently projected on the Merwe-Vierhavens area (Ch.5); an innovation district that is still in an early development stage. Based on the challenges defined for the Merwe-Vierhavens, an advice that can be used to deal with these challenges was written based on the lessons learned from Strijp-S.

The main research question for the research was: *“What are the critical factors to successfully attract and retain people in Dutch Urban Innovation Districts, and how can area managers steer on the attraction and retention of these people?”* This question can be answered by step-by-step answering the research sub-questions.

#### Who are the people meant to use UIDs?

The people meant to use UIDs are seen as the target groups that area managers aim to attract and retain in their area. For Strijp-S and M4H the target groups were identified, based on existing documents, a survey and several interviews conducted with area managers.

At **Strijp-S** the main target groups regarding workers and residents are mostly starters and people with a metropolitan lifestyle. Also the young and creative pioneers that created the image of the area are an important target group. The goal regarding visitors is to attract a variety of international, national and local people, visiting the area for different purposes.

At **M4H**, the target groups for workers are both small and large companies active in analytical- synthetic-, and symbolic sectors, with a focus on manufacturing. Also supporting companies in the facilitators- and services sector are considered important. The housing that is to be realised in M4H hence will mainly serve people with middle to high incomes. Concerning visitors, the aim is to attract people from different ages that visit the area for various purposes.

Target groups are thus area-specific. However, there are some overlapping target groups that are likely to be target groups in UIDs in general. These mainly concern several types of workers, as workers are the most crucial user group for innovation: the basis for the success of innovation districts. The target groups for workers in UIDs generally include one-man companies, start-ups and small companies active in different sectors. Besides, the presence of some facilitators, incubators and services is important for the success of UIDs.

The target groups regarding residents and visitors in UIDs are more area-specific than the target groups of workers, as these are more dependent on cities' history, location and demographics. However, UIDs generally aim to attract pioneers and early adopters.

### Who are the people using UIDs?

The people actually using the UIDs are seen as the present user groups in those areas. For Strijp-S and M4H the present user groups were identified, based on existing documents, a survey and several interviews conducted with area managers.

At **Strijp-S**, the present companies are mostly one-man companies and small companies that are active in synthetic and symbolic sectors. Also some small service companies are present in the area. In line, the employees present at Strijp-S are mainly people in the starters-, young families-, families-, or empty nesters life stage that are active in the synthetic-, symbolic-, or service sector.

Concerning residents, people from all life stages and income groups live in the area. However, the lofts and apartments offered in the area are most suitable for students, starters, empty nesters and elderly; people without children. In the first stage of the development where housing was realised, mostly young people were attracted. After some years of development, also people that have already had a living career and again search for urbanity are attracted to the area.

More than 1.3 million people have visited the area since the start of the redevelopment. Most of these people visit the area for social- and cultural activities, and in a lesser extent for purchases and attractions. Visitors are mostly between the age of 18 and 30, or between the age of 55 and 70.

At **M4H**, the present companies are mostly one-man companies, start-ups, and small companies active in the analytical-, synthetic-, and symbolic sector. Besides, some incubators and facilitators are present in the area. The amount of service companies (hospitality) is still limited. In line, the employees present in M4H are people working for the sectors mentioned above. The life stages of the employees could not be identified in M4H.

There are no residents present in the area yet. However, on the short term one of the Marconi towers will be transformed into housing. The apartments realised in this tower will mainly serve starters and expats. The larger scale housing that will be realised on the long term will serve a broader group of residents, including (young) families as well.

At the moment, the amount of visitors is still limited at M4H. The people that visit the area mostly come for cultural activities (e.g. events in the Ferro Dome) or attractions. Also, people increasingly visit the area for excursions and amenities.

In line with the target groups, present user groups are area-specific, but there are some user groups that are likely to be present in UIDs in general. Again, these mainly concern several types of workers – one-man companies, start-ups and small companies active in different sectors, facilitators, incubators and services – as these are most crucial for innovation. The presence of certain residents and visitors in UIDs is again more area-specific, depending on cities' history, location and demographics.

By comparing the present user groups to the target groups, it can be concluded that attracting larger companies to UIDs seems to be harder than attracting smaller companies. This might be related to the multi-company buildings present in both areas, offering affordable spaces for mostly smaller companies. In line, in both districts the focus is currently more on the attraction of smaller companies. At M4H the goal is in fact to attract larger production companies to the area as well.

### What are the physical, economical and networking factors of attraction and retention for the different types of users of UIDs?

For Strijp-S the factors of attraction and retention have been researched per user group. For each user group that was well represented by the respondents of the survey successful factors of attraction and factors of improvement were defined. The factors of attraction and retention mentioned by the users of Strijp-S were compared to the factors mentioned in literature. Some factors were both mentioned in literature and during the empirical research, some factors were only mentioned in literature or during the empirical research.

In general it can be stated that a **variety of amenities** is essential for the attraction and retention of people to innovation districts, since all users in practice mentioned this factor as being important and it was mentioned in literature as well. Also **location, and openness & tolerance** were mentioned by all types of users in the empirical research. These factors were however not mentioned for all types of users in theory. Table X (p.102) gives an overview of all factors mentioned per user group in both theory and practice.

#### *Workers*

Taking into account the importance of the respective groups for the main aim of UIDS – innovation – area managers should especially pay attention to the factors attracting and retaining workers. It can be concluded that for workers the most important physical factors of attraction and retention are **accessibility and a variety of amenities**. The most important economical factors of attraction and retention are **the presence of other companies/employees, business events and costs for space**. In addition, the most important social factors of attraction and retention are **interaction between companies/employees, and openness & tolerance**. These factors were mentioned in the theoretical framework as well as during the empirical research.

#### *Residents*

Regarding residents, it can be concluded that a **variety of amenities and size of housing** are the most important physical factors of attraction. The most important social factors of attraction and retention are **openness & tolerance, diversity of people, and interaction with neighbours**. Also some factors that are a combination of physical, economical and networking assets prove to be important factors of attraction and retention. These include **urban diversity and liveliness of the area**. All of these factors were mentioned in both the theoretical framework and the empirical research. It can be noticed that most factors relate to networking assets, hence social interaction proves to be very important for residents.

#### *Visitors*

Lastly, it can be concluded that for visitors the most important physical factors of attraction and retention are a **variety of amenities, activities, events, and accessibility**. Another important factor of attraction and retention is the **urban diversity**, which is a combination of physical, economical, and networking assets. These factors were mentioned in the theoretical framework as well as during the empirical framework. It can be noticed that the factors are mostly physical assets.

### How do urban planners currently steer on the attraction and retention of people to UIDs?

The strategies and means used by area managers to steer on the attraction and retention of users were identified by means of interviews with managers at both cases. Some strategies and means are being used in both cases, however more strategies and means were identified at Strijp-S since the area is already in a further development stage. At M4H the

focus is currently more on attraction users than on retaining users, although retention is very important to ensure a critical mass and liveliness as well.

The strategies and means identified during the interviews at Strijp-S were compared with the ones mentioned in the theoretical framework, in order to define similarities and differences. The potential strategies and means that were proposed in the advice for M4H to deal with the challenges in the development are based on this comparison.

In the comparison it could be noted that in addition to the ones mentioned in the theoretical framework a lot more came forward during the empirical research. Table 10 (p.103) gives an overview of the strategies and means deduced from theory and practice.

**Community management, organising events and activities, involving users in the development process, accommodating growth, branding and marketing, offering business support, and offering amenities** are considered the most important strategies and means to steer on attraction and retention of users, since they were mentioned in both theory and practice. Herein, organising events and activities, involving users in the development process, and branding & marketing are applicable to the attraction and retention of all user types. Community management and accommodating growth are applicable to the attraction and retention of workers and residents.

In addition to these strategies, some more came forward during the empirical research. The strategies and means applicable to all types of users are **steering on magnets, making a-cyclical investments, establishing a cultural fund, steering on the preservation of the identity, and providing room for user initiatives**. Furthermore, to attract and retain workers and residents effective strategies are **offering affordable space and offering new rental concepts**. In addition **facilitating entrepreneurship** can be used to attract and retain workers, and **programming the connection with the city** can be used to attract and retain visitors.

#### How can urban planners better steer on attracting and retaining people in UIDs?

The ways in which area managers can better steer on the attraction and retention of users at Strijp-S are addressed by means of the identification of factors of improvement based on the survey and focus group. The ways in which area managers can better steer on the attraction and retention of users at M4H are defined by applying lessons learned at Strijp-S to the challenges addressed in M4H.

#### *Strijp-S*

When looking at all user groups in the same way, it can be concluded that **functional-, natural-, and recreational amenities** need most improvement to attract and retain more users. All user groups have assessed the quality of these factors at Strijp-S relatively low, while they assessed their importance relatively high. These factors can be improved by increasing the amount of amenities, or by enlarging the variety of amenities.

The importance of the presence of the four user groups should however be weighted differently. With regards to the division between long-term and short-term visions, emphasis should be placed on improving the factors mentioned by the groups of companies, employees and residents as these have a long-term vision for the area. These groups all indicated **functional-, natural-, and recreational amenities, costs for services, -goods, and -space, accessibility by private transport, internal accessibility, and spontaneous interaction** as factors of improvement at Strijp-S.

The three types of amenities can be improved by increasing the amount of amenities or by enlarging the variety of amenities. Costs for services, -goods, and -space are presumably seen as factors of improvement because users experience costs as being too high. This can be improved by offering more variety of prices, so the affordable part is better represented. Accessibility by private transport and internal accessibility can be improved by i.e. increasing the amount of parking spots, lowering the parking costs, and improving bicycle- and pedestrian areas within the area. The amount of spontaneous interaction can be increased by i.e. adding meeting places in the public space and in buildings, increasing the amount of activities, and shaping interesting routes through the area that stimulate interaction.

With regards to the importance of the user groups for the process of innovation, emphasis should be placed on improving the factors seen as factors of improvement by companies and employees. These factors include – next to the factors of improvement as mentioned above – **meeting places in the public space, social diversity, openness & tolerance, and interaction between companies.**

In order to better attract and retain companies and employees, improvements thus need to be made in the field of social connections. These factors can be improved by adding meeting places, increasing the amount of activities, and shaping routes through the area. In addition, also increasing transparency could improve social connections, since this contributes to people being aware of what is there and what is going on in the area. Hence, people will be able and more likely to approach others.

#### *M4H*

In order to better steer on the attraction and retention of users in M4H, area managers should deal with four main challenges. These include the existing infrastructure, the lack of a plan of approach, the attraction of a critical mass, and liveliness and interaction.

Concerning the **existing infrastructure** of the area, the actual infrastructure is still based on its industrial function, and therefore provides limited space for slow traffic. Besides, the physical relation with surrounding areas is bad, and the realisation of housing in the area next to harbour-related companies that are still active in the area is complicated.

The actual infrastructure can be improved by focussing on giving slow traffic a place in the area. To improve the physical relation with surrounding areas, the focus should be on the development of the boundaries of M4H and on the accessibility and connection with the city centre. To realise housing next to the harbour companies that are still active in the area, the focus should be on experimenting with (temporary) housing.

Although several strategies and visions have been written for the development of M4H, there is **only a very general plan of approach**. A clear plan of approach should be made and clear investing parties should be designated to boost the further development of the area, and hence attract more people.

To set up a clear plan of approach, area managers should focus on determining directions for the long term and actions for the short term, and on involving users in the development of the plan. To clearly manage the investing parties, the focus should be on dividing the tasks, risks, investments and responsibilities among parties.

Currently, **the critical mass that is needed for the creation of support for interventions and initiatives, and for the liveliness of the area is still missing**. To attract this critical mass, several types of users should be attracted and retained.

To attract workers, residents, as well as visitors, the focus should be on improving accessibility and the connection with the city centre, on the creation of amenities, and on



the creation of openness and tolerance. To specifically attract workers, the focus should – next to the general focus points – be on attracting a diversity of companies, and stimulating interaction between companies. To attract residents and visitors, area managers should focus on stimulating interaction on area level. Lastly, to attract residents, the focus should be on stimulating interaction on building level as well.

Currently, **the amount of liveliness and interaction in the area is very low**. Interaction takes place only within the multi-company buildings and not yet on area level, there is little transparency of the present people, activities and places in the area, and few activities are organised in the public space.

To create interaction on area level, area managers should focus on creating shared spaces, and offering a diversity of activities and events. To increase transparency of present people, activities and places, area managers should focus on creating transparency both within and outside the area.

### Main research question

The combination of the answers on the sub-questions above results in an answer at the main research question, being:

*“What are the critical factors to successfully attract and retain people in Dutch Urban Innovation Districts, and how can urban planners and policy makers steer on the attraction and retention of these people?”*

The critical factors to successfully attract and retain people in urban innovation districts in the Netherlands are mainly **a variety of amenities, location, accessibility, openness and tolerance**. These factors are important for the attraction and retention of workers, residents as well as visitors.

Furthermore, for the attraction and retention of workers, also the **presence of other companies and employees, business events, costs for space, and interaction between companies and employees** have proven to be crucial. In the attraction and retention of residents, next to the general factors also **size of housing, diversity of people, interaction with neighbours, and liveliness** prove to be critical. Lastly, for the attraction and retention of visitors next to the general factors **activities and events** are critical as well.

To steer on the attraction and retention of users, area managers can use several strategies and means. Some of these are applicable to workers, residents as well as visitors. These include **organising events and activities, involving users in the development process, branding and marketing, steering on magnets, making a-cyclical investments, establishing a cultural fund, steering on the preservation of the identity, and providing room for user initiatives**.

Some strategies and means are applicable to some user types only. As such, **community management, accommodating growth, offering affordable space, and offering new rental concepts** are applicable to the attraction and retention of workers and residents. In addition, **facilitating entrepreneurship** can be used to attract and retain workers. Lastly, **programming the connection with the city** can be used to attract and retain visitors.

These factors of attraction, factors of retention, strategies and means are based on literature and empirical research conducted at Strijp-S. Of course each area has a different context, history, and goal. As such, the effectiveness of the factors and strategies depends on the situation, and there might be other factors and strategies as well.

However, in every innovation district users are key. They are the ones that create support for initiatives, determine the identity and atmosphere of an area, create liveliness, create openness and tolerance, and they innovate. As such, in order to realise successful innovation districts offering optimal innovation ecosystems and contributing to urban competitiveness, it crucial to involve users in the development process and react to they needs and wishes.

## 7.2. Recommendations

Based on the research and its results, some recommendations can be made. Recommendations with regards to practice, and recommendations for further research can be distinguished. Both are discussed below.

### Practice

The recommendations for practice address how the advice should be seen, and could be used. Also some points of attention for the development of UIDs in general are addressed. Regarding the specific advice for M4H, the recommendations are as follows:

- The advice for M4H is based on the lessons learned from Strijp-S. However, considering the ways in which the areas became available for redevelopment – Strijp-S at once as it was fully owned by Philips, M4H piece by piece as it was owned by multiple owners – the situation at M4H can be considered more representative for the reality of urban development.
- The advice for M4H focuses on four main challenges that were identified for the development of the area as innovation district. However, these are not the only things that should be improved to turn the area into a successful UID.
- The advice should be seen as a guideline for the development of M4H that can be used to provide directions and define priorities, and not as a strategy that is ready for use. If the aim is to turn the advice into specific steps, it needs further elaboration and research.

Regarding the development of UIDs in general, the following recommendations can be made:

- UIDs are manufacturable and area managers can well steer the development. However, the most suitable way of developing an area as an UID always depends on an area's history, location and demographics, and is thus always case-specific.
- In attracting and retaining users, area managers should especially focus on the attraction and retention of workers, as this is the most important user group for the main goal of UIDs: innovation.
- In the development of UIDs, it is essential to involve users. On a frequent basis meetings with users, aimed at gaining insight in the current needs and wishes, should be organised. Hence, area managers are able to respond to these needs and wishes. A condition for this is a plan of approach that includes room for flexibility.

### Further research

The recommendations for further research include some suggestions for the specific cases of M4H and Strijp-S, and some general suggestions. The recommendations for the specific cases are as follows:

- The advice for M4H contains focus points for the attraction and retention of users and potential strategies and means to steer on these focus points. These are based on the findings of the empirical research at Strijp-S. Therefore, only an advice could be given for the user groups present at Strijp-S as well. To provide a more complete and detailed advice, the same empirical research should be conducted at M4H.
- The division of present users at M4H amongst the user groups defined was made, but the ratios of the user groups are unknown. By means of conducting a user survey at M4H as well, the ratios can be determined.
- The advice is based on literature, but mainly on the empirical research conducted at Strijp-S. To increase the validity of the research, more interviews and focus groups could be conducted. Also the survey could be conducted amongst more users.
- It would be interesting to conduct the same research at Strijp-S in 5 or 10 years from now. Hence, differences between user groups, and user preferences and - experiences can be identified. Also the processes of social inclusion and gentrification could be better researched.

The general recommendations that can be made are as follows:

- This research focused on the 're-imagined urban areas model' as defined by Katz & Wagner (2014). It would be valuable to conduct the same type of research for the 'anchor plus model' and the urbanized science park model' as well, so the user preferences of the different models can be compared.
- In this research it occurred that social inclusion is an essential part of the development of UIDs, but it is also a tough part. It will therefore be interesting to further research social inclusion in UIDs, and the ways in which area managers can stimulate social inclusion and deal with gentrification.

### 7.3. Reflection

The reflection can be divided into a theoretical reflection, a reflection on the quality of the methods used, a reflection on the quality of the results of the research, and a personal reflection. The four types of reflection are discussed per paragraph.

#### 7.3.1. Theoretical reflection

Some theories selected during the literature review were used as a basis for the further research. As such, the research was narrowed down to the re-imagined urban areas model based on the theory of Katz & Wagner (2014). Strijp-S and M4H are both considered re-imagined urban areas according to this theory. However, after having studied both cases there prove to be some significant differences between the areas that influence the effectiveness of strategies and means that can be used by area managers. It can therefore be concluded that in this respect the division of innovation districts into three types is too general.

In order to address potential strategies and means that can be used for the attraction and retention of users, a sub-division of areas has to be made based on the history, the location, and the demographics of the area.

About the **history** of re-imagined urban areas Katz & Wagner (2014) state that the areas are '*former industrial or waterfront areas*'. To make a more specific sub-division, history should concern the specific former and current function and owners (single or multiple) of the area,

both influencing the time-span in which the area becomes available for redevelopment. The time-span has large consequences for the planning of the redevelopment, and for the effectiveness of strategies and means as well.

Therefore, a division should be made between areas becoming completely available for (re)development in a **short time-span** (less than 5 years), **medium time span** (5 to 10 years), and a **long time-span** (more than 10 years). Herein the border is set at 10 years as waves of innovation usually take about 10 to 15 years (Interviewee 8, 2017). When areas become available within a long time-span, the development will be more complicated.

About the **location** of re-imagined urban areas Katz & Wagner (2014) state that the areas are *'former industrial or waterfront areas undergoing physical and economic transformation'*. To make a more specific sub-division of area types, location should also include the size of the city (amount of inhabitants and surface), and the distance between the area and the city centre. The amount of inhabitants and the distance between the area and the city centre largely influence the degree of natural passage to the area. Therefore, a division should be made between areas located at **walking distance**, **cycling distance**, or **driving distance** from the city centre.

About the **demographics** of re-imagined urban areas Katz & Wagner (2014) state that the areas are located in *'high rent cities'*. To make a more specific division, demographics should specifically include the demographics of the target groups and user groups of the area itself, and the demographics of the users of surrounding neighbourhoods. The demographics of the users of surrounding neighbourhoods have significant influence on the importance of social inclusion. The bigger the difference between the users of the area itself and the users of surrounding areas, the more important social inclusion becomes. Therefore, a division should be made between areas with surrounding neighbourhoods housing **vulnerable groups**, and areas with surrounding neighbourhoods housing **middle- to high-income groups**.

With the help of table 40, innovation districts (in development) can be classified as a sub-type of one of the three models. First determine the time-span in which the whole area becomes available for development, thereafter determine the distance to the city centre, and lastly determine the demographics of surrounding areas. Following these three steps, 18 specific sub-types of re-imagined urban areas can be distinguished.

1	2	3
Time-span in which the complete area becomes available for development	Distance to city centre	Demographics surrounding areas
Short (less than 5 years) Medium (5 to 10 years) Long (more than 10 years)	Walking distance (under 1,5 km) Cycling distance (1,5-5 km) Riding distance (over 5 km)	Vulnerable groups Middle- or higher income groups

Table 40. Step-by-step plan to determine the sub-type of innovation districts.

### 7.3.2. Reflection on the research methods

This research was designed as a single case study research, which has been a good choice with regards to the time available for the research. If the focus had been on multiple cases, the level of detail of the case studies would have been lower.

Strijp-S proved to be a suitable case for the case study, as it is the Dutch UID in the most advanced developed stage so far. Therefore, a large variety of user types on which the research could focus were present in the area. It was also valuable that as a result of the advanced development stage, the first people have already moved within the area, and a new flow of people has settled in the area. Therefore, the experiences of these people could

be addressed as well. In line, also the area managers of Strijp-S could already address things they would have done differently and some lessons learned. These could be effectively used in writing the advice for the development of M4H as an innovation district.

The methods used in this research are literature review, a survey, a focus group, micro cases, and interviews. Literature review was used to explain important concepts and define variables being as the basis for empirical research. The survey, focus group and micro cases were used to gain insight in user types, -preferences and -experiences at Strijp-S. By means of interviews insight could be gained in the strategies and means used by area managers at Strijp-S and M4H.

Some theories selected during the **literature review** were used as a basis for the further research. As such, the research was narrowed down to the re-imagined urban areas model based on the theory of Katz & Wagner (2014). This model however proved to be too general, therefore a suggestion for adapting the model making it more specific by including a sub-division was made in the previous paragraph.

The survey, the focus group and the micro cases proved to be effective methods to gain insight in the user types, -preferences and -experiences at Strijp-S. The combination of quantitative and qualitative data gained by means of the **survey** was effective to easily map specific factors of attraction, retention, and improvement, and get explanation about several preferences or experiences as well.

The **focus group** and the **micro cases** turned out to be valuable from both an academic and personal point of view. From an academic point of view, the focus group helped to verify the results of the survey, and to get more extensive explanation about the preferences and experiences. In line, the micro cases were valuable for better understanding the differences in experiences and preferences of entrepreneurs at Strijp-S. From a personal point of view, it was valuable to personally get in touch with the users of Strijp-S, and gain more understanding of the motivation behind specific experiences and preferences.

The **interviews** with area managers of Strijp-S were valuable from both academic as personal point of view as well. From an academic point of view, it was interesting to gain insight in the different visions and approaches of the different parties involved. From a personal viewpoint it was nice to get some more background information, and experience the different personal opinions of the area managers as well.

At M4H, only the area manager of M4H from Stadshavens Rotterdam and a researcher focussing on the case of M4H were interviewed. Hence, most information was therefore based on these two interviews and some existing vision documents and analyses. It would however have been valuable if more interviews with area managers working at different parties were conducted, so more insight could have been gained in the different visions and approached of these parties.

With regards to the advice for M4H, the advice would have been better if the same kind of (empirical) research methods were used for the case of M4H. Hence, more specific focus points could have been distinguished, especially for the attraction and retention of specific user groups. Conducting empirical research at M4H would however have been more difficult because of the limited amount of users currently present in the area.

The research methods have thus proven to be effective for an in-depth single case study, given the degree of detail of the research. It would be valuable to compare different cases using these research methods, but it will take much effort and time to achieve the same level of detail in all cases.

### 7.3.3. Reflection on the research results

The results of the research conducted at Strijp-S are based on the review of existing documents, a survey, a focus group and micro cases conducted amongst users, and interviews conducted with area managers. The present user groups that were distinguished based on the survey are based on the composition of the respondents. When taking into account all users of Strijp-S, the ratio might be slightly different and some more user groups might be present in the area. To improve the reliability of the conclusions, more surveys, focus groups, micro cases and interviews should be conducted.

As user preferences and experiences, and strategies and means used by area managers are mostly case specific, the conclusions of the research conducted at Strijp-S are only applicable under certain conditions. These conditions are influenced by the history, location, and demographics of the area. Regarding history, Strijp-S is a quite advantageous case for redevelopment. The area was owned by only one party, and thus became available for development at once when this party sold the area. This made the (start of the) development relatively easy, as usually areas become available for redevelopment in phases.

Since the conclusions are based on a single case study in combination with literature, the conclusions cannot be generalised for all (Dutch) innovation districts. Only conclusions for the user types present in this case, and their factors of attraction and retention, could be drawn. Therefore the research does not present a complete overview of factors of attraction and retention for all possible user groups.

However, some target groups and user groups are presumably applicable to most Dutch innovation districts. These for example include one-man companies, start-ups and small companies active in synthetic, symbolic or analytical sectors, and facilitators or incubators. Besides, the factors of attraction and retention for specific user types are presumably not completely different for different cases. It is i.e. likely that one-man companies will in any case value the presence of other companies, as networking is crucial for their business.

Regarding the advice for the development of M4H as an innovation district, the challenges that were used as the basis for the advice are based on a limited amount of documents and interviews. The challenges included in the advice are thus not the only things that should be dealt with to turn M4H into a successful innovation district.

The present user groups and the ratio in which these groups are present are based on existing documents and two interviews as well, and thus not on empirical research conducted amongst users. To make the advice more specific and reliable, (more) empirical research should thus be conducted at M4H.

### 7.3.4. Personal reflection

In this research I tried to identify success factors and factors of improvements in the redevelopment of Strijp-S. In this reflection I try to identify the success factors and factors of improvement of my own research.

In my opinion it can be seen as a success factor that insight in the user side was not only gained by means of theory and a survey, but as well by speaking to people in person. This contributed to better understanding users' experiences, and a more detailed analysis.

The analysis was done for very specific user groups, which is new in theory about UIDs. The research hence contributes to literature about UIDs, which proves to be limited. This can be seen as a success factor as well.

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A third success factor is that the outcomes of the analysis of Strijp-S can be useful in the further development of the area. By knowing what users see as points of improvement, area managers are able to respond to this and can hence improve user satisfaction.

Of course, also factors of improvement can be identified. The first is that it took a while before I decided which cases would be used and what would be the relation between the cases. The empirical research at Strijp-S started while it was not entirely clear how the results would be projected to another case. When this would have been clear earlier, the empirical research at Strijp-S could have been more designed for projecting it on M4H.

Another point of improvement is that the advice is based on user types present at Strijp-S, so not for all user groups of M4H points of attention could be defined. Furthermore, the validity of the lessons learned for some user groups is higher than for others, as some groups at Strijp-S were represented by only few respondents.

Lastly, the interviews were conducted within a short time, and as a result they were analysed after they were all conducted. It would have been better to have started the analysis of the first interviews earlier already, so the preliminary results could have been used in later interviews. This would have made some interviews more informative.

At the start of the graduation period I was a bit afraid that the project would turn from a challenge into a struggle. However, I think I can state that graduation has overall been better than expected. I am still very thrilled with the choice of subject, as the development of UIDs seems to be very topical and alive, and I always get enthusiastic reactions when explaining the project to others.

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### Pictures

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Steden.net (2017) Strijp S wandeling. Retrieved 14-06-2017 from: <http://www.steden.net/nederland/eindhoven/strijp-s-wandeling/>

### Icons

The Noun Project (2017), via: <https://thenounproject.com/>





APPENDIX

## Appendix I – Sub-groups of companies



### Working people - companies

#### Size of company



#### One-man companies

Business run by one person alone, with no staff or partners (InvestorsWords, 2017)



#### Start-ups

Young companies that are just beginning to develop. Usually small and initially financed and operated by a handful of founders or one individual. Offer a product or service that is not currently being offered elsewhere in the market, or that the founders believe is being offered in an inferior manner (Fontinelle, 2017).



#### Small companies

Companies with less than 50 employees and a turnover less than €10 million (European Commission, 2009, p.3)



#### Middle size companies

Companies with 50 to 250 employees and a turnover less than €50 million (European Commission, 2009, p.3)



#### Large (anchor) companies

Companies with more than 250 employees and a turnover larger than €50 million (European Commission, 2009, p.3)

#### Type of company

#### Analytical knowledge

Companies relying on science-based knowledge (Van Winden & Carvalho, 2016, p.58).



#### Synthetic knowledge

Companies relying on engineering- and problem-solving knowledge (Van Winden & Carvalho, 2016, p.58).



#### Symbolic knowledge

Companies based on aesthetic and artistic knowledge (Van Winden & Carvalho, 2016, p.58).



#### Facilitators

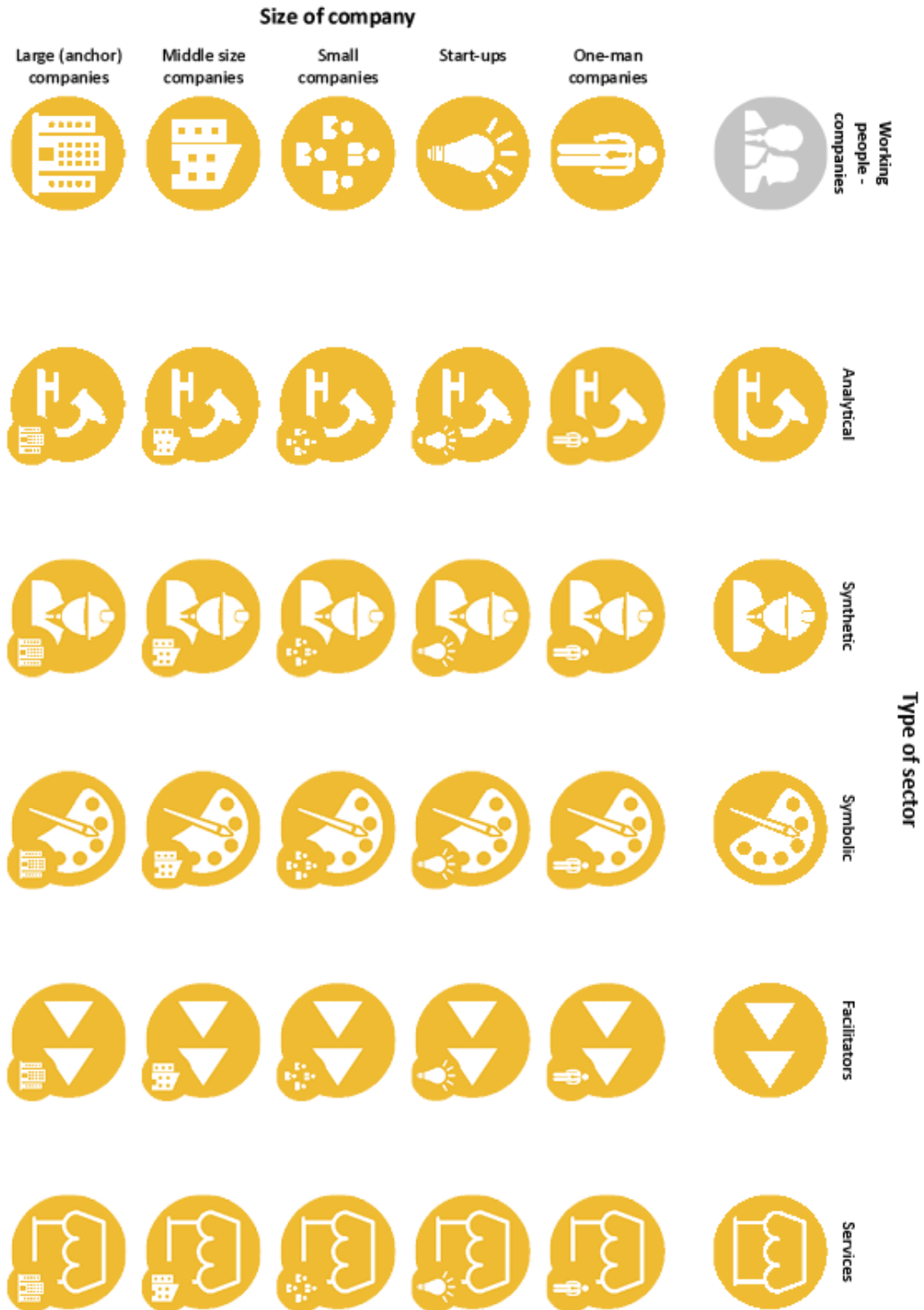
Companies that support the growth of individuals and firms that are active in industries based on analytical, synthetic or symbolic knowledge (Katz & Wagner, 2014, p.11).



#### Services

Neighbourhood building amenities providing important services to residents, workers and visitors of a district. For example grocery stores, restaurants, coffee bars and local retail (Katz & Wagner, 2014, p.12).





## Appendix II – Sub-groups of employees



### Working people - employees

#### Size of company



#### Starters

Newly formed households. Typically people that are in their establishment stage, newly married and childless (Hill, 1986, p.21) Usually between 25 and 30 years old.



#### Young families

People with young children in the pre-school phase or schoolphase (Hill, 1986, p.21). These people are typically between 30 and 40 years old, with children between 0-12 years old.



#### Families

People with adolescent children (attending high school, 13-20 years old) (Hill, 1986, p.21). These people are typically between 40 and 55 years old.



#### Empty nesters

Families as launching centre (Hill, 1986, p.21). People with children that do not live at home anymore, they are studying and often live in student houses. These people are typically between 55 and 70 years old.

#### Type of company

#### Analytical knowledge

Companies relying on science-based knowledge (Van Winden & Carvalho, 2016, p.58).



#### Synthetic knowledge

Companies relying on engineering- and problem-solving knowledge (Van Winden & Carvalho, 2016, p.58).



#### Symbolic knowledge

Companies based on aesthetic and artistic knowledge (Van Winden & Carvalho, 2016, p.58).



#### Facilitators

Companies that support the growth of individuals and firms that are active in industries based on analytical, synthetic or symbolic knowledge (Katz & Wagner, 2014, p.11).

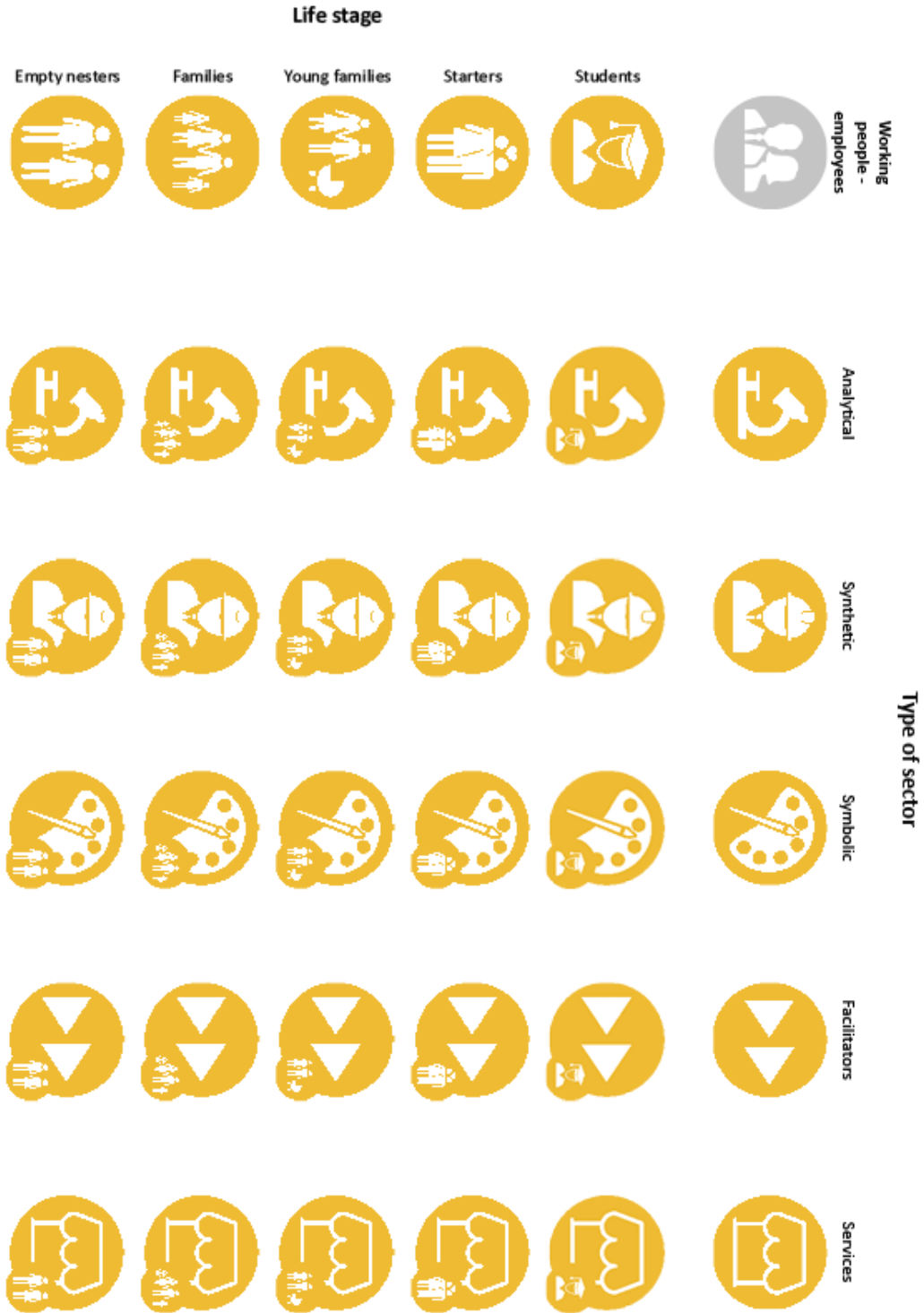


#### Services

Neighbourhood building amenities providing important services to residents, workers and visitors of a district. For example grocery stores, restaurants, coffee bars and local retail (Katz & Wagner, 2014, p.12).







## Appendix III – Sub-groups of residents



### Residents

#### Life stage



#### Students

Persons studying at a university, graduate school etc., typically between 18 and 25 years old.



#### Starters

Newly formed households. Typically people that are in their establishment stage, newly married and childless (Hill, 1986, p.21) Usually between 25 and 30 years old.



#### Young families

People with young children in the pre-school phase or schoolphase (Hill, 1986, p.21). These people are typically between 30 and 40 years old, with children between 0-12 years old.



#### Families

People with adolescent children (attending high school, 13-20 years old) (Hill, 1986, p.21). These people are typically between 40 and 55 years old.



#### Empty nesters

Families as launching centre (Hill, 1986, p.21). People with children that do not live at home anymore, they are studying and often live in student houses. These people are typically between 55 and 70 years old.



#### Elderly

People in retirement (Hill, 1986, p.21), usually older than 70 years.

#### Income

##### Low income

Households with a yearly gross income lower than €15.500 (net €11.200). Equal to the first 20% group of spendable income of the Dutch population (CBS, 2016, p.23).



##### Lower middle income

Households with a yearly gross income between €15.500 and €30.600 (net between €11.200 and €20.600). Equal to the first/second 20% group of spendable income of the Dutch population (CBS, 2016, p.23).



##### Higher middle income

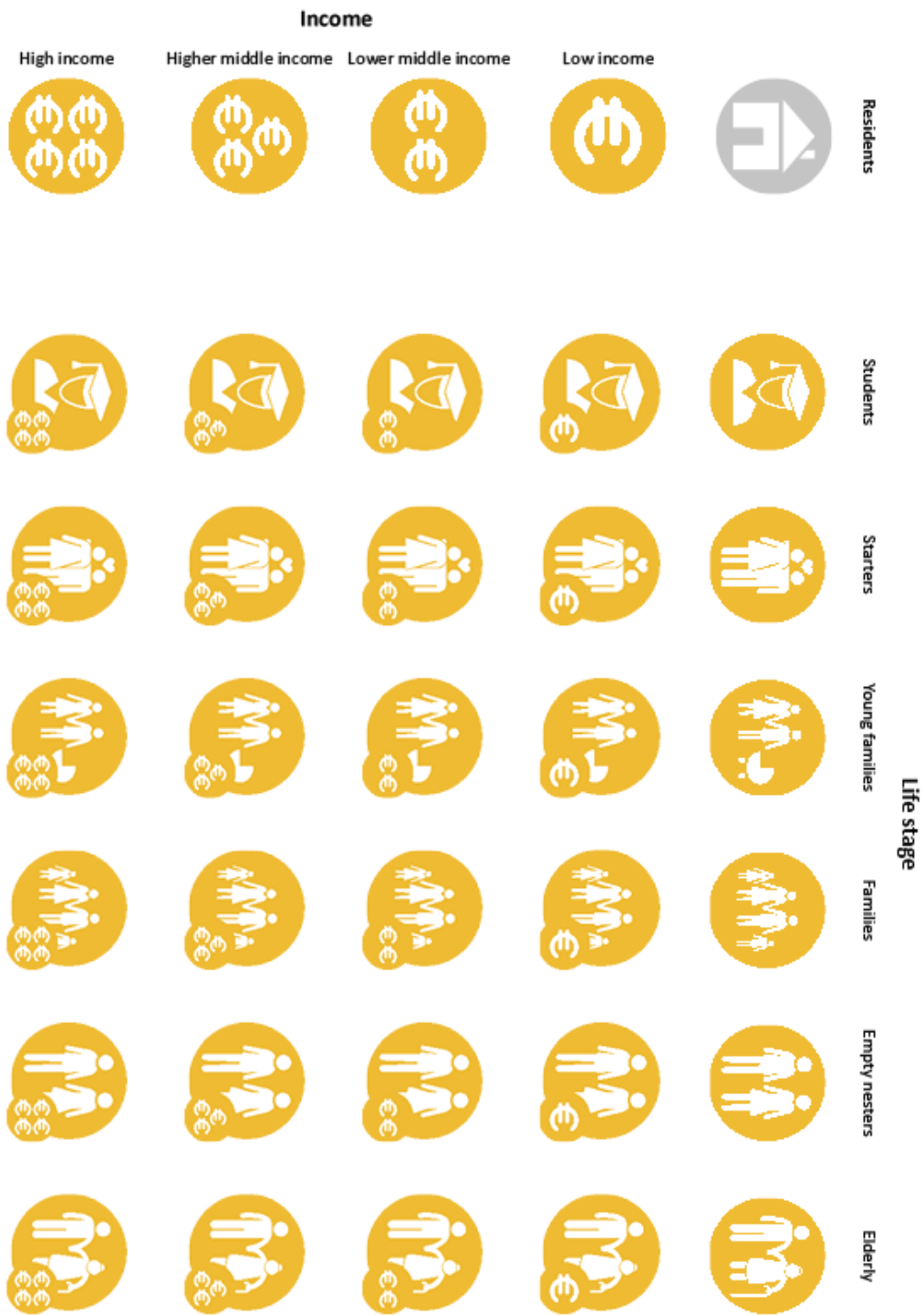
Households with a yearly gross income between € 30.600 and €46.000 (net between €20.600 and €28.600). Equal to the second/third 20% group of spendable income of the Dutch population (CBS, 2016, p.23).



##### High income

Households with a yearly gross income higher than €46.000 (net €28.600). Equal to the third/fourth/fifth 20% group of spendable income of the Dutch population (CBS, 2016, p.23).





## Appendix IV – Sub-groups of visitors



### Visitors

#### *Purpose of visit*



#### *Social activities*

Visiting the area with the purpose of visiting friends/family living in the area, or meeting people at resautants/bars.



#### *Sports activities*

Visiting the area with the purpose of practicing sports or outdoor activities.



#### *Cultural activities*

Visiting an area with the purpose of attending performances at cinema's, theatres, or attending festivals/events.



#### *Purchases*

Visiting an area with the purpose of buying groceries or things for fun, such as clothes, presents, art, interior stuff etc.



#### *Attractions*

Visiting an area with the purpose of visiting buildings with special architecture, monumental buildings etc.

#### *Age*

##### *18-30*

Students and starters as defined before.



##### *30-55*

Young families and families as defined before.



##### *55-70*

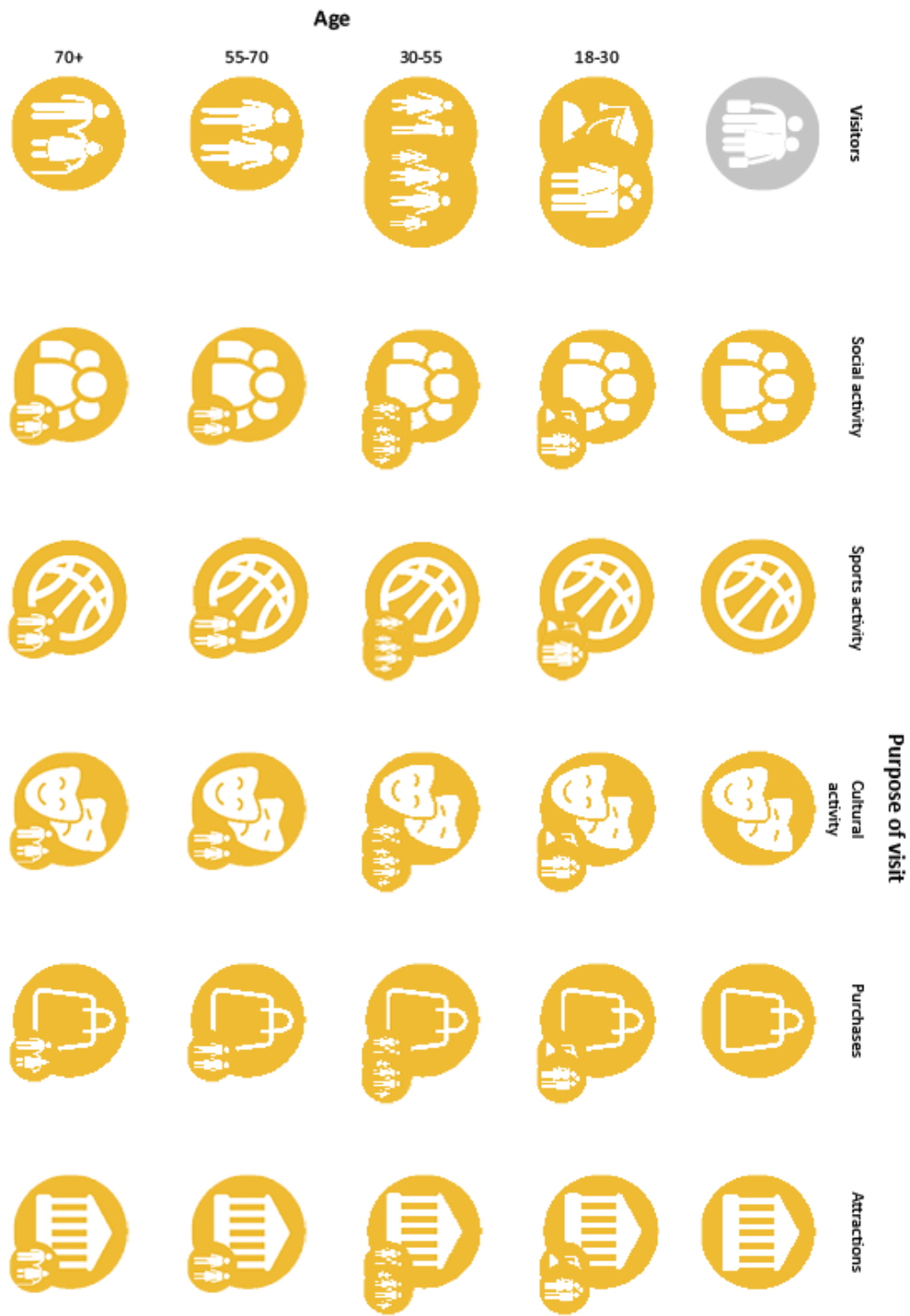
Empty nesters as defined before.



##### *70+*

Elderly as defined before.





## Appendix V – Variables users

Type of variables	Sub-type of variables	Variables	Definition/examples	Applicable to
Physical	Amenities	Cultural	Museums, art galleries, theatres, cinemas	W + R + V
		Natural	Parks, water	W + R + V
		Recreational	Shops, restaurants, bars	W + R + V
		Aesthetic	Landmarks, monumental buildings	W + R + V
		Functional	Grocery stores, child care, dry cleaner	W + R + V
	Public space	Green	Parks, trees, vegetation, water	W + R + V
		Shared spaces Connections/internal accessibility	Squares, pavilions, benches, playgrounds, Roads, bike trails, sidewalks, parking lots	W + R + V W + R + V
Building level	Structure	Shared spaces	Ceiling height, flexibility of space, daylight Common meeting rooms, lobby, outdoor space	W + R W + R
		Private spaces	Offices, meeting rooms, dwellings, storage	W + R
	Type of contract	Flexibility, tenure		W + R
Accessibility	Public transport	Train, tram, bus, shared bikes/cars	W + R + V	
	Private transport	Car, bike, walking	W + R + V	
	Location of the area	With respect to city centre, amenities, nature	W + R + V	
Economic	Costs	For space	Offices, dwellings, storage, parking	W + R
		For services/goods	Groceries, restaurants, shops, services	W + R + V
	Environment	Other firms/people Labour pool Interaction between firms + people	Firms/employees active in related fields (Future) employees, students Between same type of firms, between different types of firms, between employees	W W W
Social	Atmosphere	Diversity	Field of work, age, nationality, interest	W + R + V
		Openness + tolerance	Between firms, employees, residents, visitors	W + R + V
	Interaction	Spontaneous	Meeting people in public space, amenities	W + R + V
Planned		Meeting people at events, workshops, festivals	W + R + V	

W = Workers, R = Residents, V = Visitors

## Appendix VI – Variables area managers

Type of variables	Sub-type of variables	Variables	Definition/examples
Vision	Development	Development of the area	Vision on the goals of the development of Strijp-S/M4H, the position the area has in the city
	Management	Way of developing the area	Vision on the way of managing the development of Strijp-S/M4H
User groups	-	Target groups	The types of workers, residents and visitors that were meant to be attracted according to the vision before the start of the development
		Present user groups	The types of workers, residents and visitors that are currently present
		Future user groups	The types of workers, residents and visitors that are likely to be present in 5-10 years
Steering on attraction & retention	Attraction	Strategies and means to attract users	Strategies and means used by area managers to steer on the attraction of workers, residents and visitors
	Retention	Strategies and means to retain users	Strategies and means used by area managers to steer on the retention of workers, residents and visitors
Users' relations	User involvement	Relation between users and planners	The relation between workers, residents and visitors present in the area and the planners, during the development period.
	Relations between user groups	Relation between user groups	The relation between workers, residents and visitors present in the area
		Relation between present user groups and users of surrounding areas	The relation between the user groups present in the area and the users of surrounding areas
Evaluation	Strijp-S	Lessons learned	Lessons area managers learned from the development so far
		Advice	Advice from area managers for future development
	M4H	Potential	The chances, successes and potential of the development of M4H as UID
		Challenges	The bottlenecks in the development of M4H as UID

## Appendix VII – Protocol interviews area managers

### Introduction

For the graduation project of my master 'Management in the Built Environment' (Architecture) at the TU Delft, I am researching the factors attracting and retaining people to Urban Innovation Districts. 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. Strijp-S/the Merwe-Vierhavens is an example of an Urban Innovation District. In this research, the focus is on people working, living and visiting the area and their particular preferences, and on the strategies used to attract and retain these people. The research project consists of 2 case studies, of which Strijp-S/the Merwe-Vierhavens is one. To gain insight in the user preferences, a survey will be conducted and focus groups will be organised. To gain insight in the vision on and the means used in order to attract and retain people, interviews will be conducted with the owners, managers and municipalities involved in the cases. The results of the interviews will only be used for educational purposes, and the answers will be kept anonymous.

The interview consists of X main questions, but additional questions may arise from your answers. If you do not understand a question or need more elaboration on a specific subject, please do not hesitate to ask.

We will now start the interview.

### Vision

- What is the vision of the municipality on the development of the city of Eindhoven/Rotterdam?
- What is the position of Strijp-S/the Merwe-Vierhavens in this vision?
- What is the vision of *the company* on the development of Strijp-S/the Merwe-Vierhavens?

### User groups

- Comparing the users that are present in the current situation to the users that were present at the start of the development, do you see any differences?
  - Can you relate that to the user groups in the overview?
- Comparing the users that are present in the current situation to the users that will be present in 5-10 years, which user groups do you think will still be present in the area and which groups will not be present anymore?
  - Why?
  - Can you relate that to the user groups in the overview?

### Means to attract and retain people

- Which physical, economic and social strategies and tools were/are used to attract target groups?
- Which physical, economic and social strategies and tools were/are used to retain target groups?
- Was there a specific sequence in which target groups were attracted?
  - Why?

### User relations

- How do you see the relation between workers, residents and visitors in the area?
- How do you see the relation between the users of Strijp-S and the users of surrounding areas?
- How do you see the relation between users and the managers of Strijp-S?
  - Were the users actively involved in the development process?



---

**Evaluation**

- If you were able to develop the area again with your current knowledge, what would you have done the same and what would you have done differently?
  - Why?

That was the final question of the interview. Thank you for your participation! Hopefully, I can elaborate more on the factors of attraction and retention for innovation districts when my graduation project is finished. I will send you the results.

If there are additional things that come in mind or things that have not been discussed during the interview, you can contact me at anytime.

Could I have your e-mail address and your phone number, in case additional information is needed? This information will remain private.

## Appendix VIII – Protocol interviews micro cases

### Introduction research

1. What were the most important reasons to settle at Strijp-S?

*In the development of starting enterprises, roughly 5 phases can be distinguished. These are:*

- *The start-up phase*
- *The expansion phase*
- *The maturity phase*
- *The diversification phase*
- *The decline phase*

2. What were the most important wishes and needs for your company during the different development stages?
3. Which support and/or services did your company get from Strijp-S/the Merwe-Vierhavens during the different phases?
4. How do you see the future of your company at Strijp-S?

## Appendix IX – Protocol focus group

### Introduction research

#### Introduction round participants

- Name
- Function at Strijp-S
- 3 reasons to choose for Strijp-S → Write these reasons on 3 memo's and stick these to the following poster:

WAAROM STRIJP-S?
Belangrijkste factor:
Een na belangrijkste factor:
Twee na belangrijkste factor:

What makes Strijp-S physically, economically, and socially unique/pleasant?

- 3 factors per category → Write these factors on 9 memo's and stick these to the following posters:

WAT MAAKT STRIJP-S FYSIEK UNIEK/FIJN? <small>Gebouwen - Architectuur - Infrastructuur - Functies - Voorzieningen</small>	WAT MAAKT STRIJP-S ECONOMISCH UNIEK/FIJN? <small>Ondernemersklimaat - Betaalbaarheid - Bedrijven - Services</small>	WAT MAAKT STRIJP-S SOCIAAL UNIEK/FIJN? <small>Interactie - Diversiteit - Openheid - Verbindende activiteiten</small>
Belangrijkste factor:	Belangrijkste factor:	Belangrijkste factor:
Een na belangrijkste factor:	Een na belangrijkste factor:	Een na belangrijkste factor:
Twee na belangrijkste factor:	Twee na belangrijkste factor:	Twee na belangrijkste factor:

What could be better at Strijp-S?

- 3 (physical, economical or social) factors that can make Strijp-S better → Write these factors on 3 memo's and stick these to the following poster:

WAT KAN BETER OP STRIJP-S?

Belangrijkste factor:

Een na belangrijkste factor:

Twee na belangrijkste factor:

Statement 1: "I have the feeling that I interact with other users of Strijp-S on a regular basis"

- Agree: With whom? Where do you have this interaction?

- Disagree: Why not? Do you miss this interaction?

Statement 2: "I have the feeling that I'm being involved in the development of Strijp-S"

- Agree: How are you being involved?

- Disagree: Why not? Do you miss this involvement?

**Closure**

## Appendix X – Survey

### User preferences in Urban Innovation Districts

For my graduation project of the master 'Management in the Built Environment' (Architecture), which I am following at the Delft University of Technology, I am researching the factors attracting and retaining people to Urban Innovation Districts. 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'.

The research is focused on the preferences of people working and living at innovation district, and at people visiting innovation districts for other purposes. This survey is focused on one particular innovation district: Strijp S in the city of Eindhoven.

The results of the survey will only be used for educational purposes, and the answers will be kept anonymous. It will take about 10 minutes to fill in the survey.

The survey will start with some general questions about your personal situation, and continues with 3 parts that will be introduced shortly. The subjects of these 3 parts are as follows:

Part 1: Questions about your relation to Strijp S

Part 2: Questions about your personal preferences

Part 3: Participation in a focus group

Please fill in one answer per question, unless indicated differently.

Thank you in advance!

Britt van der Zandt

### Personal situation

*The survey will start with some short questions about your personal situation.*

What is your gender?

Male

Female

What is your age?

---

Do you have a partner?

Yes

No

Do you have a children?

Yes

No

What is you residence?

---

What is your zip code?

---

What is the highest level of education you have completed?

None

Primary school

High school

College

Bachelors degree

Masters degree

What is your profession?

---

**Part 1: Questions about your relation to Strijp S**

*This part consists of some questions about your relation to Strijp S. The questions that you should fill in within this part of the survey depend on your answer(s) to question 1. Behind the answers of question 1, it is indicated which follow-up questions are applicable.*

1. Relation to area: *(Fill in multiple answers if applicable)*

- I work at Strijp S *(follow-up questions: 2 – 4)*
- I live at Strijp S *(follow-up questions: 5 – 9)*
- I sometimes visit Strijp S for other purposes than working or living *(follow-up questions: 10 – 13)*

**Questions for people working at Strijp S**

*Do only fill in question 2 - 4 when you are working at Strijp S.*

2. For what kind of firm are you working?

- A one-man company
- A start-up
- A small company (<50 employees)
- A middle size company (50-250 employees)
- A large company (>250 employees)

3. What kind of workplace do you have?

- A personal office
- A shared office, but with my own spot
- A flex-spot

4. For how long have you been working at Strijp S?

- Less than 1 year
- 1 to 5 years
- 5 to 10 years
- More than 10 years

**Questions for residents of Strijp S**

*Do only fill in question 5 - 9 when you are living at Strijp S.*

5. What is your household composition?

- I live alone
- I live with a partner
- I live with friends/students
- I live with my (partner and) children

6. What is your housing tenure?

- I live in a rental dwelling
- I live in a owner-occupied dwelling

7. To which income group do you belong?

- Less than €15.500 net per year
- Between €15.500 and €30.600 net per year
- Between €30.600 and €46.000 net per year
- More than €46.000 net per year
- I do not want to reveal my income







Location of the area in the city	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Costs for space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Costs for services + goods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tenure (rental/owned)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presence of other firms/people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presence of a suitable labour pool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interaction between firms/employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social diversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Openness + tolerance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spontaneous interaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planned interaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How would you describe Strijp S in 3 words?

---



---



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4. What were the 3 most important factors for you to choose for Strijp S?

---



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---

5. What is to your opinion missing in Strijp S?

---



---



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6. What are the 3 most important factors for you to stay or keep visiting Strijp S?

---



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### Part 3: Participation in focus group

*At the end of October I will organise a focus group with several users of Strijp S, which will also take place at Strijp S. Based on this survey, during this meeting several matters concerning the different user preferences, experiences and motivations to choose for Strijp S will be discussed.*

1. Are you willing to participate in this focus group?

- Yes  
 No

19. If you are willing to participate in this focus group, could you please fill in your e-mail address so you I can send you an invitation?

---

***This is the end of the survey. Thank you for participating!***

*If you have any questions or suggestions, you can contact me via: [brittvanderzandt@gmail.com](mailto:brittvanderzandt@gmail.com)*

## Appendix XI – Results survey: importance + quality factors

### Importance rated by all user groups

The second column in table A shows the average score of all respondents per factor. The third to sixth column show the average score per user group for the concerning factors. The light green cells indicate scores between 4.0 (important) and 4.4, which represents factors rated as being more important than average. The dark green cells indicate scores higher than 4.4, representing factors rates as very important. The red cells indicate scores below 3.0 (average), indicating factors rated as less important than average.

Importance	General	Workers	Residents	Visitors	Workers + Residents
Cultural amenities	3.8	3.5	3.7	4.2	4.4
Natural amenities	4.0	3.8	4.1	4.0	4.6
Recreational amenities	4.3	4.3	4.3	4.3	4.6
Aesthetic amenities	3.6	3.5	3.6	3.5	4.2
Functional amenities	3.9	3.9	4.1	3.6	4.6
Meeting places in the public place	3.7	3.6	3.6	3.9	3.6
Shared spaces in buildings	3.1	3.3	2.8	3.4	3.4
Private spaces in buildings	3.2	3.2	3.4	-	2.8
Flexibility of space in buildings	3.3	3.4	3.1	-	3.8
Accessibility with public transport	4.2	4.1	4.3	4.2	4.4
Accessibility with private transport	4.1	4.5	4.1	4.0	3.4
Internal accessibility	4.0	4.2	4.0	3.9	4.0
Location compared to city centre	4.1	3.9	4.2	4.1	3.8
Costs for space	4.0	4.3	4.0	-	3.2
Costs for services and goods	3.8	3.9	3.8	3.4	3.4
Tenure	3.7	3.9	3.8	-	3.2
Presence of employees/companies	4.1	4.3	-	-	4.4
Presence of a suitable labour pool	3.1	3.4	-	-	2.0
Interaction between employees/companies	3.5	3.9	-	-	3.2
Social diversity	3.8	3.7	3.6	3.9	4.2
Openness and tolerance	4.2	4.3	4.2	4.3	4.6
Spontaneous interaction	3.8	3.8	3.7	3.9	3.8
Planned interaction	3.6	3.6	3.4	3.7	3.0

Table A. Importance rated by all user groups.

### Quality rated by all user groups

People had to rate the quality of the same factors at Strijp-S by means of a five-point scale as well, in which 1 meant very low quality and 5 meant very high quality. The second column in table B again shows the average score of all respondents per factor. The third to sixth column show the average score per user group for the concerning factors.

Quality at Strijp-S	General	Workers	Residents	Visitors	Workers + Residents
Cultural amenities	4.2	4.0	4.1	4.3	5.0
Natural amenities	2.9	2.9	2.8	3.0	3.0
Recreational amenities	3.8	3.6	3.8	3.8	3.6
Aesthetic amenities	3.8	3.8	3.9	3.8	4.2
Functional amenities	2.8	2.6	2.7	3.1	2.6
Meeting places in the public place	3.5	3.2	3.5	3.8	3.4
Shared spaces in buildings	3.5	3.7	3.3	3.7	3.4
Private spaces in buildings	3.6	3.6	3.5	-	3.3
Flexibility of space in buildings	3.6	3.6	3.4	-	3.4
Accessibility with public transport	4.3	4.3	4.5	4.2	4.6
Accessibility with private transport	3.7	3.5	3.5	4.0	3.0
Internal accessibility	3.7	3.6	3.8	3.8	3.4
Location compared to city centre	4.0	4.1	4.3	3.8	4.2
Costs for space	3.3	3.5	3.6	-	3.0
Costs for services and goods	3.2	3.4	3.2	3.0	2.4
Tenure	3.6	3.6	3.7	-	3.8
Presence of employees/companies	4.0	4.1	-	-	4.2
Presence of a suitable labour pool	3.6	3.5	-	-	3.7
Interaction between employees/companies	3.7	3.6	-	-	3.5
Social diversity	3.8	3.7	3.8	4.1	3.2
Openness and tolerance	4.0	4.0	3.9	4.2	3.4
Spontaneous interaction	3.7	3.6	3.5	3.9	3.8
Planned interaction	3.7	3.7	3.4	4.0	3.4

Table B. Quality rated by all user groups.

### Importance rated by companies

The second column of table C shows the average given to each factor by all workers. Columns three to six show the average scores of the four sub-groups. Columns seven to nine show the scores of the other types of companies. The green cells indicate that the respective user sub-group has rated a factor significantly more important than the average of the main group (average score +0.5). The red cells indicate factors that have been rated significantly less important by user sub-groups than the main group of workers (average score -0.5).

Importance	Workers	One-man companies x synthetic sector	One-man companies x symbolic sector	Small companies x synthetic sector	Small companies x symbolic sector	Start-ups x synthetic sector	Middle-sized companies x synthetic sector	Large companies x synthetic sector
Cultural amenities	3.4	3.7	3.9	3.3	3.8	3.3	2.6	4.0
Natural amenities	3.7	4.5	4.1	3.6	3.9	3.3	3.8	4.5
Recreational amenities	4.3	4.7	4.5	4.3	4.5	4.7	4.0	4.5
Aesthetic amenities	3.6	3.8	4.0	3.4	3.8	4.0	3.2	4.5
Functional amenities	3.9	4.0	4.3	4.1	4.2	4.0	3.8	4.5
Meeting places in the public place	3.6	4.0	4.0	3.5	4.0	3.3	3.4	3.5
Shared spaces in buildings	3.5	4.0	4.1	2.6	3.7	3.0	4.0	3.5
Private spaces in buildings	3.5	3.6	3.8	2.8	3.8	2.7	3.4	4.0
Flexibility of space in buildings	3.7	3.8	3.9	3.1	3.7	3.0	4.2	4.5
Accessibility with public transport	4.2	4.0	4.3	3.7	5.0	4.0	3.8	4.5
Accessibility with private transport	4.4	4.4	4.0	4.6	4.5	4.0	4.8	4.5
Internal accessibility	4.1	4.2	3.7	4.4	4.4	3.7	4.4	4.5
Location compared to city centre	3.9	3.2	4.1	3.9	4.0	4.0	3.4	4.5
Costs for space	4.2	3.2	4.1	4.4	4.4	4.7	4.2	4.0
Costs for services and goods	4.0	3.8	3.9	4.2	3.9	4.0	4.0	4.0
Tenure	3.8	3.8	3.5	3.6	4.0	4.0	3.8	4.0
Presence of employees/companies	4.4	4.2	4.5	4.2	4.5	4.3	4.0	4.0
Presence of a suitable labour pool	3.6	2.3	3.2	3.3	3.6	3.3	3.8	4.5
Interaction between employees/companies	3.9	3.8	3.9	4.0	3.9	3.7	3.6	4.5
Social diversity	3.8	3.8	4.3	3.6	3.7	4.0	3.4	4.5
Openness and tolerance	4.2	4.0	4.5	4.1	4.5	4.3	4.4	4.5
Spontaneous interaction	3.8	3.8	4.4	3.8	3.8	4.0	3.4	3.5
Planned interaction	3.7	3.4	3.5	3.7	3.8	4.0	3.2	3.5

Table C. Importance rated by companies.

### Quality rated by companies

People had to rate the quality of the same factors at Strijp-S by means of a five-point scale as well, in which 1 meant very low quality and 5 meant very high quality. The second column of table D shows the average given to each factor by all workers. Columns three to six show the average scores of the four sub-groups. Columns seven to nine show the scores of the other types of companies.

Quality at Strijp-S	Workers	One-man companies x synthetic sector	One-man companies x symbolic sector	Small companies x synthetic sector	Small companies x symbolic sector	Start-ups x synthetic sector	Middle-sized companies x synthetic sector	Large companies x synthetic sector
Cultural amenities	3.9	4.2	4.6	4.1	4.2	3.7	3.5	3.0
Natural amenities	2.9	3.0	2.6	3.1	3.1	3.0	2.2	2.5
Recreational amenities	3.5	3.5	3.8	3.7	3.7	3.3	3.2	3.0
Aesthetic amenities	3.7	3.5	4.1	3.8	3.8	3.7	3.2	2.5
Functional amenities	2.7	2.5	3.0	2.6	2.6	3.0	2.0	3.0
Meeting places in the public place	3.2	2.6	3.5	3.6	3.1	3.0	3.2	3.0
Shared spaces in buildings	3.7	3.2	3.8	3.7	3.5	4.0	4.0	3.0
Private spaces in buildings	3.7	3.6	4.0	3.4	3.6	3.5	3.8	3.0
Flexibility of space in buildings	3.8	2.6	3.7	3.6	3.7	3.3	4.2	3.0
Accessibility with public transport	4.3	4.2	4.9	4.2	4.7	4.0	4.5	3.0
Accessibility with private transport	3.4	2.6	4.1	3.3	3.6	3.7	4.2	2.5
Internal accessibility	3.5	3.5	3.8	3.5	3.6	4.0	4.0	3.0
Location compared to city centre	4.1	4.3	4.4	4.1	4.0	4.0	4.2	4.5
Costs for space	3.4	3.0	3.6	3.4	3.6	4.0	3.0	3.0
Costs for services and goods	3.3	3.0	3.3	3.2	3.4	4.0	3.5	3.0
Tenure	3.5	3.8	3.7	3.5	4.1	4.0	3.8	3.0
Presence of employees/companies	4.2	3.6	4.5	4.1	4.5	4.3	4.4	4.0
Presence of a suitable labour pool	3.5	3.3	3.5	3.3	3.6	3.0	3.8	-
Interaction between employees/companies	3.7	3.0	3.7	3.8	3.6	3.3	4.0	-
Social diversity	3.8	3.3	3.4	3.8	3.7	4.0	4.0	-
Openness and tolerance	4.0	3.7	3.9	4.0	4.5	4.0	3.8	-
Spontaneous interaction	3.6	3.0	4.0	3.8	3.3	3.3	4.2	-
Planned interaction	3.7	3.5	3.6	3.8	3.4	3.3	4.2	-

Table D. Quality rated by companies.

### Importance rated by employees

Table E shows the importance of the defined factors for the four sub-groups of employees that will be further analysed. The second column shows the average given to each factor by all workers. Columns three to six show the average scores of the four sub-groups. The green cells indicate that the respective user sub-group has rated a factor significantly more important than the average of the main group (average score +0.5). The red cells indicate factors that have been rated significantly less important by user sub-groups than the main group of workers (average score -0.5).

Importance	Workers	Starters x synthetic sector	Starters x symbolic sector	Young families x symbolic sector	Families x synthetic sector
Cultural amenities	3.4	3.2	3.8	4.2	3.5
Natural amenities	3.7	3.7	3.9	3.8	3.9
Recreational amenities	4.3	4.3	4.1	4.4	4.4
Aesthetic amenities	3.6	3.5	3.3	4.2	3.5
Functional amenities	3.9	4.2	4.5	4.1	4.2
Meeting places in the public place	3.6	3.8	3.6	4.1	3.6
Shared spaces in buildings	3.5	3.0	3.3	3.8	3.1
Private spaces in buildings	3.5	3.7	3.6	3.4	3.0
Flexibility of space in buildings	3.7	3.8	3.4	3.7	3.3
Accessibility with public transport	4.2	3.8	4.8	4.6	3.8
Accessibility with private transport	4.4	4.5	4.1	3.9	4.6
Internal accessibility	4.1	4.2	4.0	3.9	4.3
Location compared to city centre	3.9	3.8	4.1	4.0	4.0
Costs for space	4.2	4.0	4.0	3.9	4.5
Costs for services and goods	4.0	4.0	3.6	3.8	4.2
Tenure	3.8	4.3	3.8	3.7	3.8
Presence of employees/companies	4.4	4.2	4.3	4.6	4.3
Presence of a suitable labour pool	3.6	4.0	3.0	3.5	3.2
Interaction between employees/companies	3.9	4.3	3.5	3.9	4.0
Social diversity	3.8	4.2	3.8	3.9	3.6
Openness and tolerance	4.2	4.5	4.4	4.4	4.2
Spontaneous interaction	3.8	4.5	3.6	4.1	3.7
Planned interaction	3.7	3.7	3.4	3.6	3.7

Table E. Importance rated by employees.

### Quality rated by employees

People had to rate the quality of the same factors at Strijp-S by means of a five-point scale as well, in which 1 meant very low quality and 5 meant very high quality. The second column shows the average given to each factor by all workers. Columns three to six show the average scores of the four sub-groups.

Quality at Strijp-S	Workers	Starters x synthetic sector	Starters x symbolic sector	Young families x symbolic sector	Families x synthetic sector
Cultural amenities	3.9	3.5	4.1	4.7	4.0
Natural amenities	2.9	3.0	3.1	3.0	2.8
Recreational amenities	3.5	3.7	3.6	3.9	3.4
Aesthetic amenities	3.7	4.0	3.6	4.6	3.5
Functional amenities	2.7	2.8	2.9	2.7	2.5
Meeting places in the public place	3.2	3.7	3.1	3.4	3.4
Shared spaces in buildings	3.7	4.0	3.6	3.4	3.8
Private spaces in buildings	3.7	3.8	3.9	3.6	3.4
Flexibility of space in buildings	3.8	3.5	3.7	3.6	3.7
Accessibility with public transport	4.3	4.5	4.6	4.7	4.1
Accessibility with private transport	3.4	3.2	3.8	3.7	3.5
Internal accessibility	3.5	3.7	3.7	3.7	3.7
Location compared to city centre	4.1	4.0	4.1	3.9	4.2
Costs for space	3.4	3.3	3.4	3.6	3.5
Costs for services and goods	3.3	3.3	3.4	3.0	3.5
Tenure	3.5	3.3	3.6	3.8	3.7
Presence of employees/companies	4.2	4.3	3.9	4.6	4.2
Presence of a suitable labour pool	3.5	3.8	3.4	3.3	3.5
Interaction between employees/companies	3.7	3.3	3.6	3.4	3.9
Social diversity	3.8	3.8	3.4	3.2	4.0
Openness and tolerance	4.0	4.0	4.1	3.9	4.0
Spontaneous interaction	3.6	3.5	3.4	3.8	3.9
Planned interaction	3.7	4.0	3.5	3.4	4.0

Table F. Quality rated by employees.

### Importance rated by residents

Table G shows how the four selected sub-groups have assessed the importance of the factors in the survey. The second column shows the average given to each factor by all residents. Columns 3 to 6 show the average scores of the four sub-groups. The green cells indicate that the respective user sub-group has rated a factor significantly more important than the average of the main group (average score +0.5). The red cells indicate factors that have been rated significantly less important by user sub-groups than the main group of workers (average score -0.5).

Importance	Residents	Students x low income	Starters x lower middle income	Starters x higher middle income	Families x high income
Cultural amenities	3.7	3.5	3.1	3.6	3.2
Natural amenities	4.1	3.8	4.2	3.8	4.2
Recreational amenities	4.3	4.3	4.0	4.3	4.2
Aesthetic amenities	3.6	3.4	2.7	3.7	3.7
Functional amenities	4.1	4.6	4.2	3.7	4.5
Meeting places in the public place	3.6	3.5	3.3	3.5	3.5
Shared spaces in buildings	2.8	2.8	2.9	2.2	2.0
Private spaces in buildings	3.4	3.4	3.2	3.4	3.5
Flexibility of space in buildings	3.1	3.6	3.0	2.7	1.8
Accessibility with public transport	4.3	4.9	4.3	3.8	4.2
Accessibility with private transport	4.1	4.1	4.1	3.8	4.3
Internal accessibility	4.0	4.3	3.8	3.7	4.0
Location compared to city centre	4.2	4.4	4.1	4.2	4.0
Costs for space	4.0	4.3	4.3	3.3	4.0
Costs for services and goods	3.8	4.0	3.9	3.3	3.7
Tenure	3.8	3.9	4.1	3.2	3.6
Social diversity	3.6	3.6	3.7	3.3	3.5
Openness and tolerance	4.2	3.9	4.3	4.1	4.8
Spontaneous interaction	3.7	3.3	3.7	3.4	4.2
Planned interaction	3.4	3.4	3.3	3.0	3.3

Table G. Importance rated by residents.

### Quality rated by residents

Table G shows how the four selected sub-groups have assessed the quality of the factors in the survey at Strijp-S. The second column shows the average given to each factor by all residents. Columns 3 to 6 show the average scores of the four sub-groups.

Quality at Strijp-S	Residents	Students x low income	Starters x lower middle income	Starters x higher middle income	Families x high income
Cultural amenities	4.1	4.1	3.6	4.1	4.0
Natural amenities	2.8	2.9	2.8	3.0	2.8
Recreational amenities	3.8	3.9	3.6	3.7	3.5
Aesthetic amenities	3.9	4.1	3.3	3.8	3.8
Functional amenities	2.7	3.1	2.5	2.8	2.2
Meeting places in the public place	3.5	3.5	3.4	3.8	3.5
Shared spaces in buildings	3.3	3.3	3.4	3.1	3.2
Private spaces in buildings	3.5	4.0	3.5	3.3	3.4
Flexibility of space in buildings	3.4	3.5	3.4	3.3	3.0
Accessibility with public transport	4.5	4.3	4.5	4.4	4.7
Accessibility with private transport	3.5	3.0	3.1	3.5	4.2
Internal accessibility	3.8	3.8	3.5	3.9	4.3
Location compared to city centre	4.3	4.3	4.0	4.1	4.8
Costs for space	3.6	3.4	3.5	3.2	3.6
Costs for services and goods	3.2	3.1	3.2	3.0	3.2
Tenure	3.7	3.8	3.5	3.4	3.8
Social diversity	3.8	3.8	3.7	3.8	3.8
Openness and tolerance	3.9	3.6	4.0	4.0	4.2
Spontaneous interaction	3.5	3.1	3.7	3.5	3.0
Planned interaction	3.4	3.4	3.3	3.5	3.0

Table H. Quality rated by residents.

### Importance rated by visitors

Table I shows how the four selected sub-groups have assessed the importance of the factors in the survey. The second column shows the average given to each factor by all residents. Columns three to six show the average scores of the four sub-groups. The green cells indicate that the respective user sub-group has rated a factor significantly more important than the average of the main group (average score +0.5). The red cells indicate factors that have been rated significantly less important by user sub-groups than the main group of workers (average score -0.5).

Importance	Visitors	Age 18-30 x social activities	Age 18-30 x cultural activities	Age 55-70 x social activities	Age 55-70 x cultural activities
Cultural amenities	4.2	4.0	4.1	4.1	4.1
Natural amenities	4.0	3.8	3.9	3.6	3.8
Recreational amenities	4.3	4.4	4.2	4.3	4.3
Aesthetic amenities	3.5	3.7	3.7	3.1	3.3
Functional amenities	3.6	3.5	3.5	3.4	3.6
Meeting places in the public place	3.9	3.8	3.9	3.8	4.1
Shared spaces in buildings	3.4	3.5	3.4	3.5	3.3
Accessibility with public transport	4.2	4.3	4.4	4.0	4.1
Accessibility with private transport	4.0	3.9	4.0	4.4	4.1
Internal accessibility	3.9	3.8	4.1	4.3	4.1
Location compared to city centre	4.1	4.0	4.0	4.0	4.0
Costs for services and goods	3.4	3.4	3.6	3.6	3.2
Social diversity	3.9	3.9	4.1	4.3	4.2
Openness and tolerance	4.3	4.2	4.4	4.4	4.3
Spontaneous interaction	3.9	4.2	4.1	4.5	4.3
Planned interaction	3.7	3.6	3.6	4.4	4.2

Table I. Importance rated by visitors.

### Quality rated by visitors

Table J shows how the four selected sub-groups have assessed the quality of the factors in the survey at Strijp-S. The second column shows the average given to each factor by all residents. Columns three to six show the average scores of the four sub-groups.

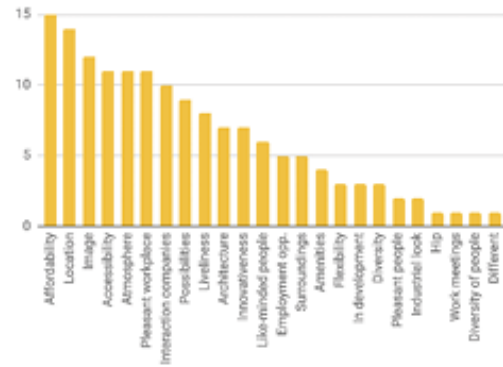
Quality at Strijp-S	Visitors	Age 18-30 x social activities	Age 18-30 x cultural activities	Age 55-70 x social activities	Age 55-70 x cultural activities
Culturele voorzieningen	4.3	4.2	4.5	4.4	4.3
Natuurlijke voorzieningen	3.0	3.1	2.9	2.9	2.9
Recreatieve voorzieningen	3.8	4.0	4.0	3.9	3.6
Esthetische voorzieningen	3.8	4.2	4.1	3.8	3.7
Functionele voorzieningen	3.1	2.9	3.0	3.6	3.5
Ontmoetingsplekken openbare ruimte	3.8	3.5	3.9	3.9	3.6
Gedeelde ruimtes in gebouwen	3.7	3.8	3.6	3.5	3.7
Bereikbaarheid OV	4.2	4.5	4.6	4.1	3.7
Bereikbaarheid privaat vervoer	4.0	4.3	4.2	4.1	3.8
Interne bereikbaarheid	3.8	3.8	4.0	3.9	3.7
Ligging tov stad	3.8	4.0	4.0	4.7	3.9
Kosten voor services/goederen	3.0	3.3	3.4	3.0	2.5
Sociale diversiteit	4.1	3.8	4.1	4.6	4.5
Openheid/tolerantie	4.2	4.0	4.3	4.3	4.4
Spontane interactie	3.9	4.0	4.2	4.1	4.1
Geplande interactie	4.0	4.1	4.1	4.4	4.3

Table J. Quality rated by visitors.

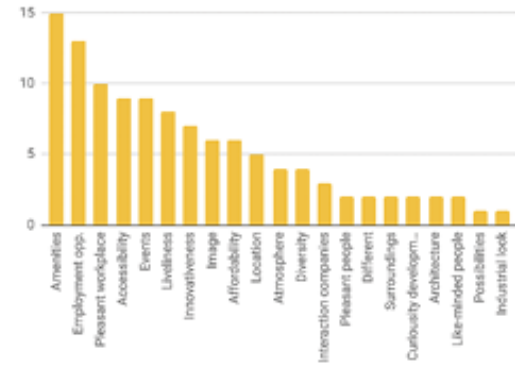
## Appendix XII – Results survey: open questions

### Workers

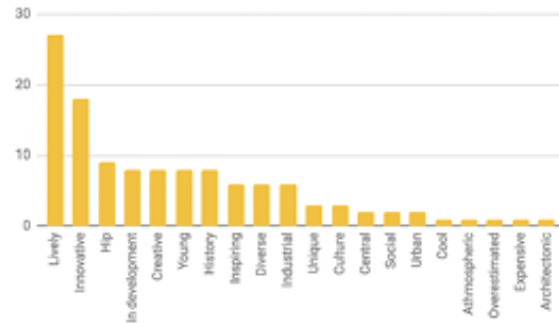
Factors of attraction



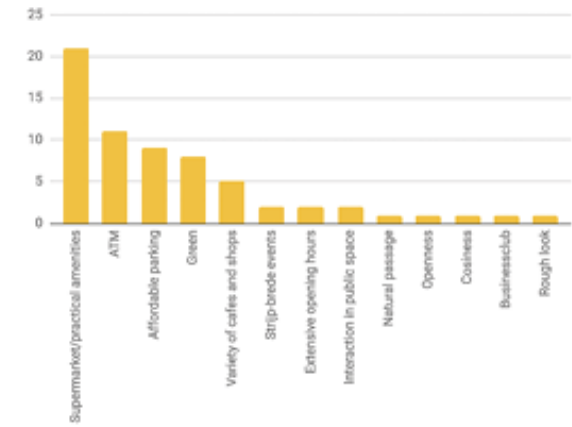
Factors of retention



Description Strijp-S in 3 words

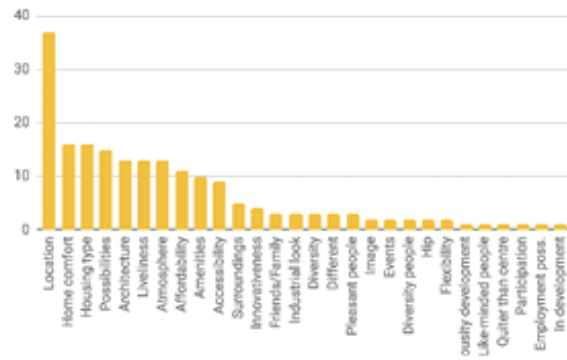


Missing at Strijp-S

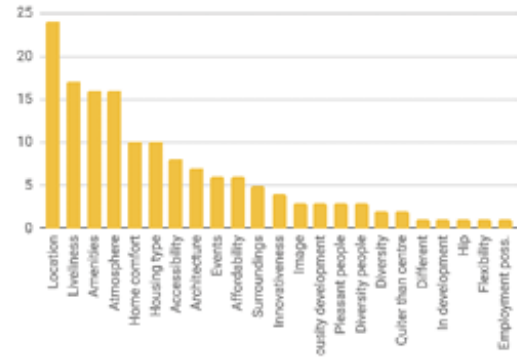


## Residents

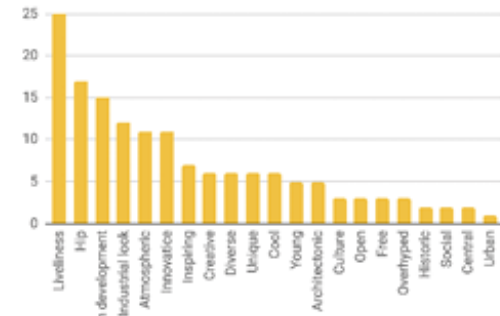
Factors of attraction



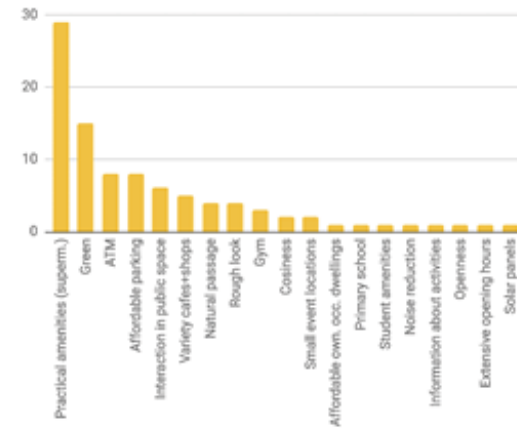
Factors of retention



Description Strijp-S 3 words

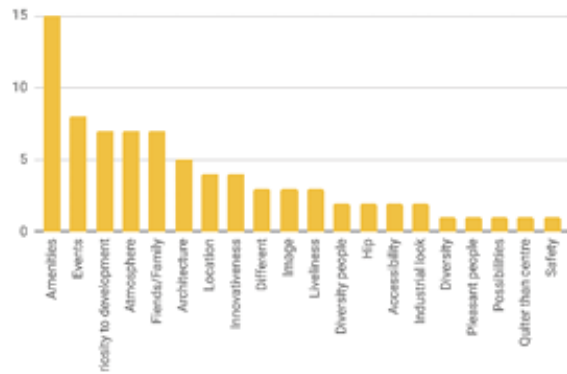


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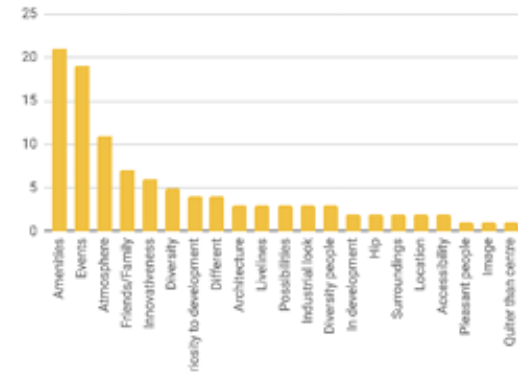


## Visitors

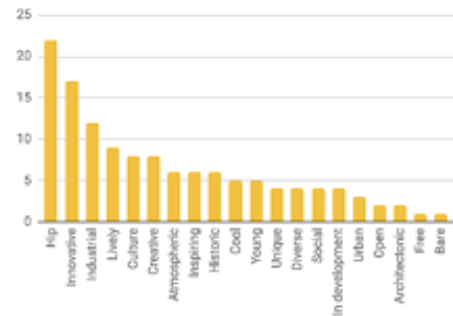
Factors of attraction



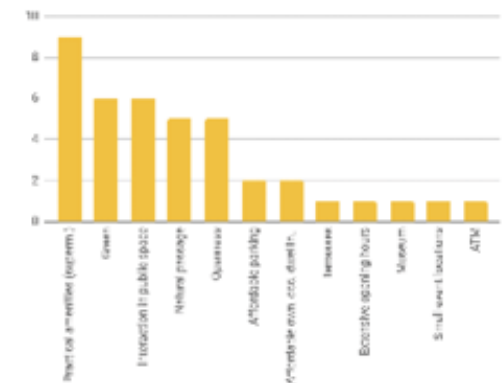
Factors of retention



Description Strijp-S 3 words



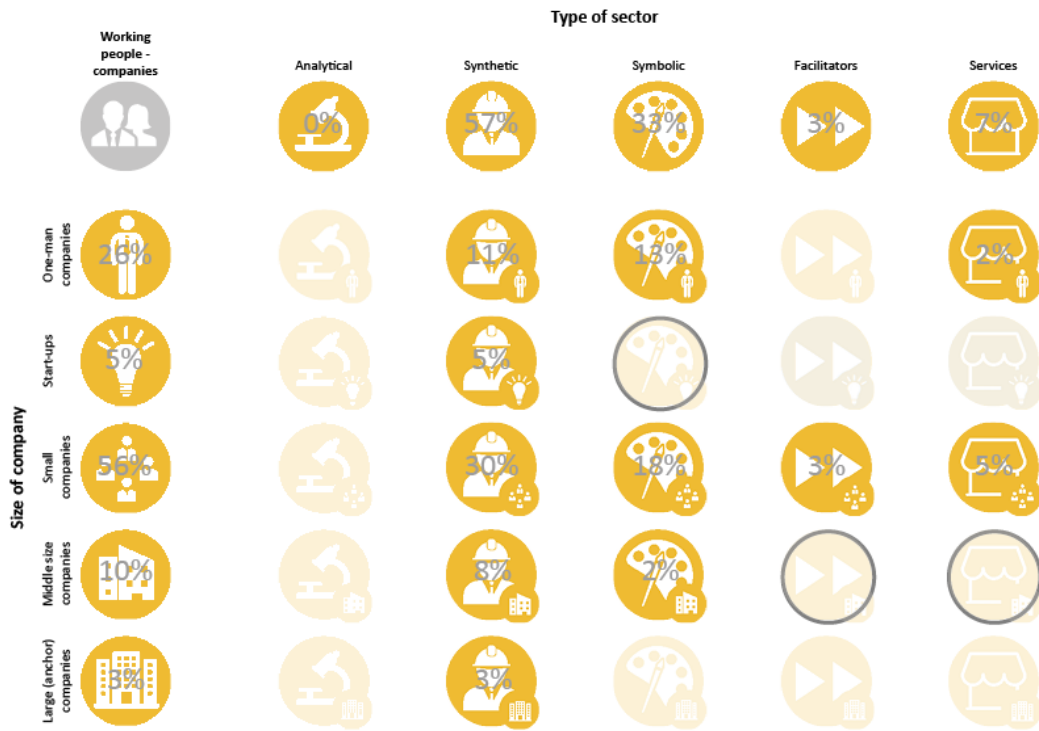
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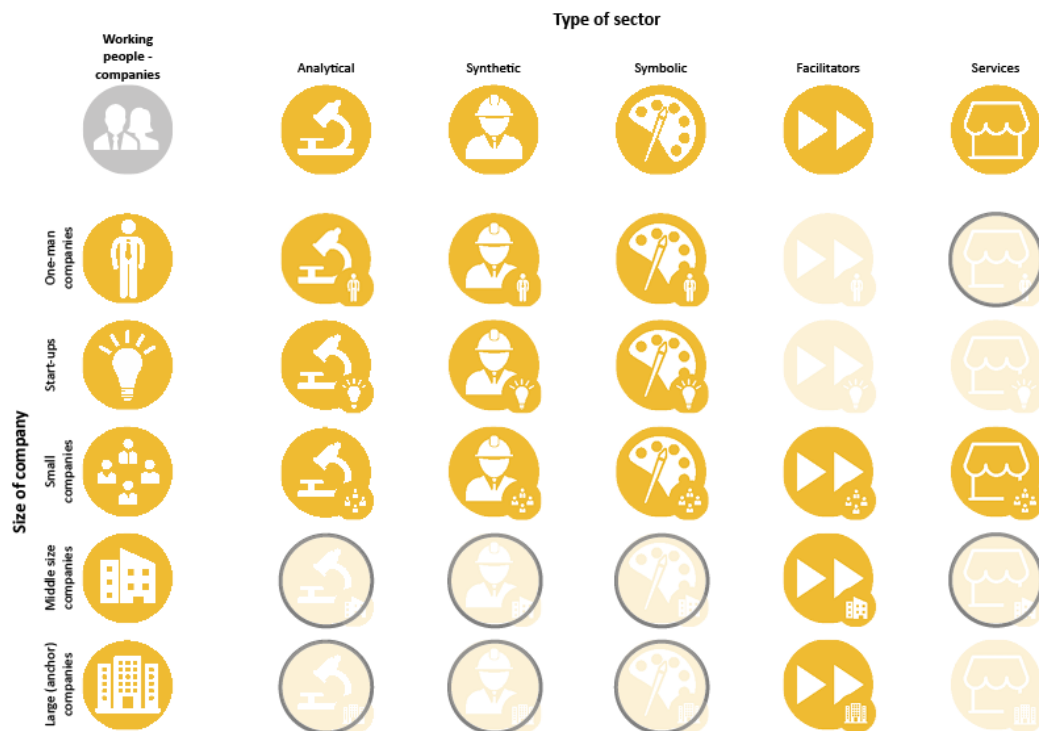


## Appendix XIII – Target groups + present user groups Strijp-S and M4H

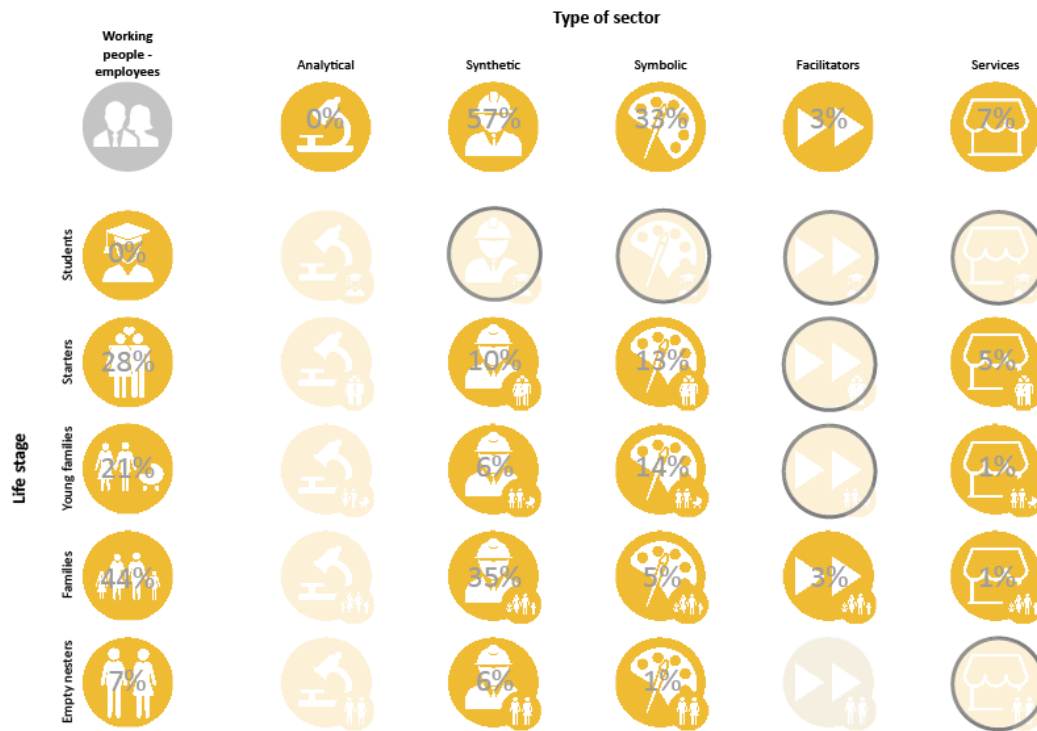
### Companies – Strijp-S



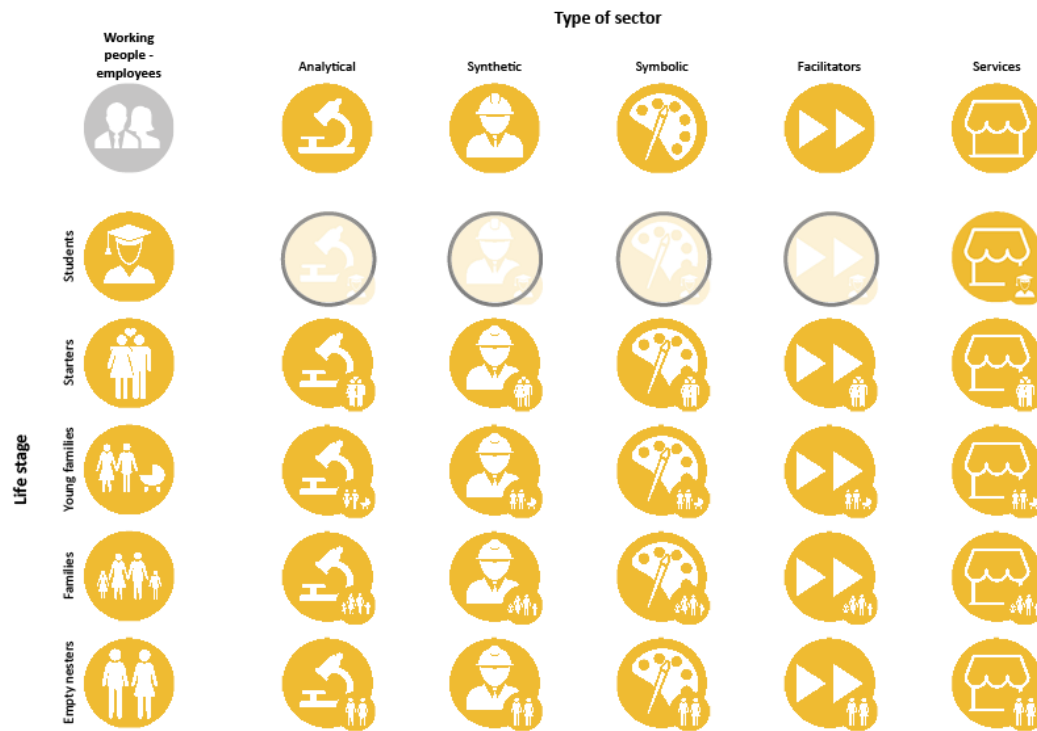
### Companies – M4H



### Employees – Strijp-S



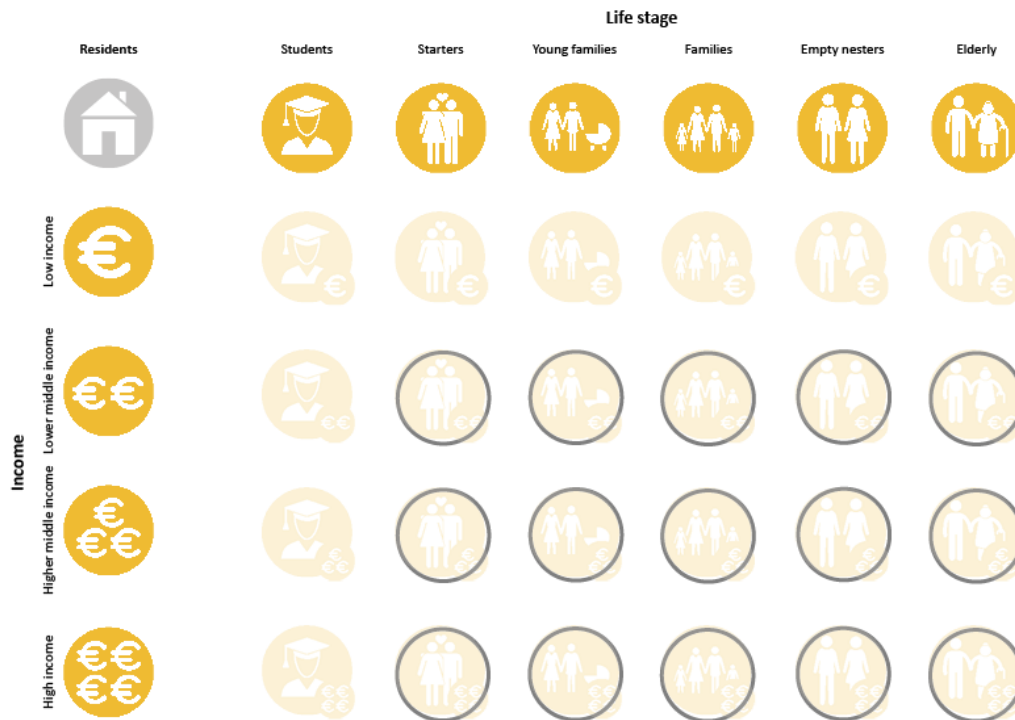
### Employees –M4H



Residents – Strijp-S



Residents – M4H



### Visitors – Strijp-S



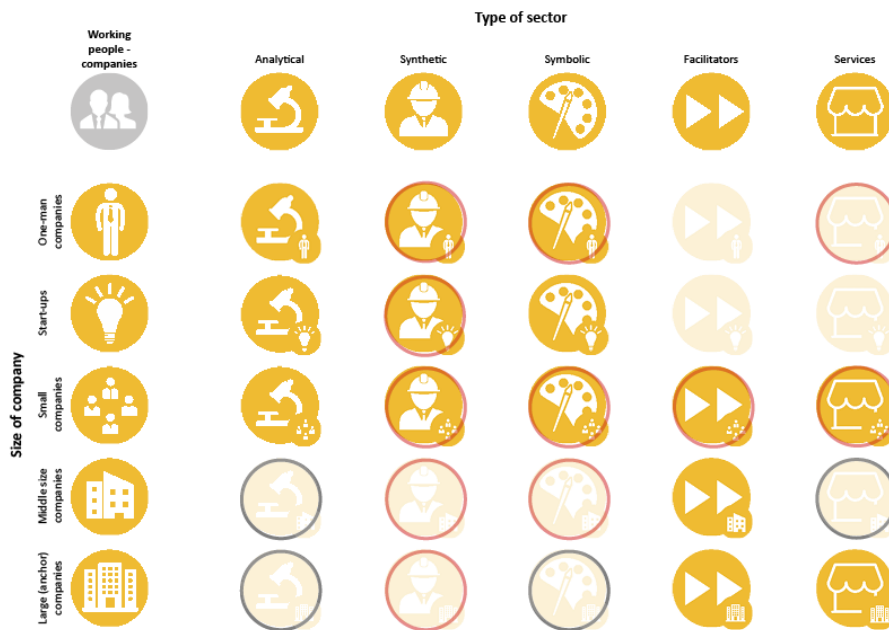
### Visitors – M4H



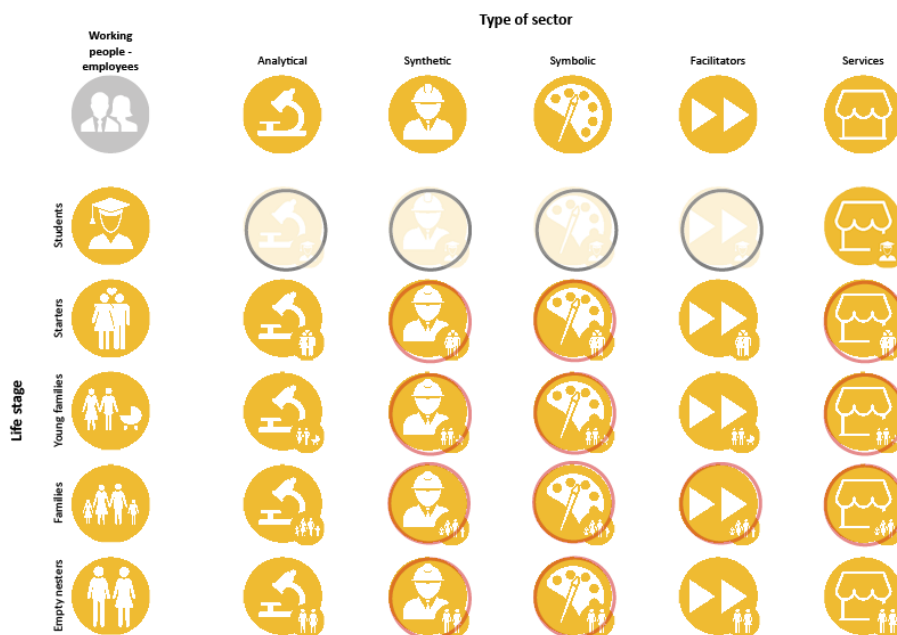
## Appendix XIV – Comparability target groups + present user groups Strijp-S and M4H

The following figures show the target groups (transparent with a circle) and present user groups (yellow icons) in M4H, in which the red circles indicate the types of companies for which focus points regarding attraction and retention can be defined based on the lessons learned at Strijp-S. The red circles around the target groups indicate company-types for which the accent will be on attraction. The red circles around the present user groups indicate company-types for which the accent will be on retention.

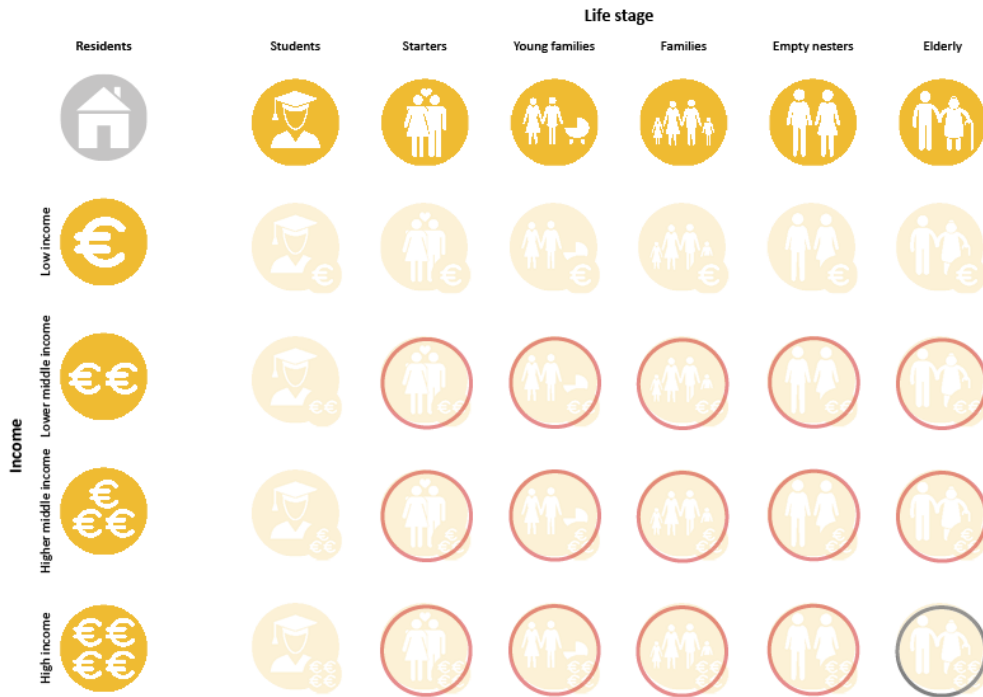
### Companies



### Employees



### Residents



### Visitors











