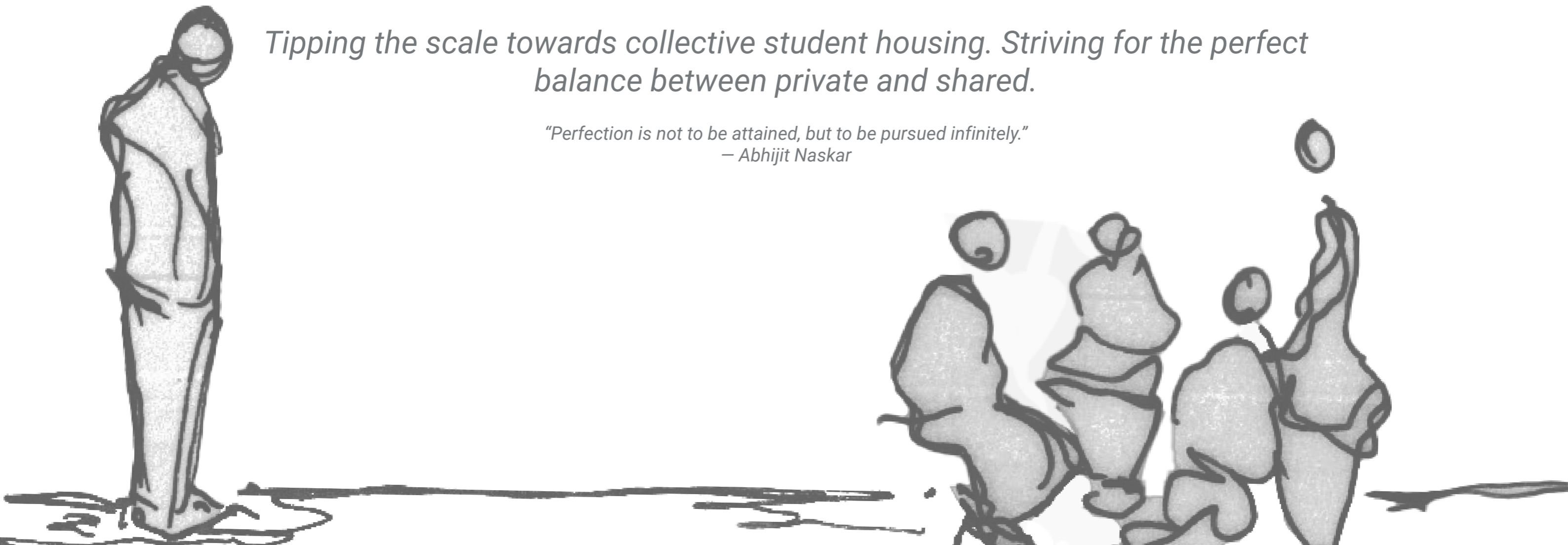


Private vs. Shared Rigid vs. Adaptable

Tipping the scale towards collective student housing. Striving for the perfect balance between private and shared.

*"Perfection is not to be attained, but to be pursued infinitely."
— Abhijit Naskar*



Personal Information

Name: Daan Doelman

Studio: Architectural engineering
Design tutor: Mauro Parravacini Olga
Research tutor: Loannou

Why architectural engineering?

My main reason for choosing architectural engineering as a studio was the feeling that I get almost complete design freedom. Something that will probably become increasingly scarce in the future, so I want to seize this opportunity with both hands and completely immerse myself in my own project. In addition, I have always found realizing a concept by developing details and building structure that match it amazing and incredibly satisfying to do.

Legenda

Problem statement	4
Objective	6
Context	7
Design & Research question	8
Methodologies	9
Planning	14
Relevance	15
Literature	16

Private vs. Shared

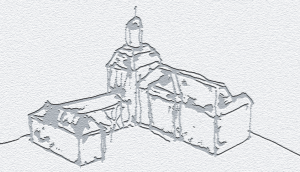
*Tipping the scale towards collective student housing.
Striving for the perfect balance between private and shared.*

Graduation Project

Keywords

*Co-Housing, Loneliness, Circularity, student housing,
collectivism*

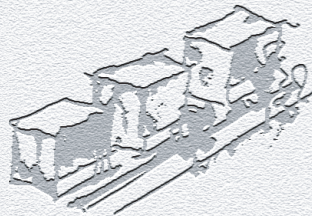
Mijnbouwplein



Rotterdamseweg



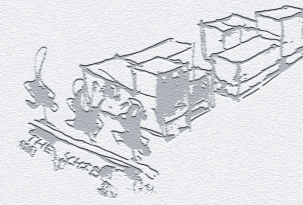
Leegwaterstraat



Korvezeestraat



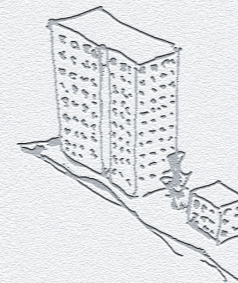
Prof. Schermerhornstraat



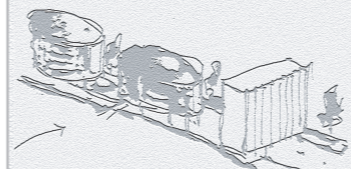
Michiel de Ruyterweg



Stieltjesweg



Balthasar van der Polweg



The TU Delft campus is a place that we are all more than a little familiar with. For me it has been my living environment for many years and in that relatively short period a lot has changed in the built environment both inside and outside the campus. With the arrival of new interfaculty buildings such as pulse and echo and renovations to sports X. But also new student residences such as the Stieltjesweg and Prof. Schermerhornstraat.

What strikes me about new student housing is the main focus on the construction of studios or single apartments. This frustrates me as this often involves hospital-like corridors and the treatment of living quarters as individual boxes with no regard for social interaction.

In addition, there is a pressing shortage of student housing, which means that students also have little choice when choosing a home. This brings me to my problem statement: There is a severe shortage of student housing and increasing loneliness and psychological problems among students.

Problem statement

“There is a severe shortage of student housing and increasing loneliness and psychological problems among students.”

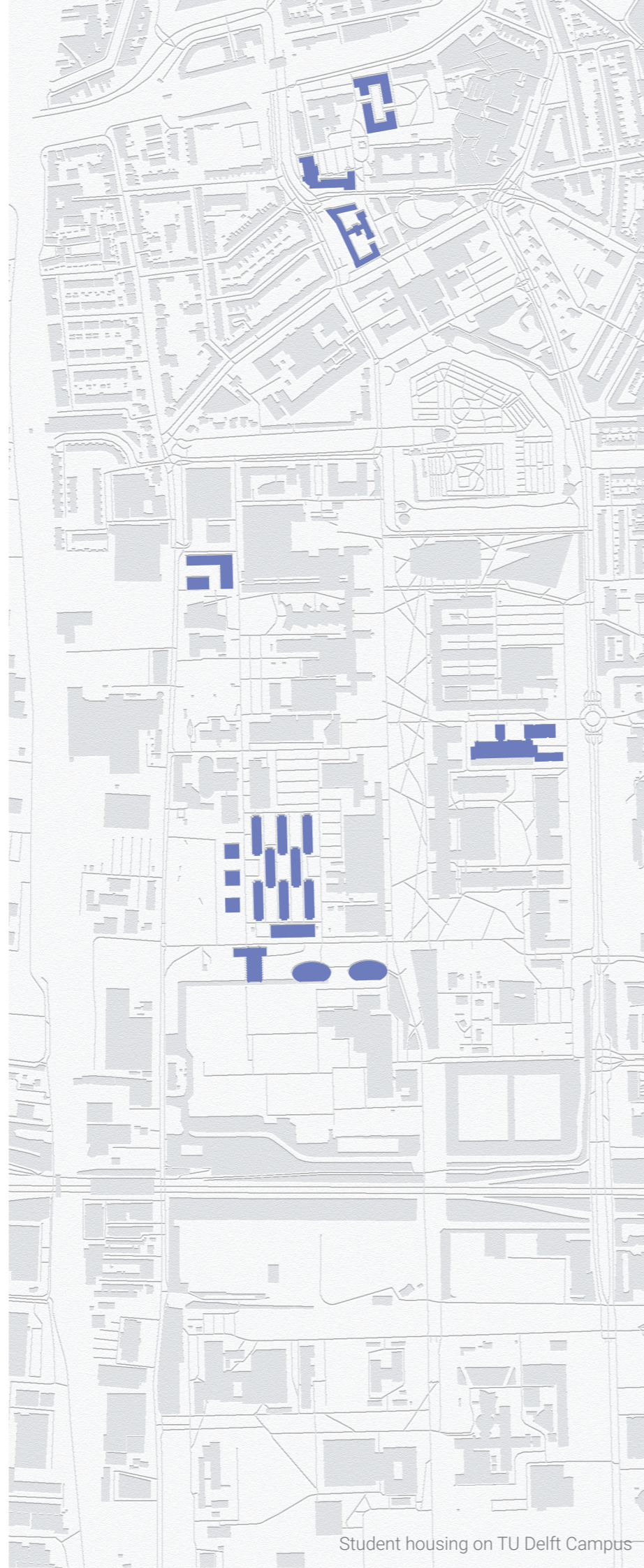
Student housing scarcity

The national room shortage has increased to about 26,500 student residences. There is now a shortage of 1500 rooms in Delft and that could rise to 3600 in 2028.

Year	Student houses	Shortage
2021	16 500	1500
2028	22 830	3600

Van der Veld, M. (2021, 12 oktober) Tekort van 1500 studentenkamers in Delft, *TU Delta*

This shortage is constantly noticeable among students. Looking for a room has become a task that requires time and mental capacity. Getting a room is often done through consents. Where you as an individual in the middle of a group are judged by the other inhabitants whether you are nice enough to qualify for a room.



Student housing on TU Delft Campus

Loneliness

Loneliness among students

The RIVM monitor shows that 51% of students experience psychological complaints such as anxiety and sadness. Performance pressure and stress are often to blame for this. Also, 80% of the students feel lonely. (Dopmeijer et al., 2022) The RIVM research was done during corona, which will affect the figures. However, it does indicate how much influence your environment can have on your mental health when it is reduced to just your home, as happened during lockdowns.

51% of students have psychological complaints

80% of students feel alone

(Dopmeijer et al., 2022)

What are the consequences

In the long run, loneliness can have dire consequences. Some of the consequences described by (Hawkley & Cacioppo, 2010)

- accelerate physiological aging
- loneliness predicts increased morbidity and mortality
- personality disorders and psychoses
- Increases in depressive symptoms
- Suicide

Defining Loneliness

To tackle the problem of loneliness it is important to have a clear definition of loneliness (Hawkley & Cacioppo, 2010) explains this clearly:

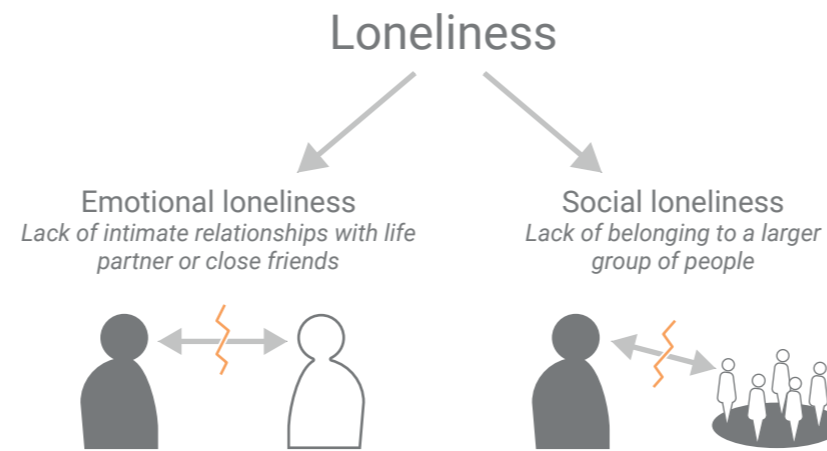
"Loneliness is synonymous with perceived social isolation, not with objective social isolation. People can live relatively solitary lives and not feel lonely, and conversely, they can live an ostensibly rich social life and feel lonely nevertheless. Loneliness is defined as a distressing feeling that accompanies the perception that one's social needs are not being met by the quantity or especially the quality of one's social relationships"

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters

To conclude, loneliness is the feeling of social isolation due to the failure to fulfill social needs.

Two types of loneliness

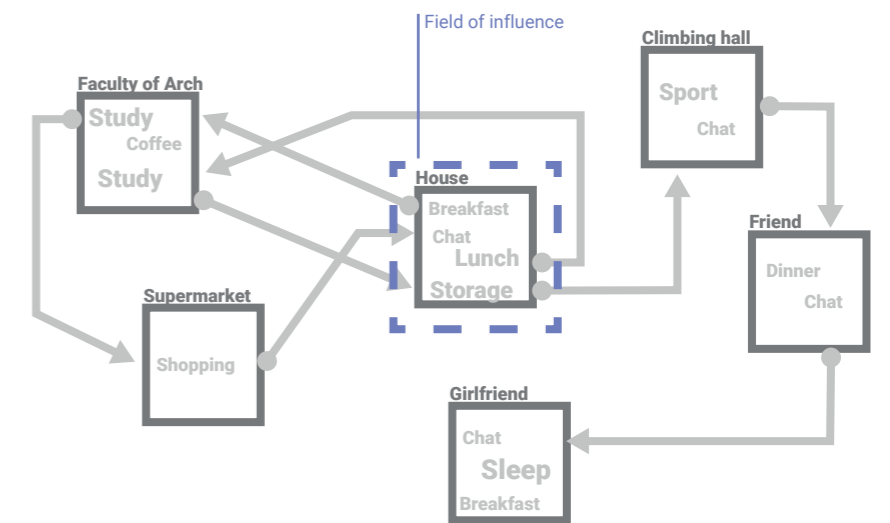
Loneliness, according to (Weiss, 1973), can be divided into two types, namely emotional and social loneliness. Emotional loneliness is defined as the lack of intimate relationships with, for example, a life partner or close friend. Social loneliness refers to the lack of belonging to a larger group. (Hawkley & Cacioppo, 2010) also seems to refer to this by mentioning quantitative and qualitative social interactions.



Two types of loneliness, according to Weiss (1973)

Field of influence

To what extent does architecture play a role in this problem? Social interaction takes place everywhere and cannot be reduced to the built environment. Yet a large part of social life takes place within the doors of a building. It is my firm belief that architecture can influence the amount of social interactions and the quality of these interactions. However, with the sobriety that the influence is limited in its scope. Both by the time spent in a building and the difference in how the building is experienced which is inherently subjective. As can be seen in the diagram below, almost all social interactions take place outside the home on that



Schematic day in the life of Daan Doelman, Tuesday 18 Oktober

Summary

To summarize: There is a serious shortage of student housing, which is currently at a shortage of 1500 rooms and could rise to a shortage of 3600 rooms in 2028. There is also loneliness and other psychological complaints among students. Loneliness can be understood as the feeling of social isolation. Which may stem from the lack of emotional and social interactions. Finally, the realization that the built environment has an influence on these feelings, but also the sobriety that this influence limited to a certain extent.

Objective

Tipping the scale

To create strong & forceful possibilities for social and emotional interaction in a large sustainable housing complex

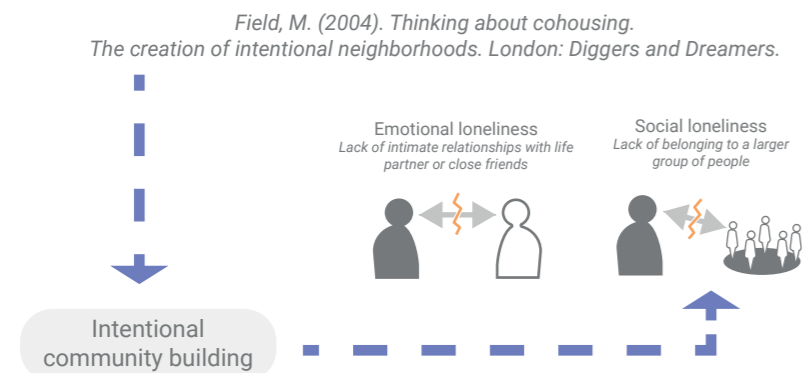
Student housing scarcity

The shortage of student housing requires a major solution, which can make a significant dent in the current shortage. This also entails the complexity that it is more difficult for a building to focus on strengthening social interactions. The question can be asked how does an individual distinguish himself from the crowd? The suggested answer Co-Housing.

Co-Housing

Co-housing can be described as the intentional setting up of a community. Where the intention is to make a difference in shared and individual spaces. The shared spaces bring a number of advantages. First, it saves on costs. For example, by sharing a kitchen with four people. Simply put, this saves you three kitchens and three gas bills. This is closely linked to sustainability benefits through saving goods and energy. Second, it promotes social interaction, so there is a need to share, so conversations take place in the shared spaces. Thirdly, saving space and sharing different functions also means that they are not needed per individual.

"basic conditions for the development of cohousing projects are identified in intentionality, design for facilitating processes of socialisation, the presence of private and common facilities, group size to support community dynamics, and control self-management."



Loneliness

Creating possibilities for social interaction

The goal is to create a building that counteracts loneliness in various ways and creates a strong social foundation for student life. Using Co-Housing principles, the aim is to foster a sense of community that meets the social needs of residents.

Share more, more better?

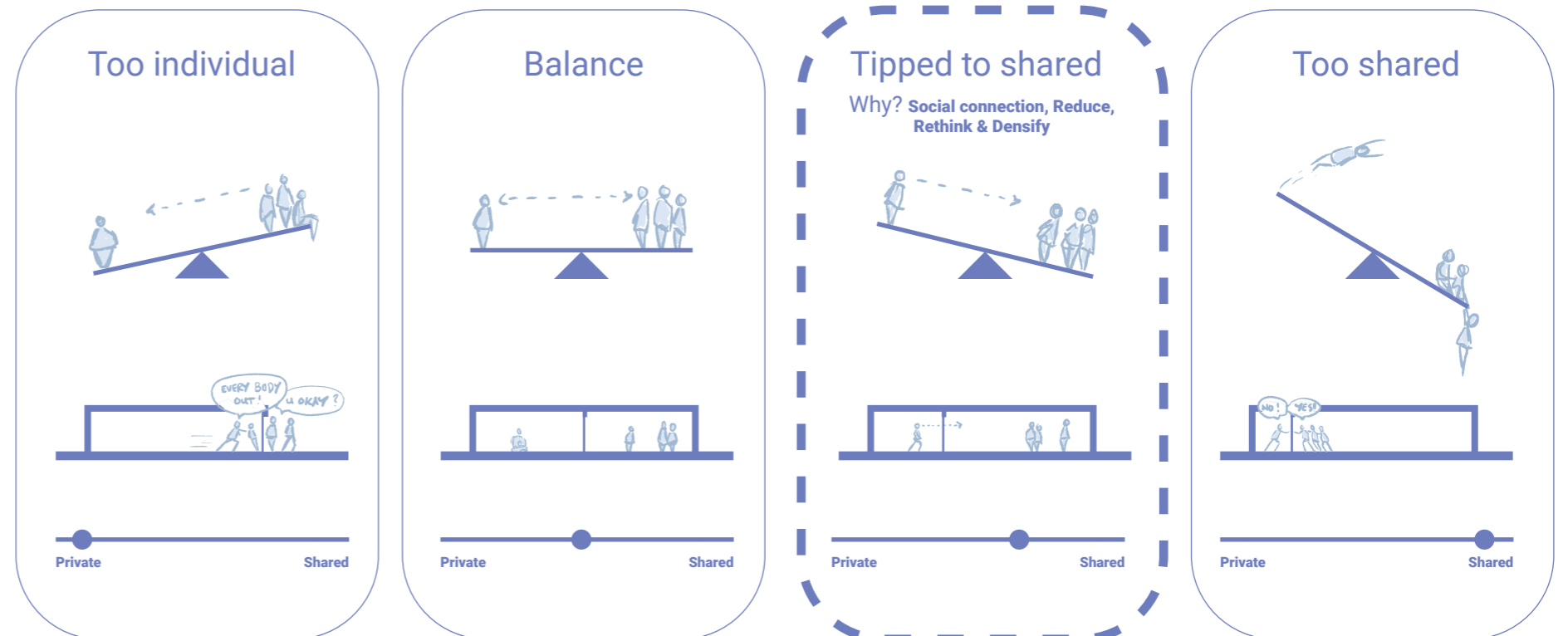
The sense of sharing for social benefits, cost reduction, sustainability and densification can lead to the tendency to share everything to an extreme extent. Because the more you share, the greater the benefits, right? There is a tipping point where the individual is overwhelmed by the collective. The overarching goal must remain that the social quality of life is increased without the collective getting the upper hand. Where this limit lies should become clear from the research. However, the aim is to make a shift towards more sharing take place by showing residents the benefits of co-housing and by encouraging them to embrace these principles. As seen in the diagram below.

Circularity

Rethink & Refuse

Circularity and Co-Housing can have a happy marriage without huge steps. In its essence, Co-Housing adopts an important aspect of circularity, namely rethink. Rethink refers to the more intensive use of products by sharing them, which is an important part of co-housing. In addition, an important goal is to make the communal areas adaptable. This with the underlying idea that the wishes, requirements and norms and values of shared spaces will change over time. By making these spaces adaptable, the building does not become irrelevant within its lifespan as a result of different demands on the complex.

Furthermore, the aim is to approach the building from social aspects and thus to approach the design assignment with a new approach. The intended outcome is a building that offers structural and social circularity by looking at design in a different way. This falls under the theme of the circular strategy of refuse.



Context

The proposed site

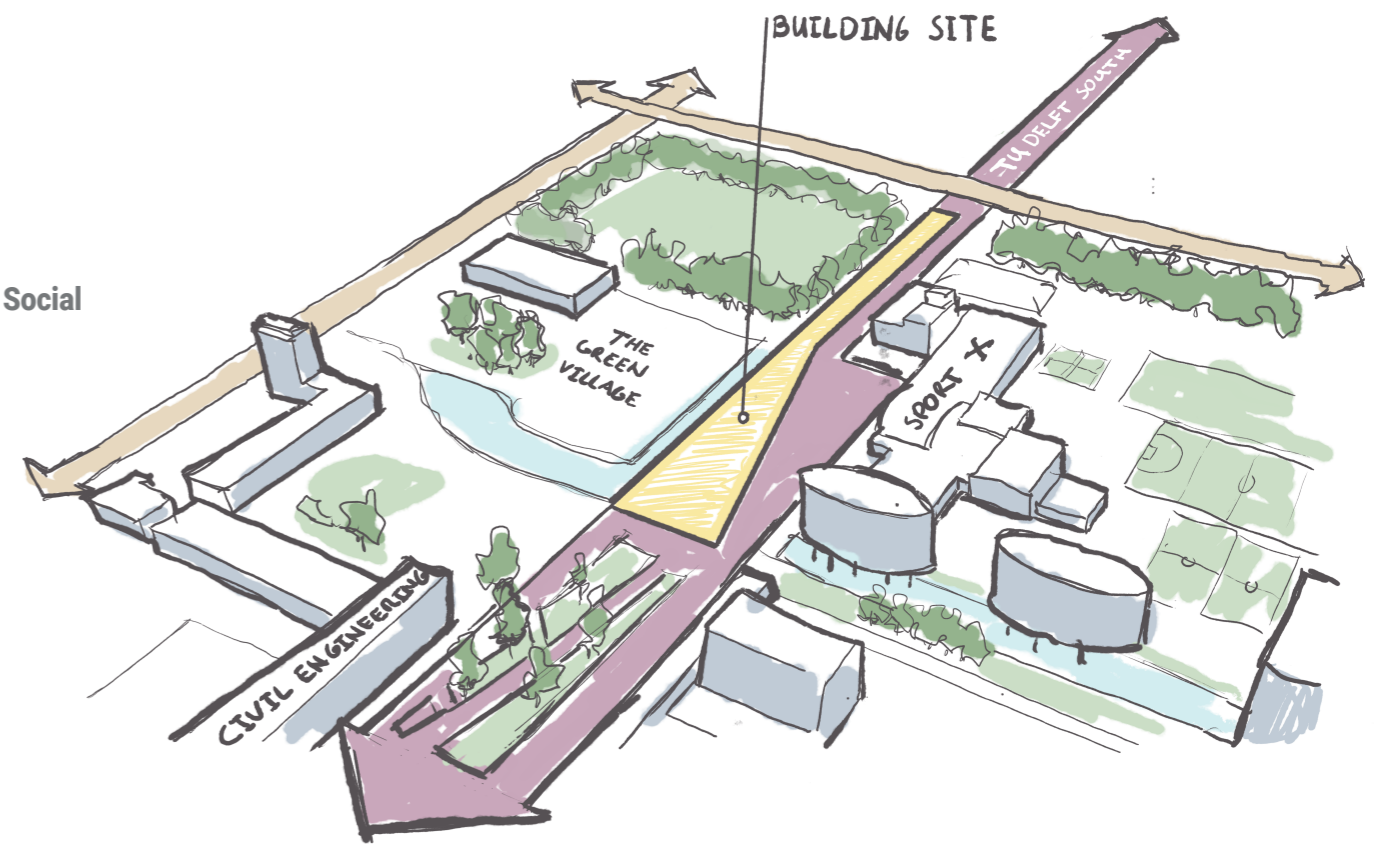
Why this spot?

There are several reasons why this location was chosen in the middle of the TU Delft campus. The location grabbed attention by the shift of the axis from north to south. The main axis through the campus, which has clearly been given shape by the Mekelpark, makes a bend to the left here and then straightens again to the relatively new southern part of the campus. The southern part of the campus has little relationship with the old part of the campus. The location offers opportunities to make this bridge from old to new. Furthermore, the green village, sport x, a faculty building, the Mekel Park and the Balpol residential tower are located directly next to the area. The melting pot of functionalities in the immediate vicinity makes it an attractive area to live in and it is an interesting task to find out how the intended building enters into a relationship with its immediate surroundings.

The building

What are the main goals for the building?

- Tipping the scale towards more **sharing**
- **400+** Inhabitants
- Providing **possibilities** for the fulfillment of **Social** and **emotional** needs
- Marrying **circular & Co-Housing** ideologie
- **Adaptability** for future resilience



Shift of axis

The Mekelpark axis shifts just beside the location

End of Mekelpark

The Mekelpark ends here. This creates the opportunity for a meaningful ending or continuation

Green village

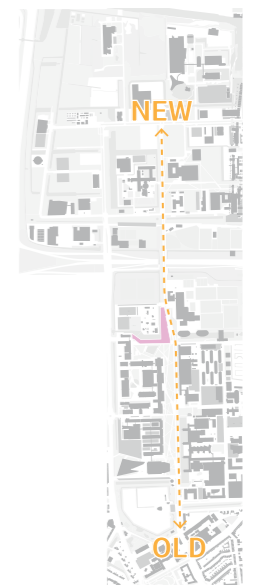
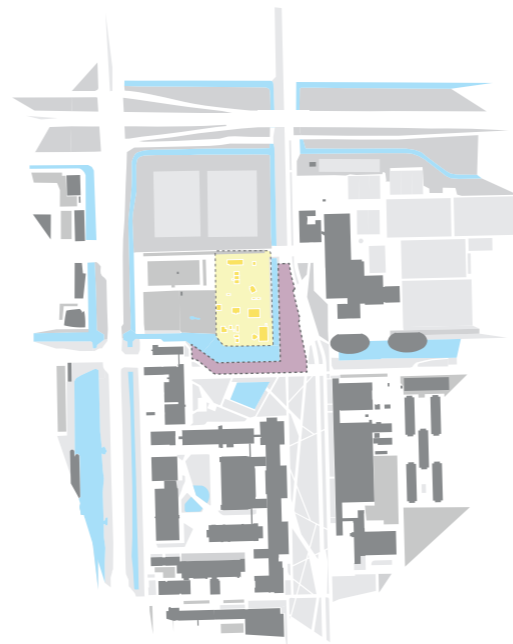
The facility of the green village creates a experimental building environment where a new type of student housing is well suited

Density

The near facility of other functions/buildings provides an attractive living climate and architecturally challenging location

Old to new

The location is in the middle of the transition from old to new. This provides the opportunity to make a gesture to both sides.



Design and research question

Design question

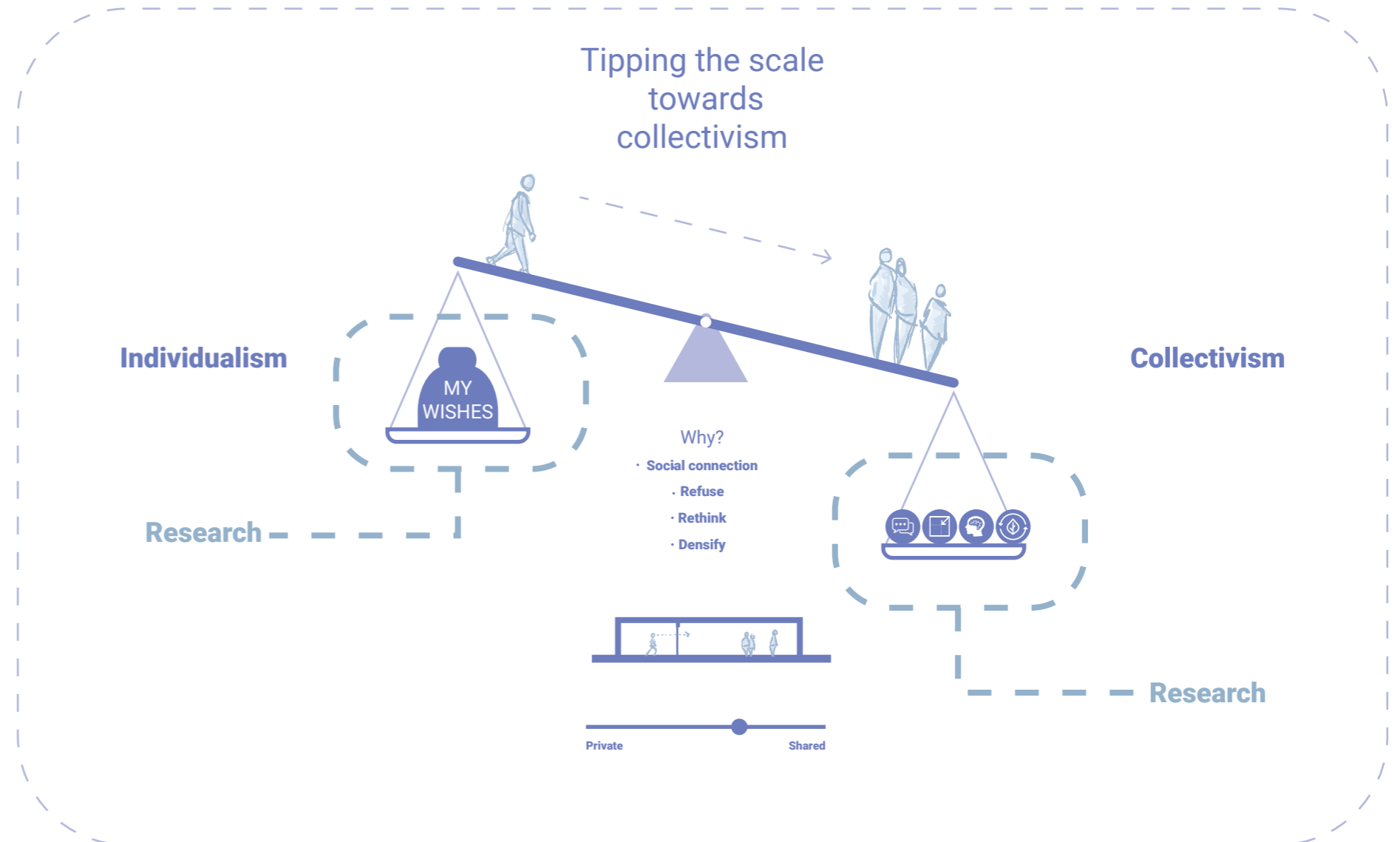
Is an adaptable student Co-Housing complex able to intensify the use of space while providing in the social and emotional needs of students?

Research Question

How can we intensify the use of space in student housing complexes by mapping the social and emotional aspects of co-living?

Subquestions:

- A What can we learn from existing student and Co-Housing projects?
- 1 How can the social and emotional needs of students be mapped to enhance Co-Housing design?
 - How can we find future social needs
 - Expectancy of social demands of housing situation
 - The individual and shared aspects of future housing situation
- 2 Which social and circular factors can stimulate large scale Co-Housing for students?
- 3 What are the spacial implications of circularity and collectivity on co-housing?



Methodology

The proposed methodology to conduct the research is a chronological step-by-step plan. The intended results of each step are necessary to carry out the next part of the research. The results of the research should provide the pieces of the puzzle to jointly create the ideal co-housing situation for students on the TU Delft campus.

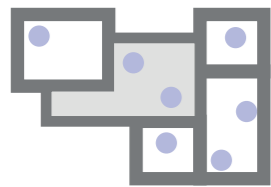
A

Case studies

The aim of the case study research is to establish a reference framework for different typologies, transitions from private to shared, indoor activities and finally a catalog of interactions in housing situations.

- Analyzing typologies
- Analyzing inbetween/border elements
- Analyzing activities
- Catalog of interactions in co-housing

Typology



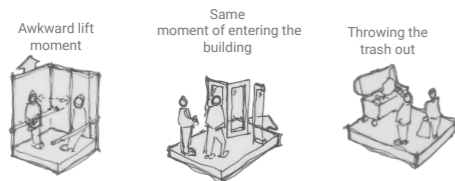
Inbetween/border elements



List of activities



Tiles of interaction



1

Mapping social preferences

Mapping individual student preferences regarding co-housing. To give a clear picture of the wishes for individual and shared activities.

- Mapping social preferences
- Interviews
 - Literature research

Sharing preferences



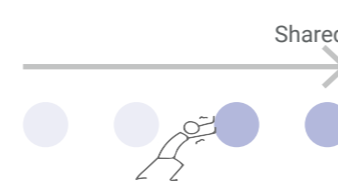
2

Nudging towards

The goal is to share more to aid social interaction and sustainability. What are important factors for students to create more willingness for this.

- Nudging towards
- Interviews
 - Literature research

Nudging

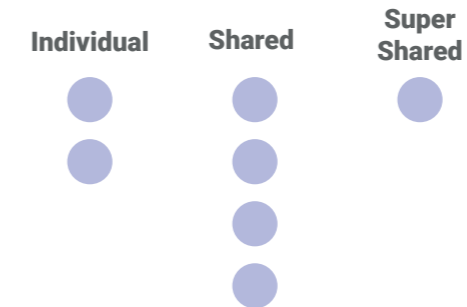


3

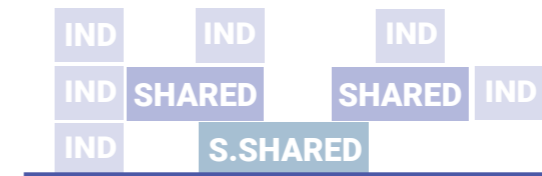
Program definition

A programmatic layout of the building must be made from the previous steps. However, this must be translated into a building layout by means of an investigative design.

- Program definition
- Analyzing data
 - Research by design



Arranging Program



4 & 5

Construction

The program will pose a technical challenge of making static and adaptable components live in harmony in one building.

Context & Design

The construction and program will play a major role in the final design. The context will define how the building interacts with the surrounding.

Design phase

A CASE STUDIES

The purpose of the case studies is to build a frame of reference as a review of what has already been done. A distinction is made between student housing and Co-Housing examples. The two are closely related, but there is a clear distinction. The main difference is attributable to the short stay of students in their home. Where Co-Housing examples are often set up in consultation with the future residents, a student moves in and out after a few years without really having any influence on the housing situation.

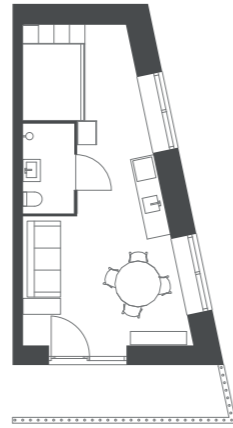
The information that case studies should provide are:

- Catalog of different typologies,
- An insight into different types of boundary and transition spaces/elements.
- The different activities that take place in the case studies
- A catalog of interactions that take place

The intention of the currently selected projects is to provide a broad overview of types of student housing & Co-Housing. Additional projects are needed for both categories for a complete overview.

STUDENT HOUSING

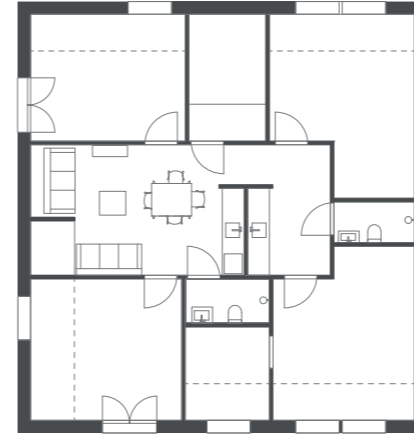
Michiel de Ruyterweg - Studio



Inhabitants: 1



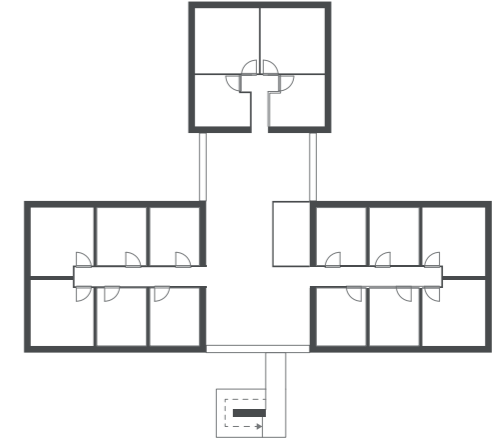
Spieringstraat 19 - shared housing



Inhabitants: 4



Jacoba van Beierenlaan - shared housing



Inhabitants: 18



CO-HOUSING

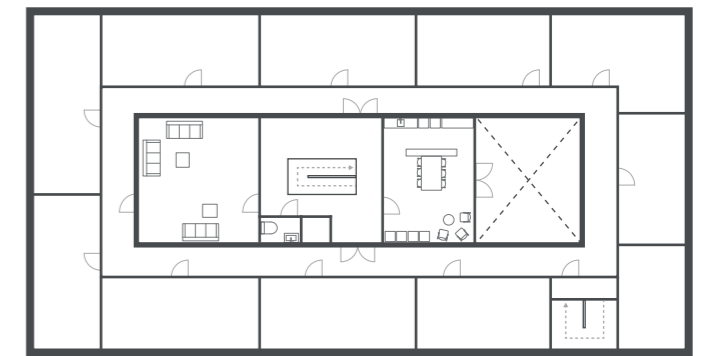
Josai shared housing



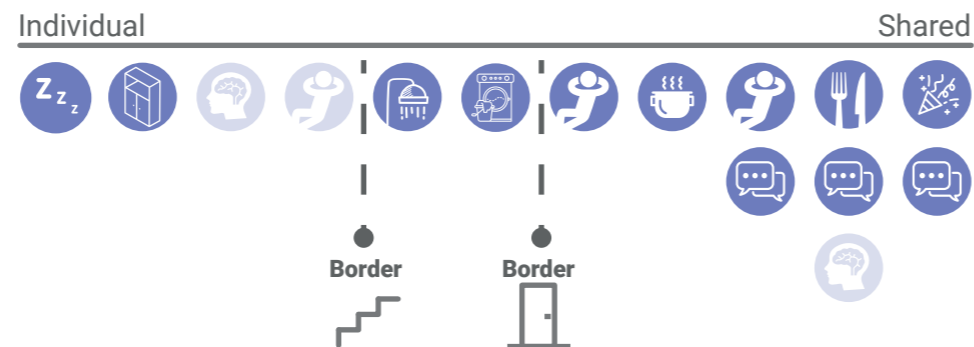
Inhabitants: 10



Bagijnhof - Co Housing



Inhabitants: 50



A CASE STUDIES

Tiles of Interaction

Establishing and assessing different types of interactions within housing situations



Time spend on the interaction

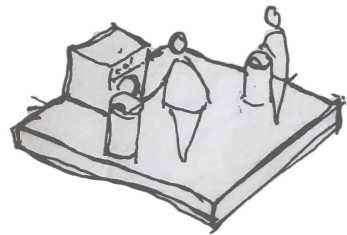
Social

Sense of belonging to a larger group of people

Emotional

Intimate relationships with life partner or close friends

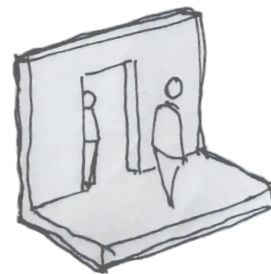
Laundry encounter



0:10 h

Social ★☆☆☆☆
Emotional ☆☆☆☆☆

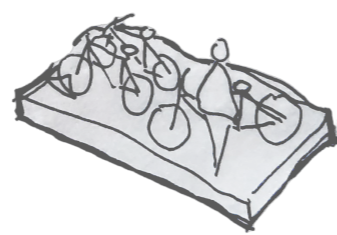
Friendly neighbour conversation



0:15 h -->

Social ★★☆☆☆
Emotional ★☆☆☆☆

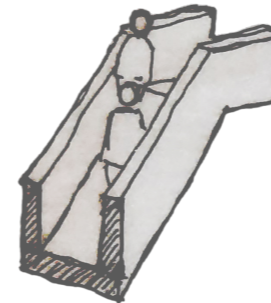
Putting the bike away



0:03 h

Social ☆☆☆☆☆
Emotional ☆☆☆☆☆

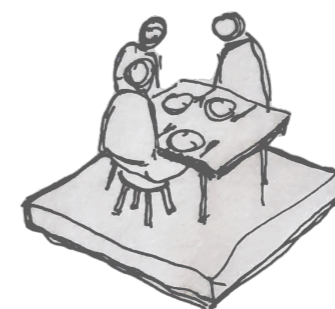
Narrow stair encounter



0:01 h

Social ★☆☆☆☆
Emotional ☆☆☆☆☆

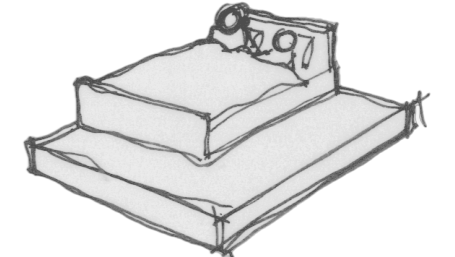
Dinner with friends



1:30 h -->

Social ★★☆☆☆
Emotional ★★☆☆☆

Laying in bed with partner



8:00 h -->

Social ★☆☆☆☆
Emotional ★★★★★

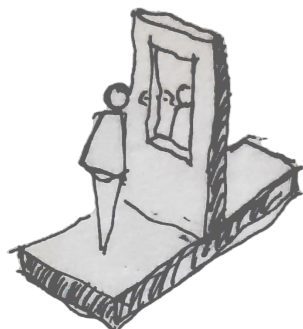
Just chilling by the tree



1:30 h -->

Social ★★☆☆☆
Emotional ★★☆☆☆

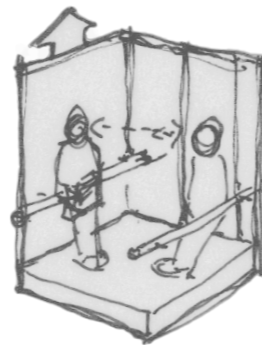
Eye contact while walking past the window



0:01 h

Social ★☆☆☆☆
Emotional ☆☆☆☆☆

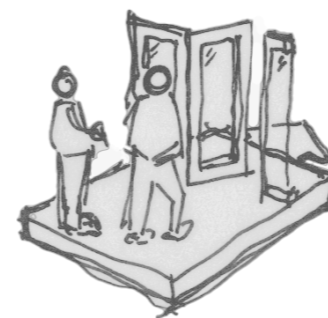
Awkward lift moment



0:05 h

Social ★☆☆☆☆
Emotional ☆☆☆☆☆

Same moment of entering the building



0:02 h

Social ★★☆☆☆
Emotional ☆☆☆☆☆

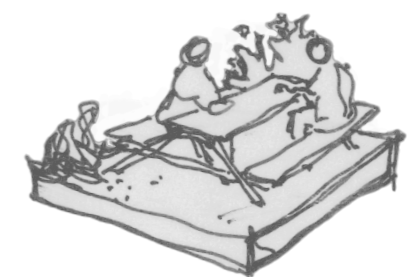
Throwing the trash out



0:05 h

Social ★☆☆☆☆
Emotional ☆☆☆☆☆

Outside lunch

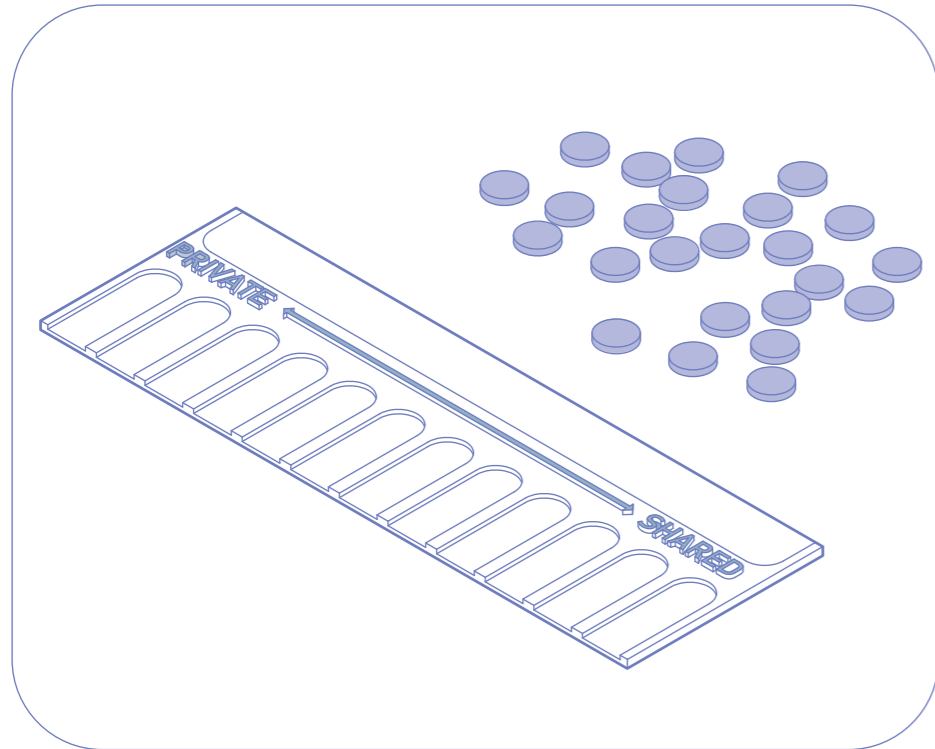


0:45 h

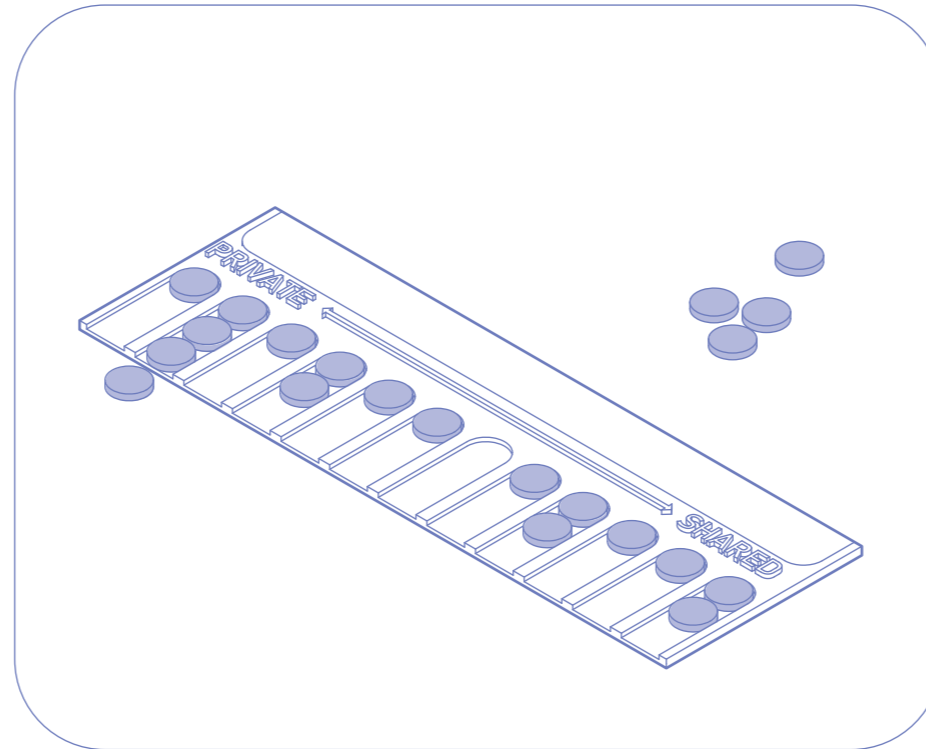
Social ★★☆☆☆
Emotional ★★☆☆☆

1 Mapping social preferences

Private to shared Playing the game

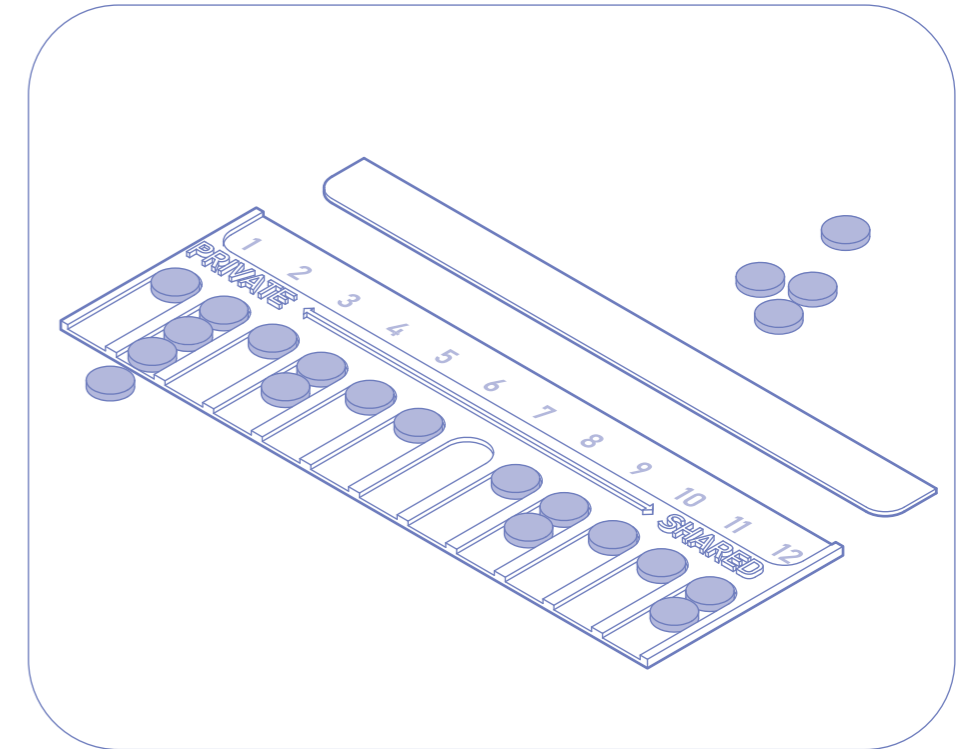


The player is presented with a board and different activity pucks. The objective is to arrange the pucks from private to shared.



There is no right or wrong while arranging the pucks. Pieces can be left out or stacked further outside of the board if the player thinks it is necessary.

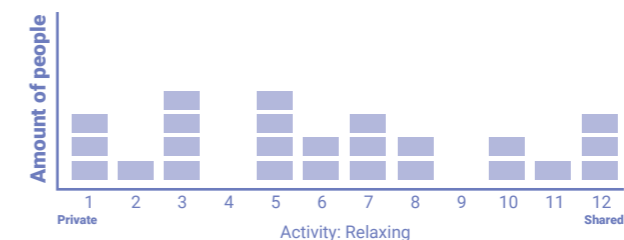
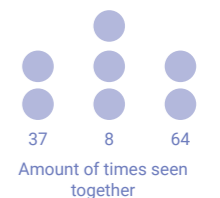
Data collection



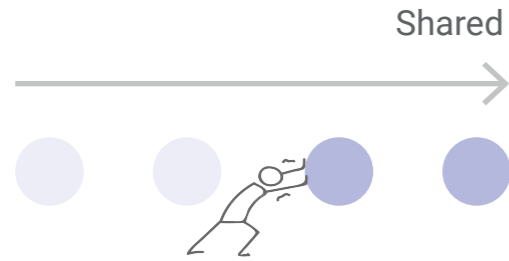
The data collection consists of removing a piece to uncover a set of numbers to categorize the activities on a scale from 1 till 12. This is not shown to the player to keep them from thinking about numbers instead of their feeling.

The goal is to establish where different activities are placed on the scale from private to shared. But also which activities are most commingly stacked together.

Exploring social preferences towards Co-Housing involves more than this “game” but it will be the main element and produce data in the form of histograms. The aim is to clarify how students at TU Delft envision their housing space in terms of individual and shared activities. The results will give an idea of the extent to which there is consensus or division about the place of different activities on the scale from individual to collective.



2 Nudging



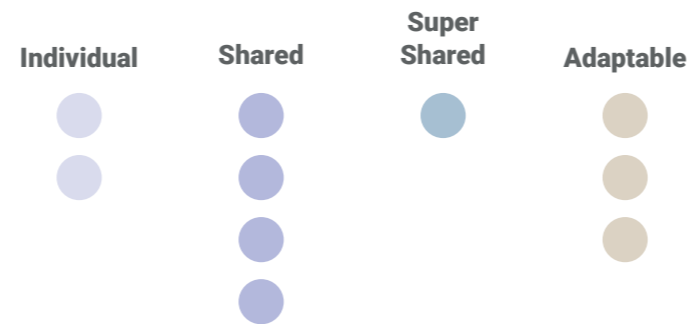
Which social and circular factors can stimulate large scale Co-Housing for students?

The aim is to answer question above. This will be investigated through literature research and interviews. The main questions from the interview will focus on the themes of the satisfaction of social and emotional needs and to what extent sustainability and circularity can play a role in stimulating Co-Housing. The proposed interview can be found in the appendix on page (XX).

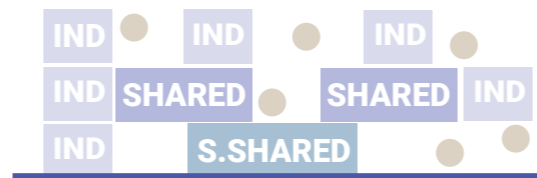
3 Defining the program

What are the spacial implications of circularity and collectivity on co-housing?

It should become clear from the case studies, interviews and mapping of social needs what the program of the building will look like. In particular, the division of activities between individual, shared and super shared. However, it is expected that by no means all activities will be agreed upon as to which framework they fit into. The approach is to make activities that fall outside the framework adaptable and put them in the hands of the residents. They must then be able to adapt their home to their own wishes. How the four frameworks relate to each other spatially must be investigated by means of design.

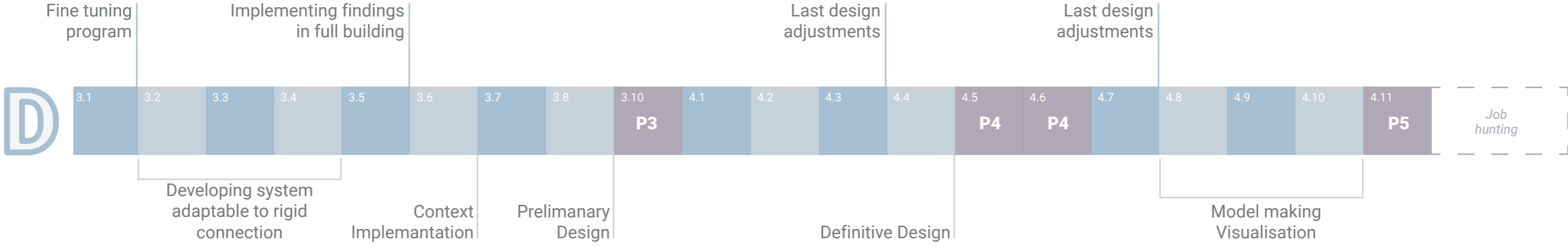
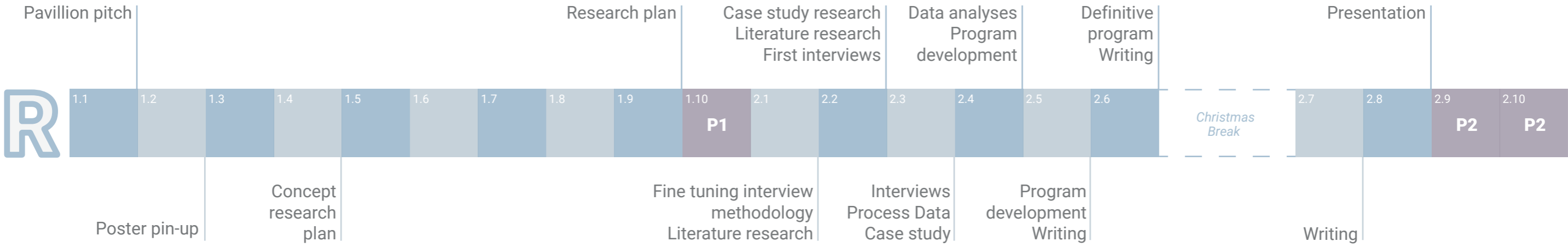


Arranging Program



Planning

A scheme of the division of the workload of the graduation project in the 42-week timeframe.



Relevance

The two topics that form the project loneliness and housing scarcity are both relevant themes today. Housing scarcity, both among students and in the rest of the Netherlands, is a theme that is not lost on anyone since it affects one of your necessities, namely a roof over your head. For students, it creates harrowing situations when it comes to looking for a room with fierce competition. This makes the search for new solution for intensifying housing construction for students relevant.

The mental health of students has increasingly come to light and in the news due to corona and multiple lockdowns. How and whether the mental health of students can be improved through architecture is therefore an interesting approach for the research and design.

In addition, the approach of the project is that the program is guided by the social needs and preferences of the target group. This way of determining the program is a new way of approaching the design process of student housing.

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