



BEGIN AGAIN

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Chalmers School
of Architecture

ARCHITECTURE &
PLANNING BEYOND
SUSTAINABILITY

examiner: Johanna Eriksson
supervisor: Elke Miedema

BEGIN AGAIN

Monika Ewa Luśnia’s
master thesis project at

Chalmers School
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CHALMERS
UNIVERSITY OF TECHNOLOGY

abstract

We stumble upon them, unpredictably, in certain life situations or during a side course of professional research. In both cases, with an unpleasant surprise. The blank spots on the map of groups represented by the built environment. Rehab care sector is one of them. It is often dealing with social stigma, to such extents, that even deliberate research leaves one with an impression, that there is very little straight-forward talk on the subject.

The hope that an example of thoughtful and inclusive design for a rehab facility can contribute to changing this state of things and providing a more supportive built environment for the troubled members of the society, became the point of departure for this research.

This work’s overall intention is to find solutions which will provide suitable rehab care, to those previously underserved. This includes rural communities and, among and beyond those, the patients with dual-diagnosis, women around pregnancy, underaged children of the patients and multiple cases of co-dependance.

The research process involved gathering information from written sources, direct and indirect case studies, along attempts of getting in contact with authorities in the field, to retrieve practical information. The collected knowledge was first translated into a set of goals and strategies for the project and later on resulted with a design proposal, of a modular facility, which could be adapted to most given sites and have a potential for going from no infrastructure to a network of locally oriented facilities.

The research investigation was limited to the extents of what proved to be useful in creating a general ‘know how’ for the design, leaving space for further iterations and clarifying the technical details. The generic elements were, however, designed in a way to never contradict the assumptions of sustainable design.

At the moment of submitting this work, I can tell that it only touches the surface of what is a very broad and complex topic, but I do hope that it can help establishing a more open atmosphere for discussing issues connected to addiction treatment and the ways in which architecture can support addiction patients.

research question : How to make rehab more accessible in rural areas and for the underserved groups of patients with the development of dedicated infrastructure?

keywords* :

female patient care

modular design

BEHAVIORAL SCIENCE

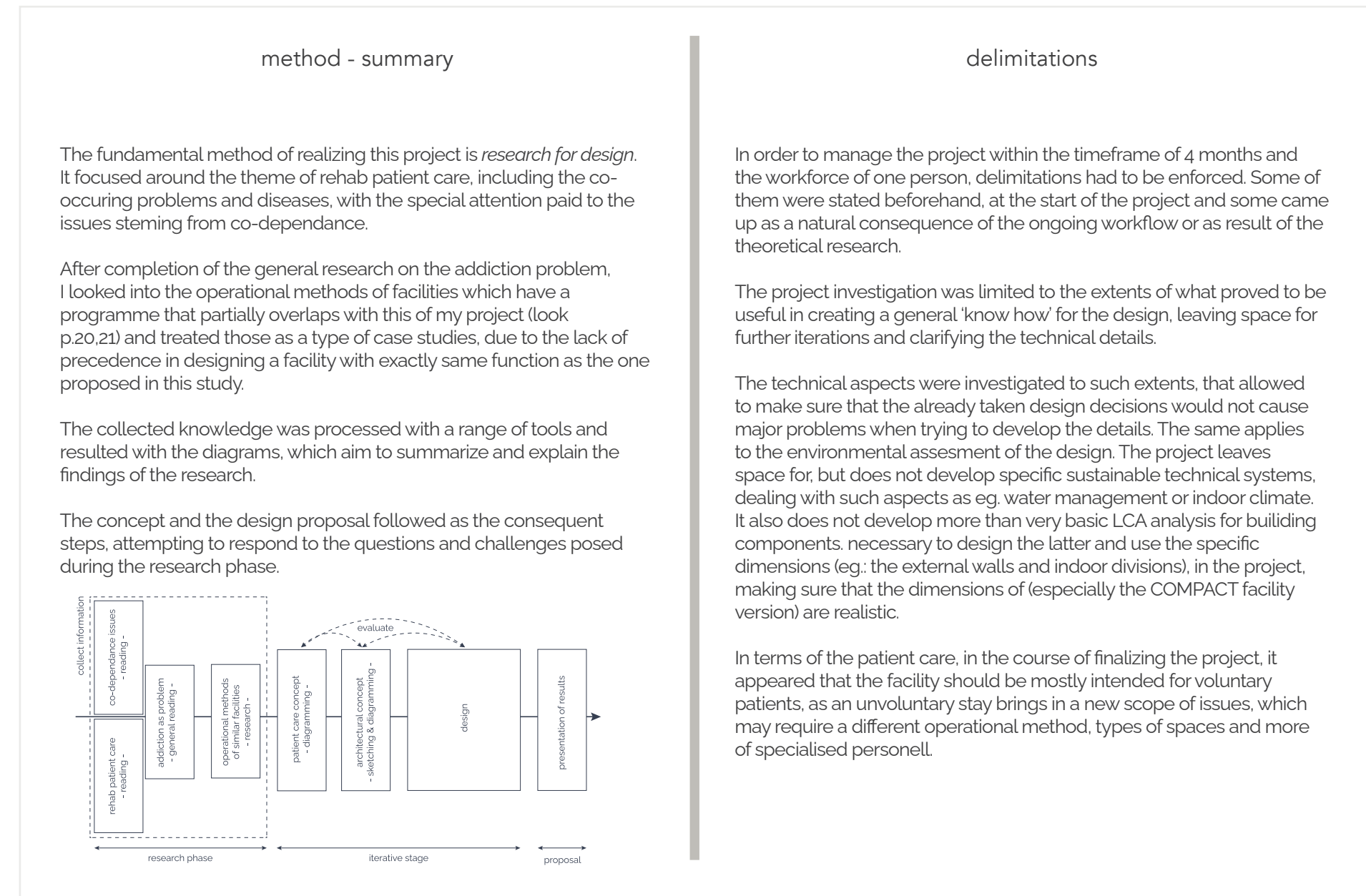
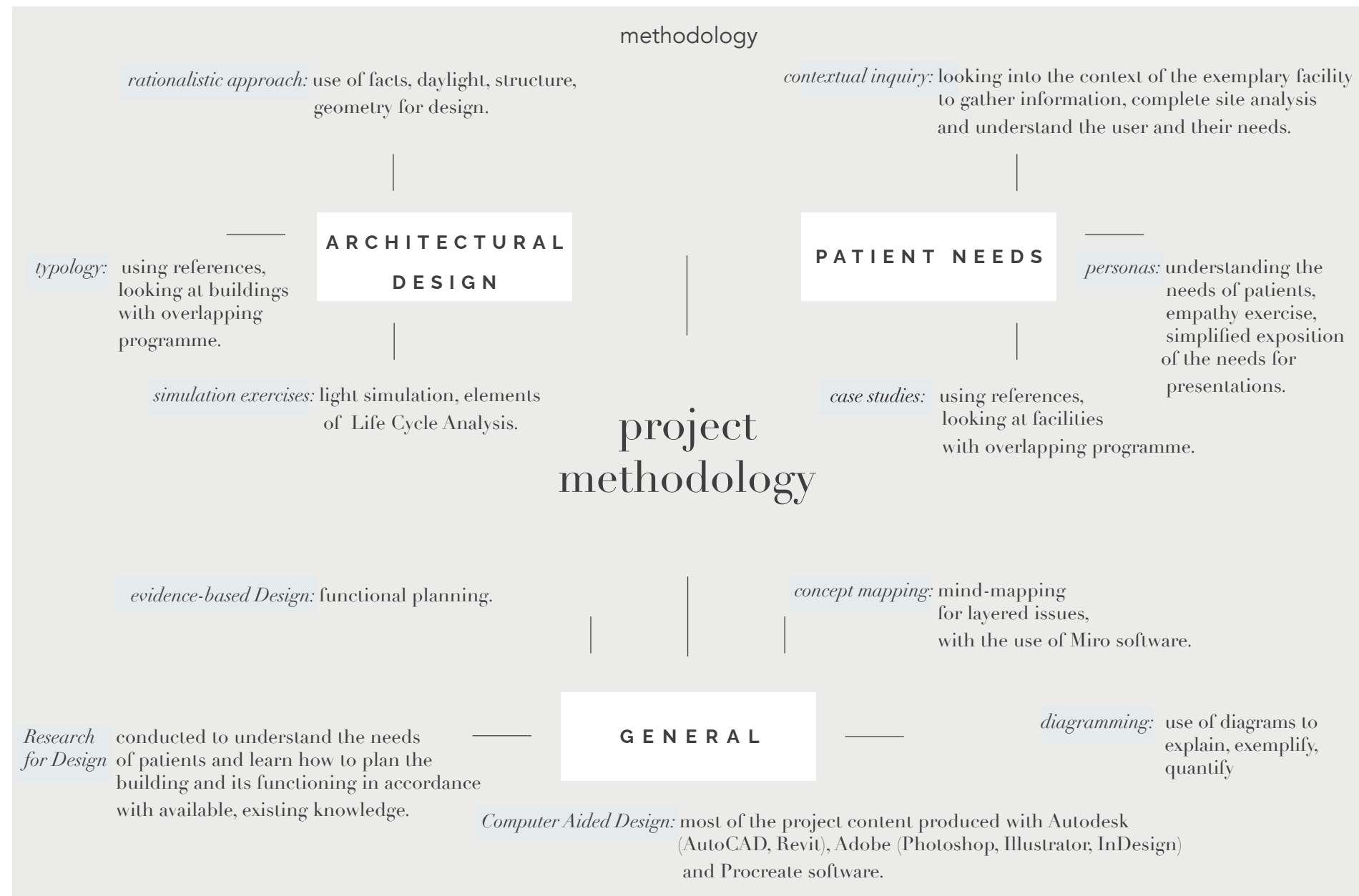
REHAB FACILITY

environmental psychology

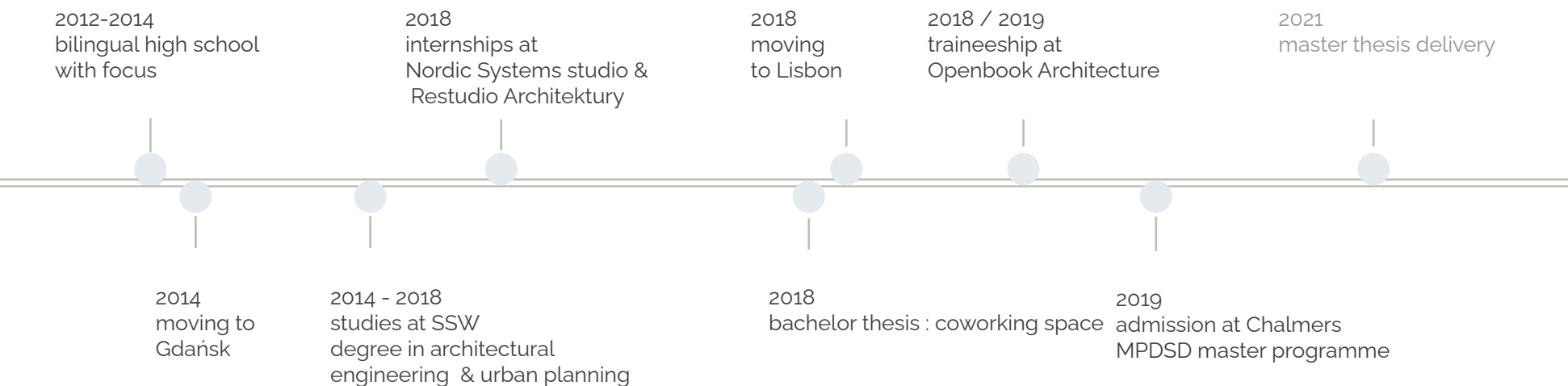
non-definitive site

co-dependance

Certain vocabulary used in the project from this moment on can be unintuitive for a reader from outside of the healthacre sector. For clarification check the glossary : p. 77.



my background



THE COURSES THAT I HAVE COMPLETED AT CHALMERS

- Planning and Design for a Sustainable Development in a Local Context
- Managing Design Projects
- Sustainable Architectural Design
- Norm-critical Approach
- Residential Healthcare

POTENTIALLY RELEVANT PROJECTS THAT I HAVE DONE SO FAR

- artist's solitude
- housing
- a number of repurposing / renovation of buildings during my internship
- community centre
- sustainable building (preschool function)

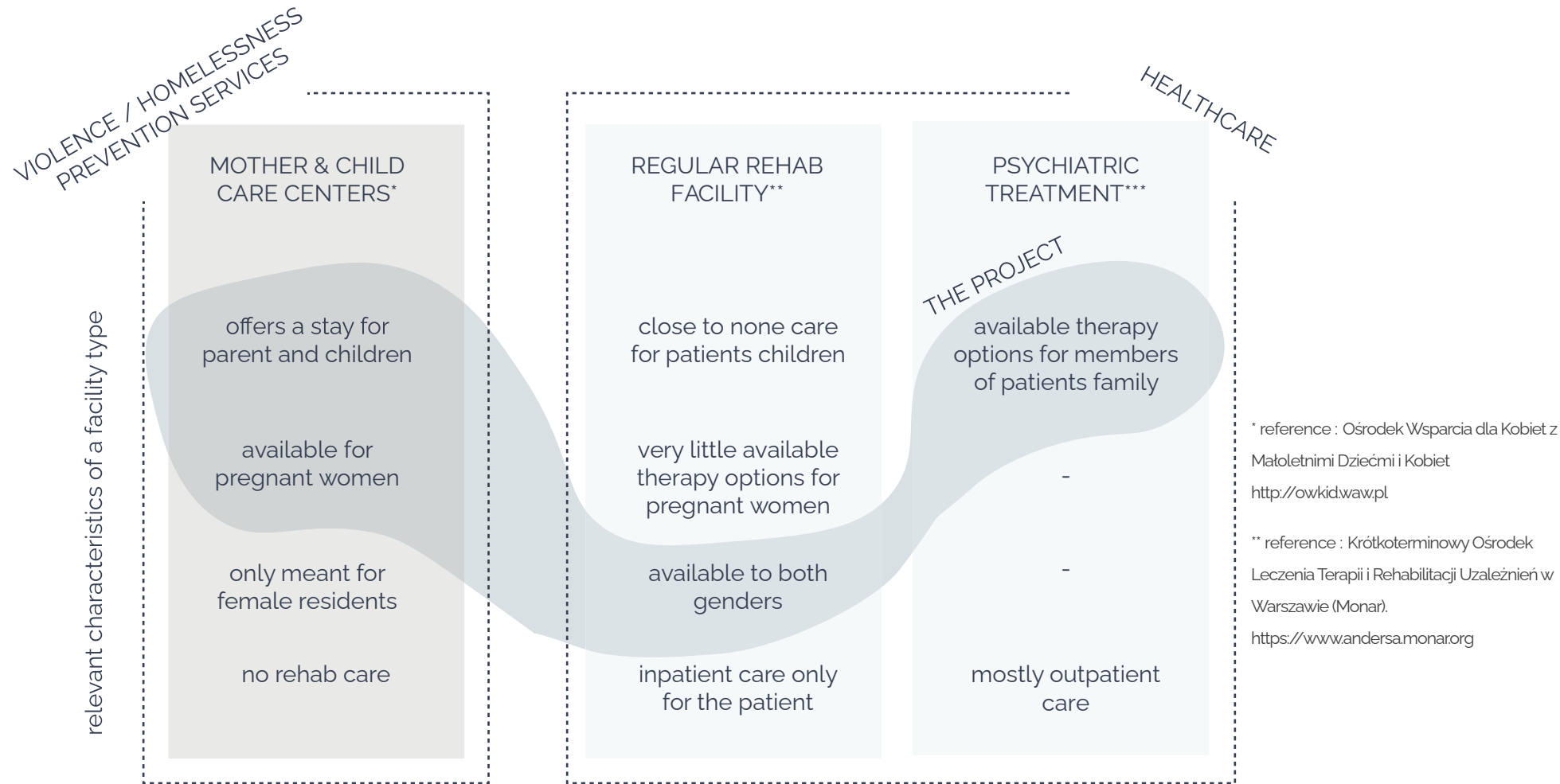
motivation & process

begin again

At the very start, the point of departure for this project was not the function it was going to serve. I wanted to work with an architectural intervention such as renovation of an exisitng site, which would stand against the widely spread philosophy of disposable goods. I needed to find a function, which would go hand in hand with it, or better, emphasize my call for second chances. This is the way in which my attention got drawn to rehab facilities and the issues connected. I found the concept of the double beginning, for the building and for its users powerful. It was only later, when in the process of researching the needs of rehab patients, I discovered the scope in which this sort of institutional help was lacking in the rural areas, internationally. Among the rural communities in general, I was able to spot the patient cases which were particularly underserved: the women around pregnancy having very little rehab opportunities and dealing with especially strong stigma. In consequence or later in time, their underaged children often needed help too. Having identified that problem, the angle of my work turned towards developing a modular, expandable design which most compact version could be affordable for the rural communities. Parallel to this important thread of patient care and social sustainability, it was still important to me to enforce sustainable building technology and make sure that my design is in line with ecological principles.

the author

project in context of healthcare architecture & rehab care



context

healthcare architecture

rehab care

In the course of research, I found that rehab patients who suffer from co-occurring mental disorders, often are not able to receive suitable care for both conditions, at the rehab-oriented facilities.

At this time, the first cross-sector bridge was drawn in my mind. In terms of the function that I wanted my building to serve, it appeared crucial to join parts of rehab care and psychiatric treatment facilities operations, binding together two sectors of healthcare.

Within the rehab care, understood as inpatient treatment in the process of going out of addiction to various types of substances, there are groups of patients, who need specific type of treatment, requiring conditions or infrastructure, which almost all of the existing facilities can not provide. As the result, many of those patients experience such barrier to accessing treatment, that they end up receiving no help at all.

Among those groups we can list pregnant women, previously mentioned, patients with dual diagnosis (co-occurring mental disorders) and parents caring for underaged children.

As those patients lack representation in the built environment, it was difficult for this project to find facilities to serve as accurate case studies. In the end, the used solution was to look at facilities which have programme that partially overlaps with this project's assumptions, but the project in itself is a concept for an entirely new type of facility, which bridges two sectors of healthcare with the care usually provided by social services.

data retrieved from <https://americanaddictioncenters.org>

<https://stopuzalezniom.pl/fakty-o-alkoholu/statystyki-spozycia-alkoholu/>

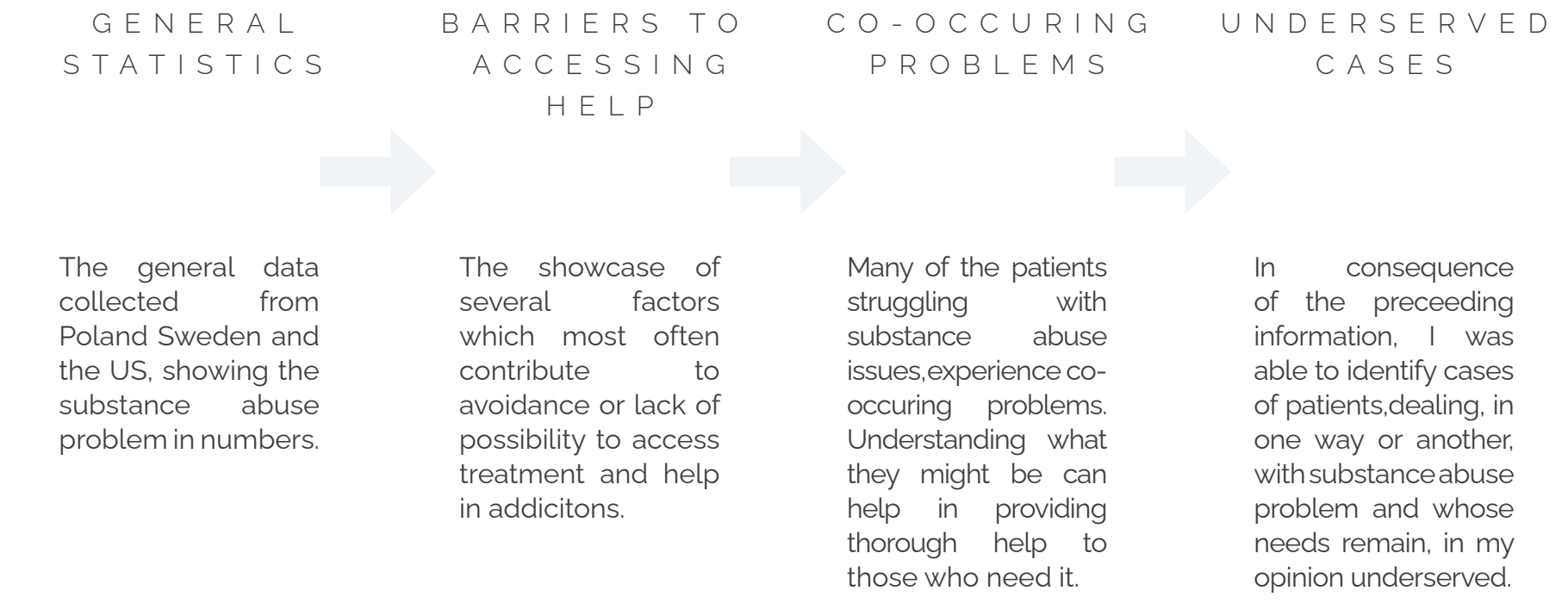
https://www.researchgate.net/publication/237468221-Predyktory_ukoaeczenia_terapii_mOEczyzn_i_kobiet_uzalenionych_od_alkoholu-Predictors_of_treatment_completion_in_alcohol_dependent_males_and_females

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PROBLEM, DIAGRAMMED

In this chapter I intend to gather the thoughts and conclusions drawn during the phase of research done for this project. It is to present the aspects which will later directly influence the design cocept, in a summarized and diagrammed form.



general statistics

By exposing the statistical data from three different countries, I intend to showcase the versatility of the problem and the sheer value of the solutions proposed later in the project.

POLAND

as of 2019:

2 %

of Poles abused alcohol on a daily basis and were diagnosed as addicted

3 - 4

million people lived in a family struggling with alcohol problem and

4 %

of Poles are a child brought up by a drinking person, while in the whole country there were only

51

child-support centers, majority of which was located in districts with major cities.

data retrieved from [parpa.pl and https://stopuzaleznieniom.pl/fakty-o-alkoholu/statystyki-spozycia-alkoholu/](https://stopuzaleznieniom.pl/fakty-o-alkoholu/statystyki-spozycia-alkoholu/)

SWEDEN

as of 2019:

15-44

In the age group of years old the most common reason for inpatient care is mental and behavioural disorders.

25%

of the patients who voluntarily submitted for institutional care, were female

data retrieved from <https://www.socialstyrelsen.se>

USA

as of 2019:

92%

treatment facilities were located in urban areas and

90%

of medical specialists approved to prescribe specific rehab medications practiced in major cities

3,4%

of the people with substance abuse problem were diagnosed with mental disorders and

52%

of them didn't receive any treatment at all

data retrieved from <https://americanaddictioncenters.org>

13

barriers to accessing help

1

PHYSICAL DISTANCE

Most of the rehab clinics are located in major cities (in 2019 it was 90% of the facilities in the US) and the study shows that many of the people struggling with substance abuse don't decide to start treatment due to physical distance, which would mean a long commute.

2

FINANCES

Financing the treatment often becomes a barrier to accessing help, as in many cases the costs extend patients' financial abilities. On top of that, deterioration of one's finance situation is often a co-occurring factor in substance abuse problem.

3

'SOFT' COSTS

The fear of stigmatization and loss of one's established life order, such as a potential need to pause working or to inform one's social circle about the problem is often a blocking factor. 12% of the patient query respondents in the US stated that they are afraid of losing friends or experiencing stigma, if they confirm their addiction problem.

4

GENDER-RELATED BARRIERS

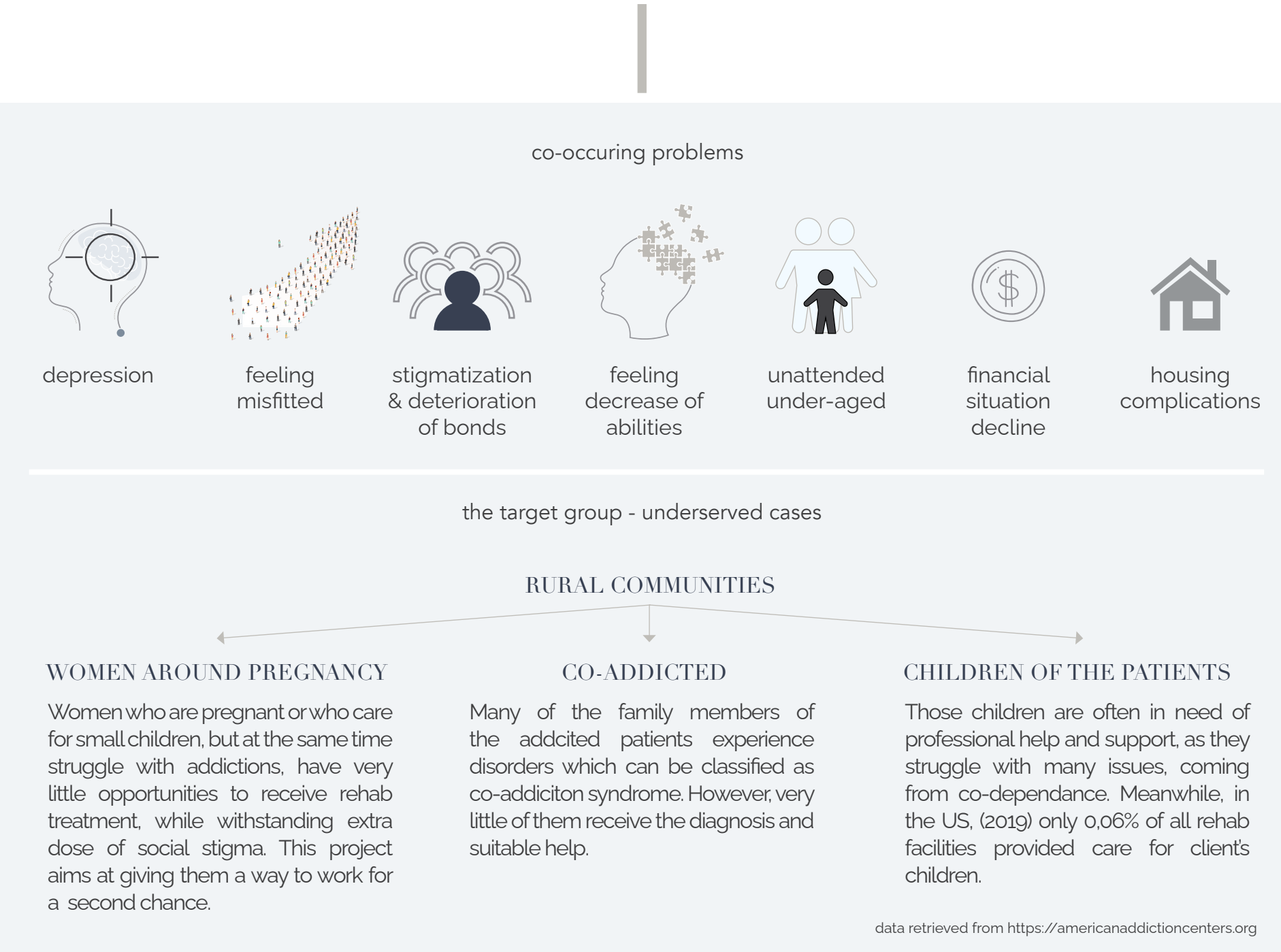
Women in general experience more trouble getting support in treatment. They tend to be more stigmatized, also by their closest relatives. Statistically, they report experiencing more financial trouble when trying to cover their treatment. Additionally, most of the rehab facilities don't offer programs suitable for women around pregnancy.

5

CO-OCCURRING DISORDERS

Some of the substance abuse patients struggle with mental disorders as well. This group is less likely to enter rehab and to receive appropriate care. In 2016, in the US, only 7,4% of them got suitable treatment for both conditions.

data retrieved from <https://americanaddictioncenters.org>



CONCEPT - PATIENT CARE

The concept for the patient care is a the part of the work where the thoughts on the needs of the future users of my design are gathered, discussed and exhibited. It exists parallel to the Concept for Design chapter (p.20), to highlight the equal importance of the two and the way in which they influence each other.

FOCUS,
GOALS
&
STRATEGIES

Stating the priorities of the project and the way to way to pursue the assumed goals, in terms of the patient care.

REMOVING
THE
BARRIERS

Project's response to the barriers to accessing treatment, identified earlier on, backed up with the project strategies, assorted to the barriers, treated as problems.

PERSONAS
&
USER
EXPERIENCE

An attempt at identifying several probable cases of a patient's profile and experience scenario, in order to empathize with their problem in a better way.

LEARNING
FROM
EXPERIENCE
< CASE STUDIES >

The useful experience of existing facilities serving partially similar function as the one planned for the project.

FOCUS

1. To investigate methods of helping the substance abuse patients, identified earlier as 'underserved', with the particular focus on female patients around pregnancy and caring for small children.
2. Children of the patients would get a chance to receive help and support during their parent's inpatient treatment. Other cases of co-addicted family members would be able to receive out-patient help.
3. The goal is to create a versatile design, which could be easily adapted to any site and therefore help with providing a network of rehab facilities accessible for the population of the less urbanized or completely rural areas, even when facing the lack of big funds.

GOALS



PROVIDING DIFFERENT LEVELS OF ACCESSIBILITY:

GEOGRAPHICAL,
SOCIAL,
FOR PEOPLE WITH CO-OCCURING DISORDERS



CREATING A FACILITY TYPOLOGY WHICH COULD FORM A NETWORK

STRATEGIES



Care for the co-addicted and co-dependant

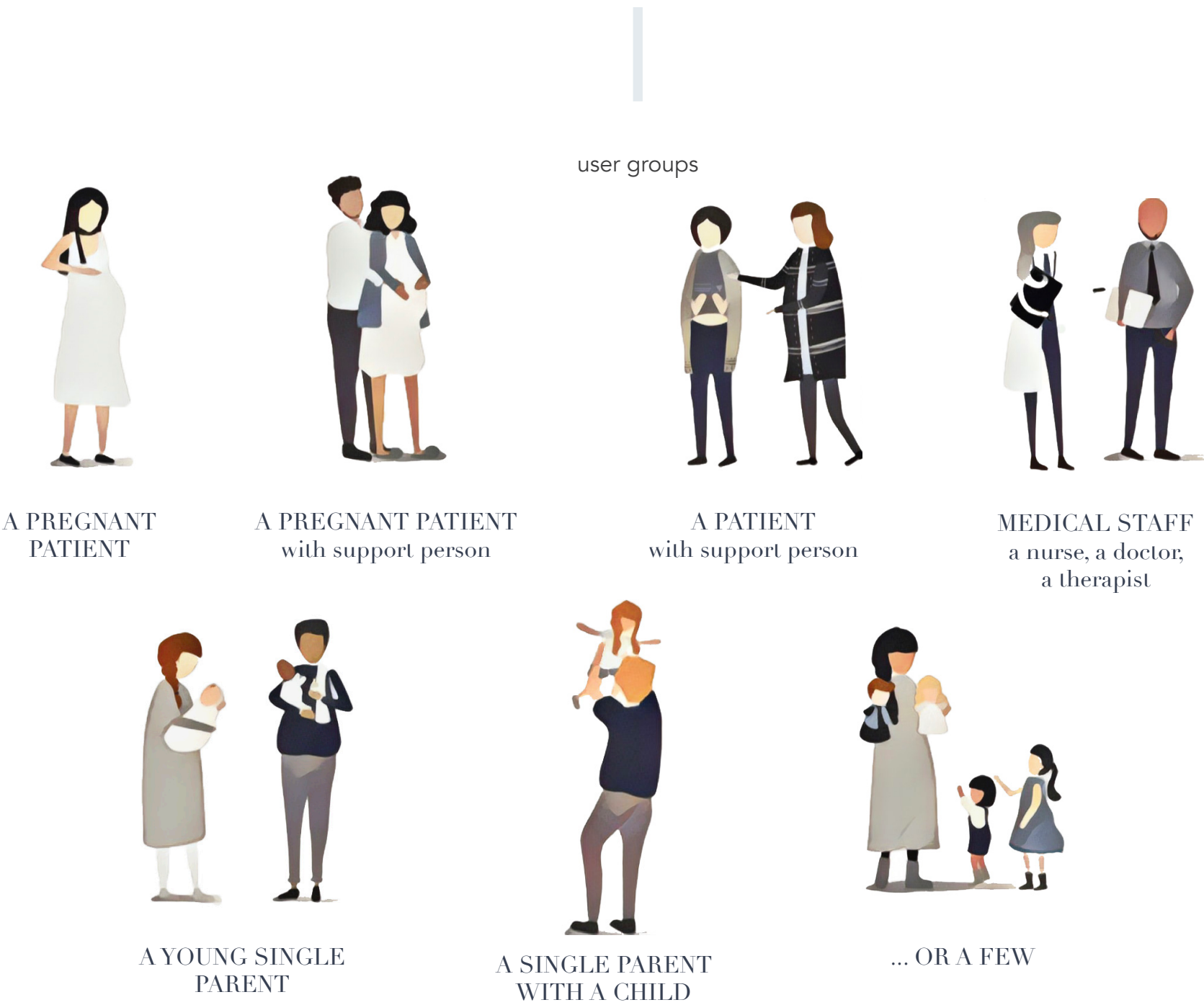
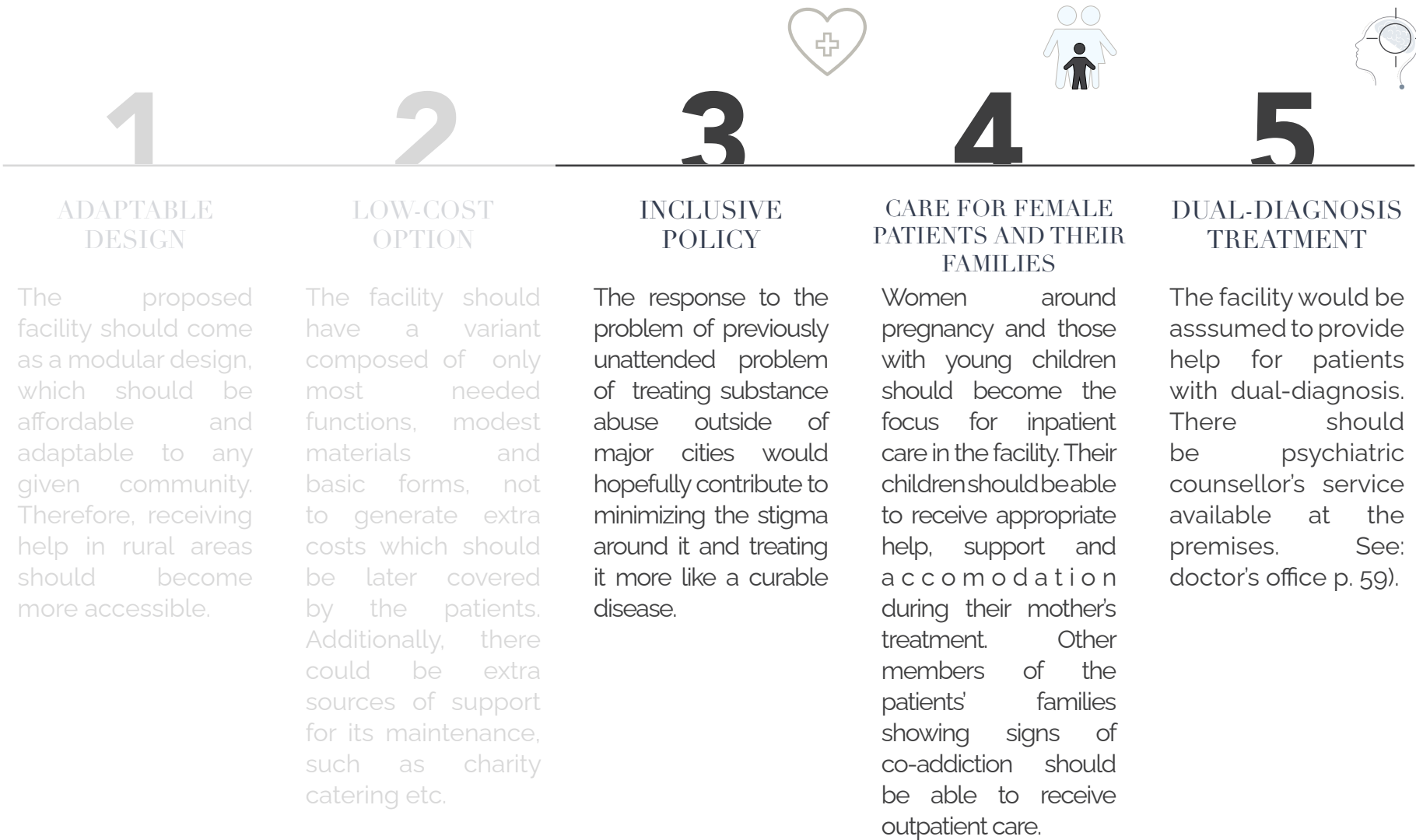


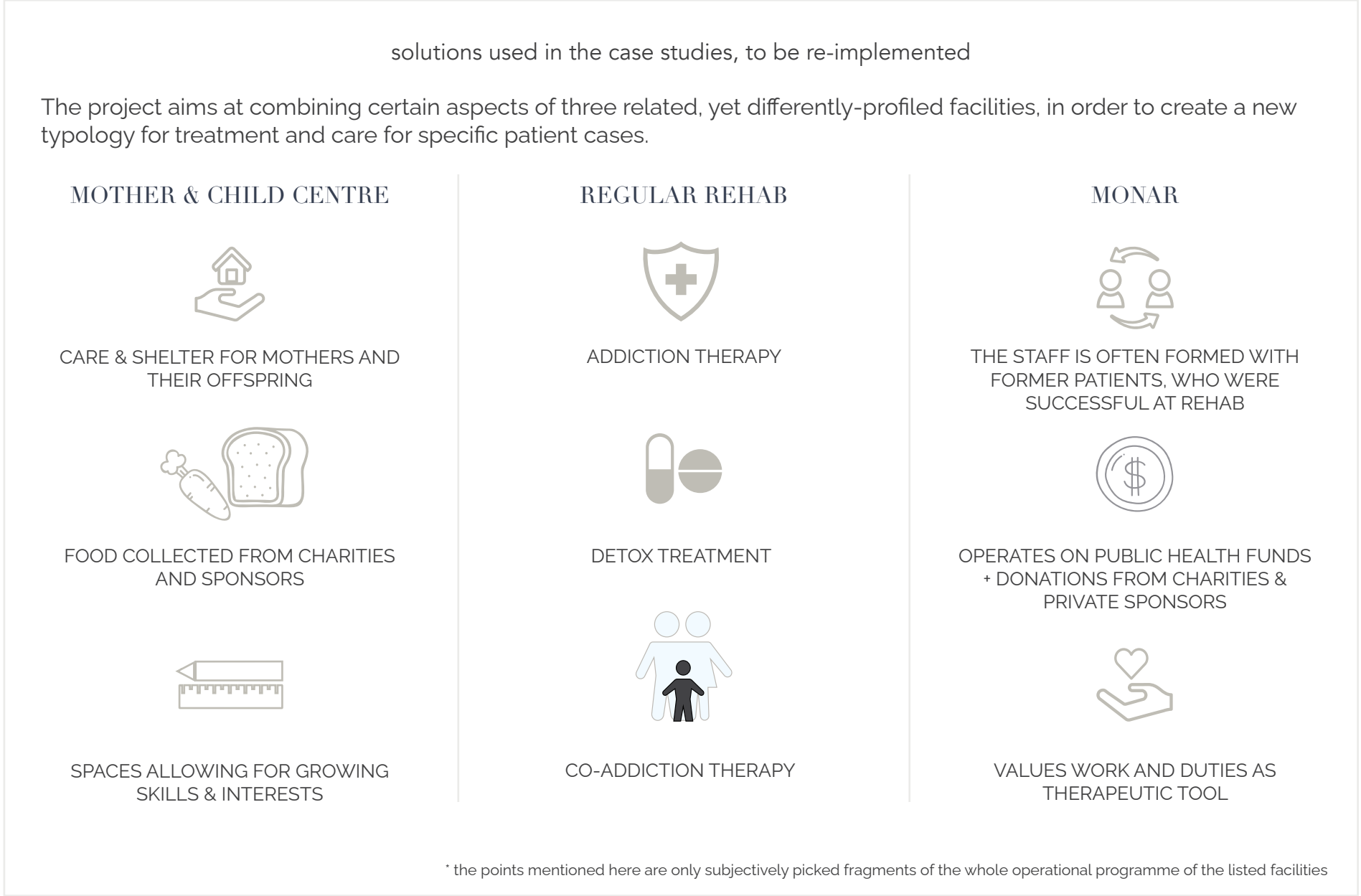
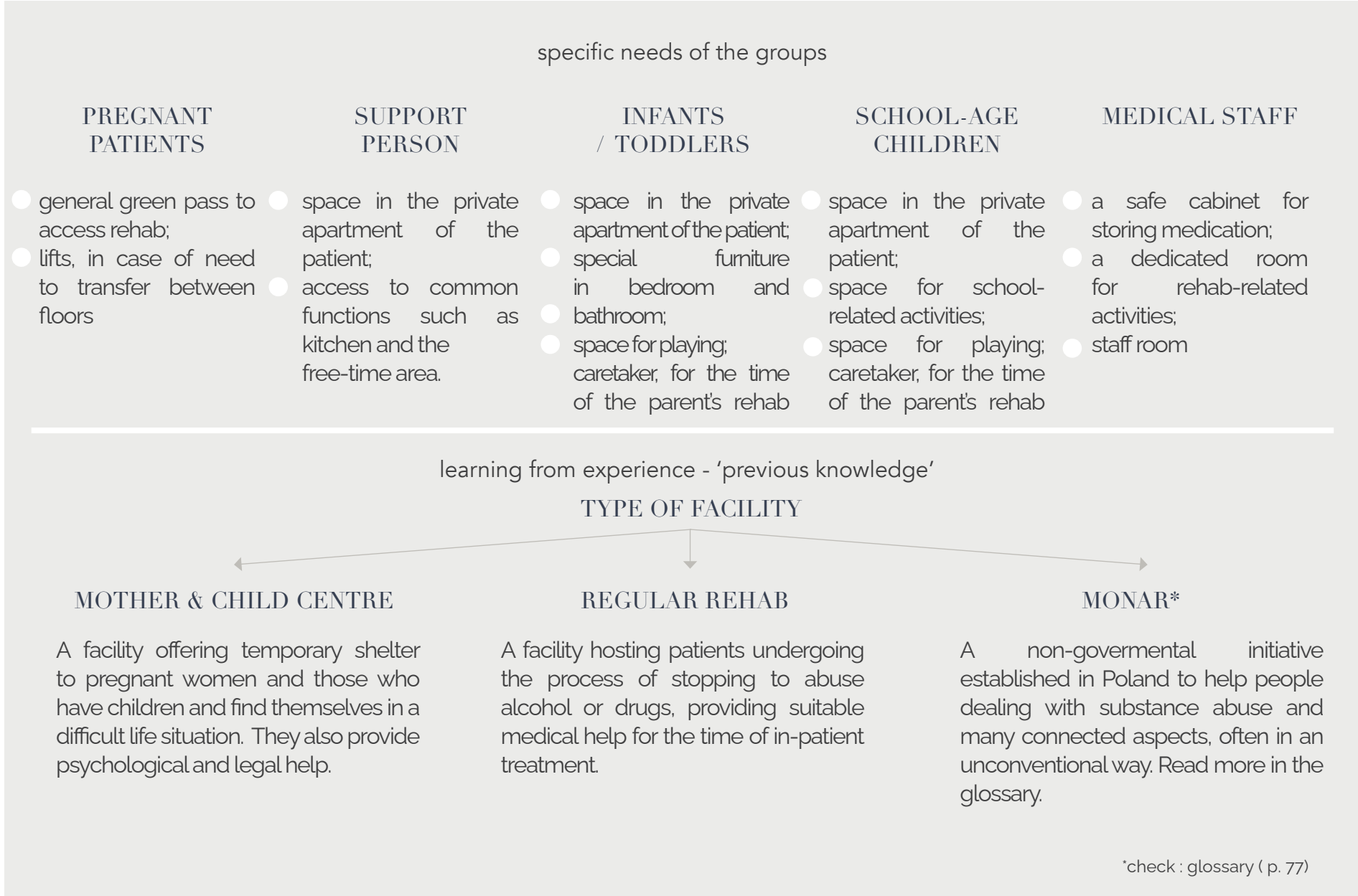
Care for patients with dual-diagnosis

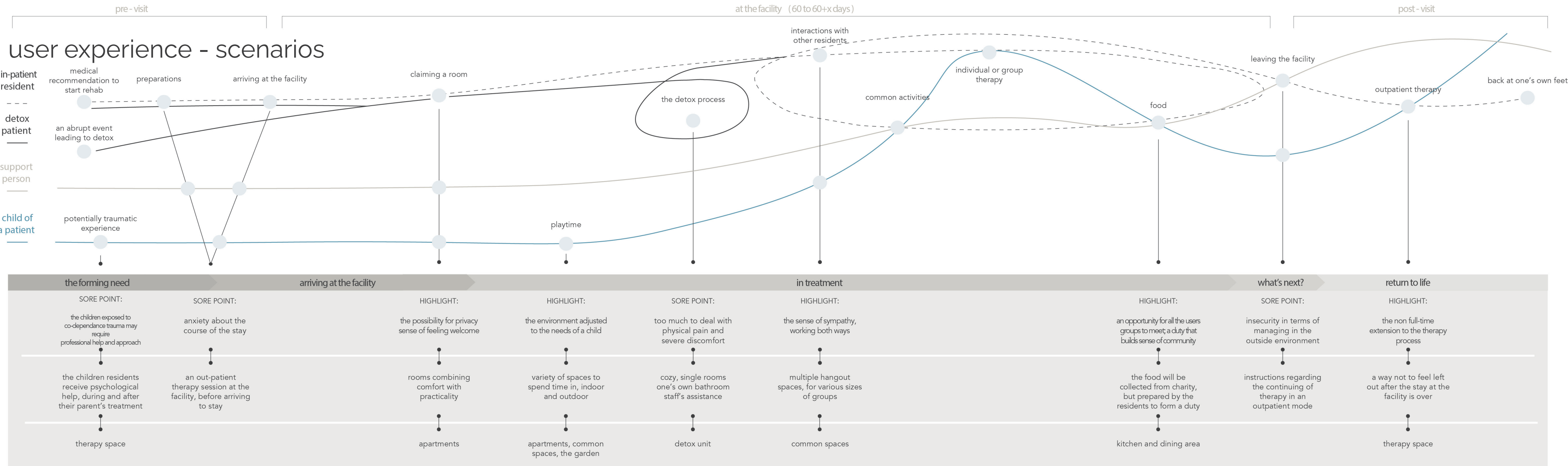


Friendly and supportive space in a local help unit

removing the barriers





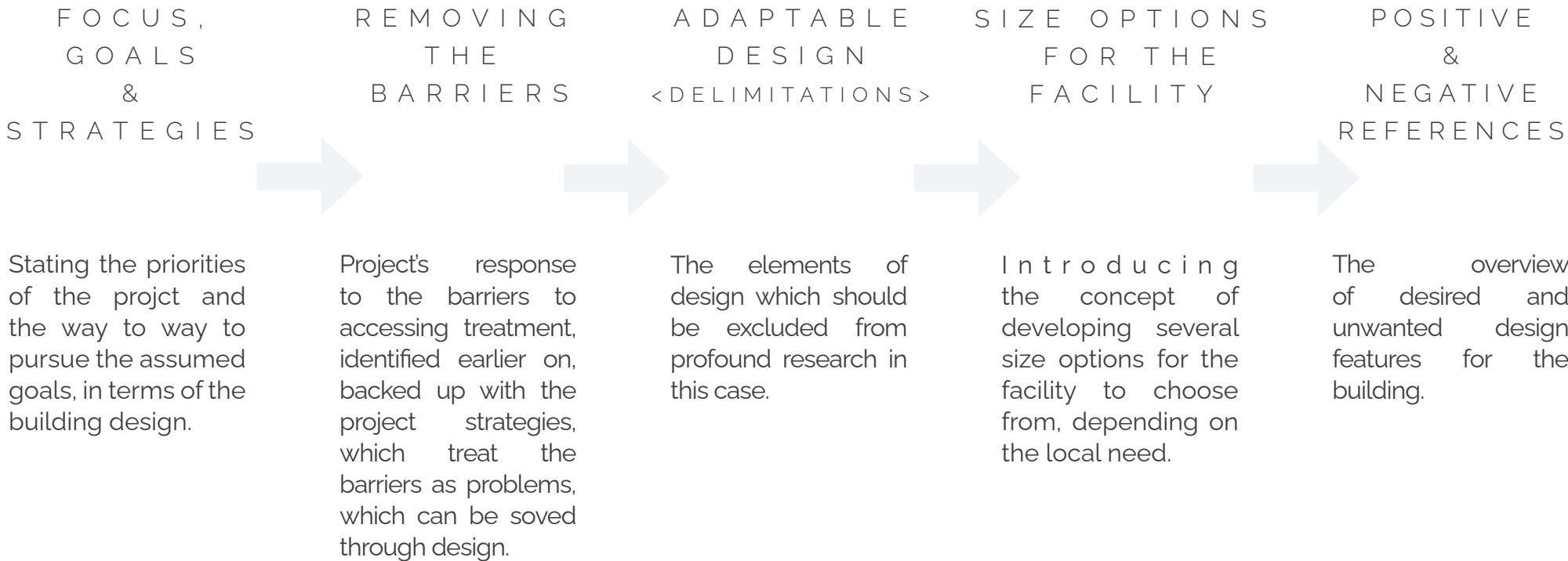


*the scenarios refer to a successful / desired rehab outcome

CONCEPT

- ARCHITECTURAL

The concept for the design project aims at being a response to problems and challenges identified in the research phase of the thesis and illustrated in the preceeding chapter. It will later translate into architectural solutions used in the development of the building design.



FOCUS

1. The goal is to create a versatile design, which could be easily adapted to any site and therefore help with providing a network of rehab facilities accessible for the population of the less urbanized or completely rural areas, even when facing the lack of big funds.
2. There should be modular way of thinking, which should allow for creating several sizes of the facility, from which the community and their administration unit could choose, depending on their own size and needs. There should be a possibility for expansion, in case of a growing need.
3. The project should provide a summary of realistic recommendations for choosing a plot for the facility, in a way that would make the most efficient use of the design.

GOALS



CREATING A FACILITY TYPOLOGY WHICH COULD FORM A NETWORK



VERSATILE EXPRESSION, EASY TO MULTIPLY



ADAPTABLE TO MOST SITE-SPECIFIC CONDITIONS

STRATEGIES



replicable design



low-cost COMPACT option with potential for expanding



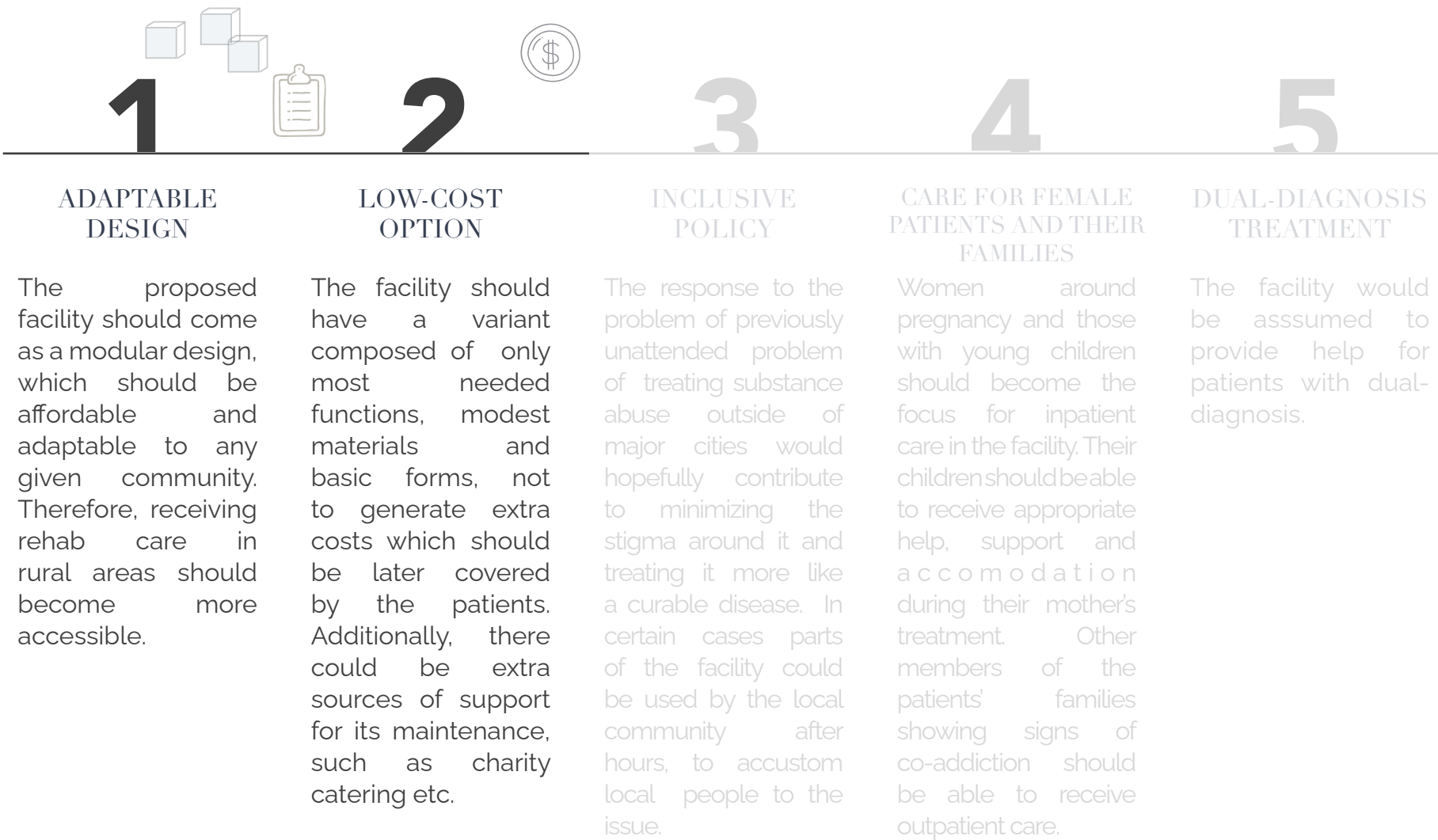
providing recommendations for choosing the plot



following guidelines of how to fit with most rural scapes*

*look : page 35

removing the barriers



positive & negative references

atmosphere



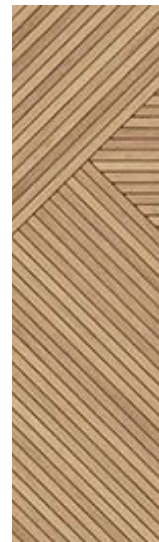
The feeling of seclusion and isolation from the world.
<https://pl.pinterest.com/pin/364369426109925130/>



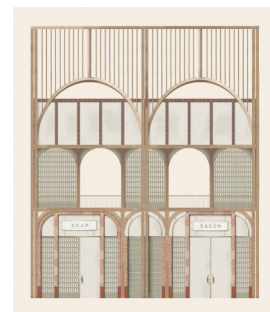
The feeling of being embedded in nature.
<https://pl.pinterest.com/pin/364369426109925092/>

facade expression

materials



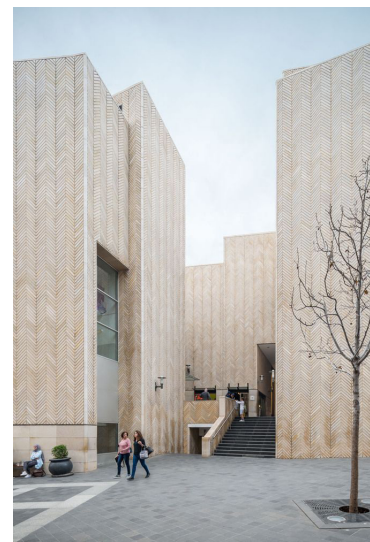
Timber finishes.



Wooden structure.
<https://pl.pinterest.com/pin/364369426109935093/>



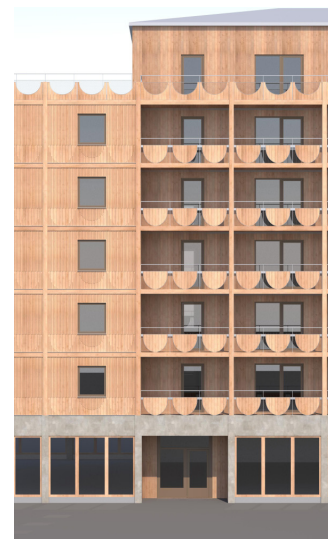
Concrete.



Meaningful windows.
<https://pl.pinterest.com/pin/364369426109925061/>



Cold minimalism and repetition. Excessive paving.
<https://pl.pinterest.com/pin/364369426109924996/>



Simplicity, yet characteristic features.
<https://pl.pinterest.com/pin/364369426109924932/>

form & geometry



Interesting geometry of modules.
<https://pl.pinterest.com/pin/364369426109926290/>



<https://pl.pinterest.com/pin/364369426109926334/>



<https://pl.pinterest.com/pin/364369426109926338/>



<https://pl.pinterest.com/pin/364369426109926381/>

Oversimplicity and hangar-like feeling.



<https://pl.pinterest.com/pin/364369426109927209/>



<https://pl.pinterest.com/pin/364369426109927397/>

Village-like look from the outside.

interiors



<https://pl.pinterest.com/pin/364369426109927466/>
 Luminous spaces.



<https://pl.pinterest.com/pin/364369426109927477/>
 Room in a room.



<https://pl.pinterest.com/pin/364369426109927439/>



https://pl.pinterest.com/pin/AV_-bWcuOYo4bycy29Df
 Simple furniture.



<https://pl.pinterest.com/pin/364369426109927418/>
 Natural and neutral finish materials.

FUNCTIONAL PROGRAMME

Analysis of the functions required in the designed facility, their sizes and their mutual links and connections.

MAP OF FUNCTIONS

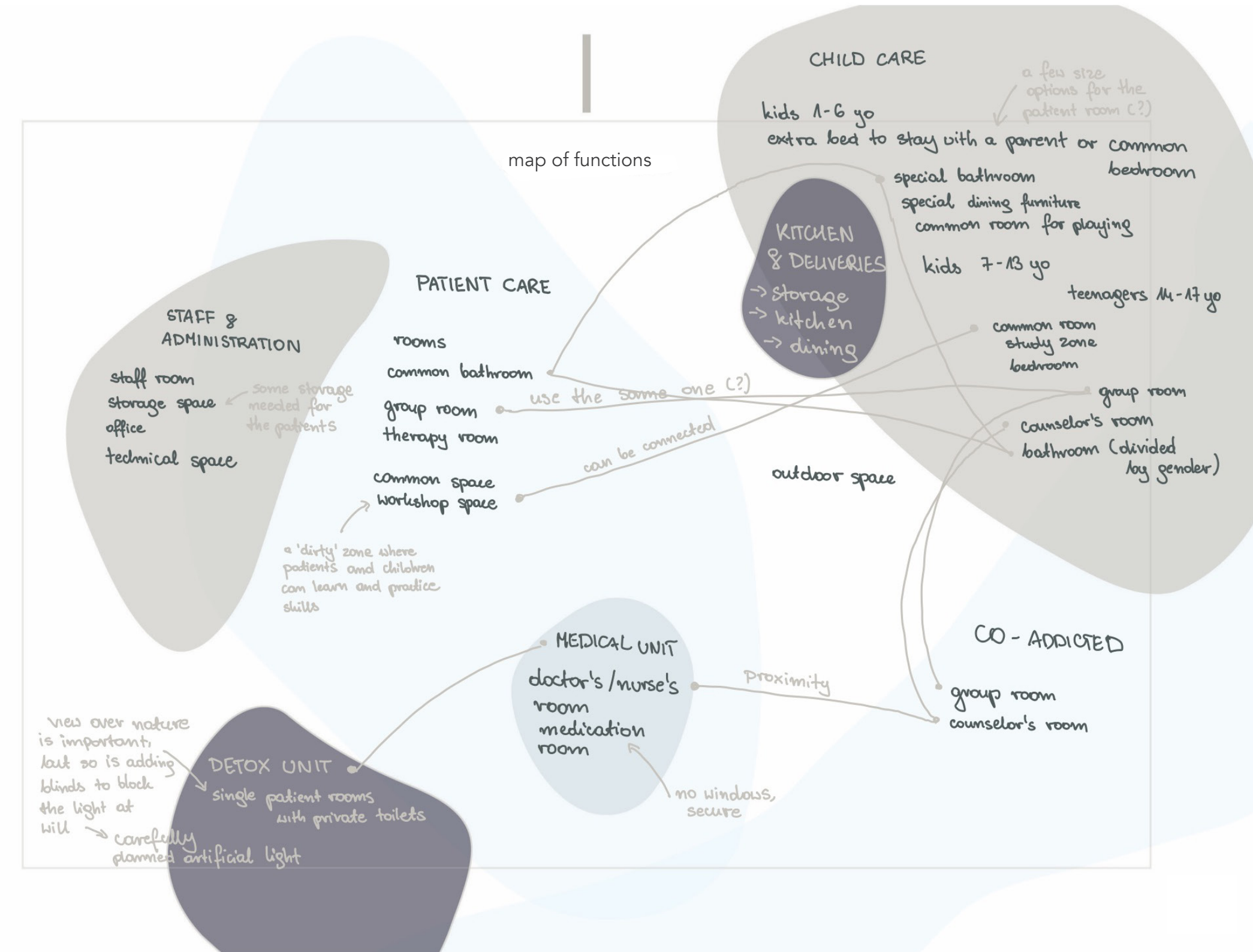
A sketch, picturing the functions required in a rehab facility.

CLUSTERS OF FUNCTIONS

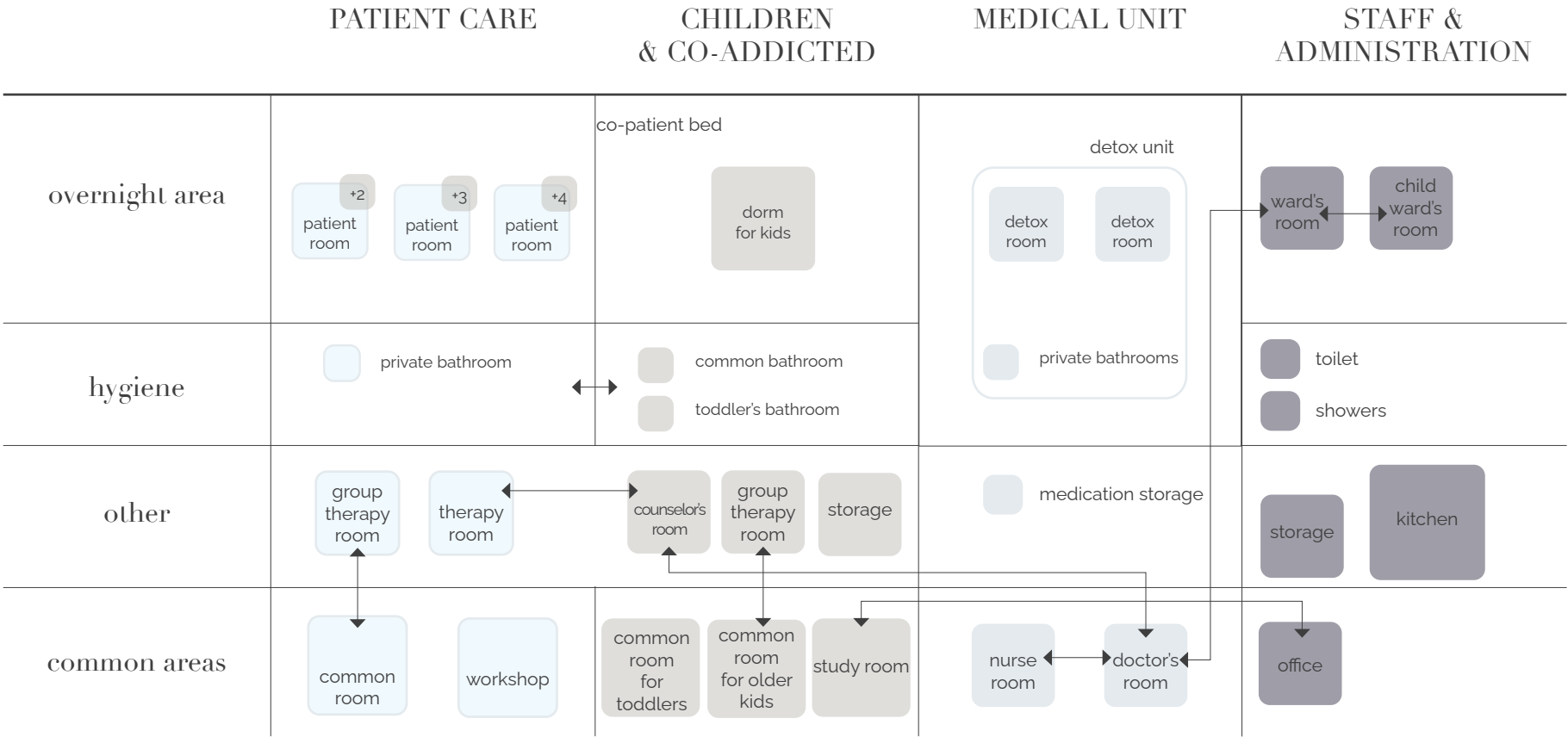
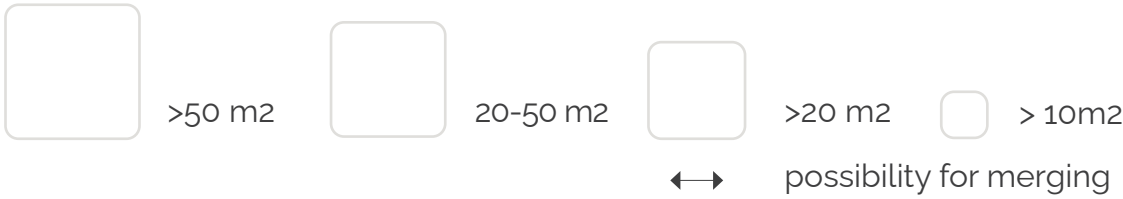
Schematic picturing of the functions embedded in a rehab facility, their sizes and their mutual connections.

SIZE OPTIONS: FUNCTIONS

Sorting the functions in accordance to the requested size of the facility (introducing several options).



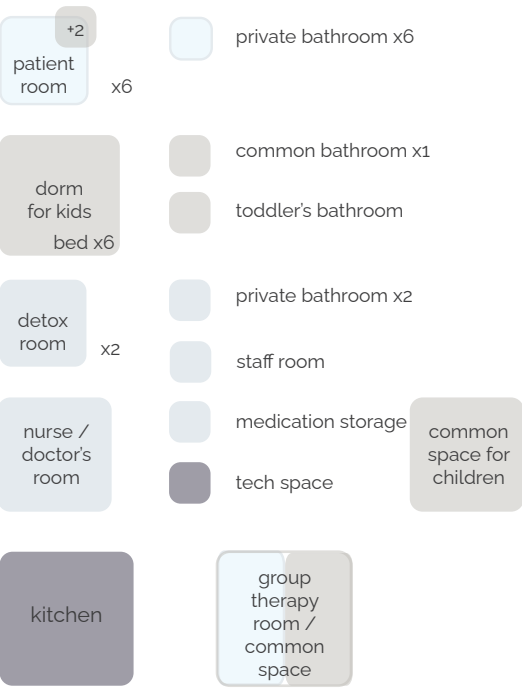
clusters of functions



size options : functions

COMPACT

max. 6 patients + 12 co-patients
the space compacted to the maximum for
low cost construction and maintenance



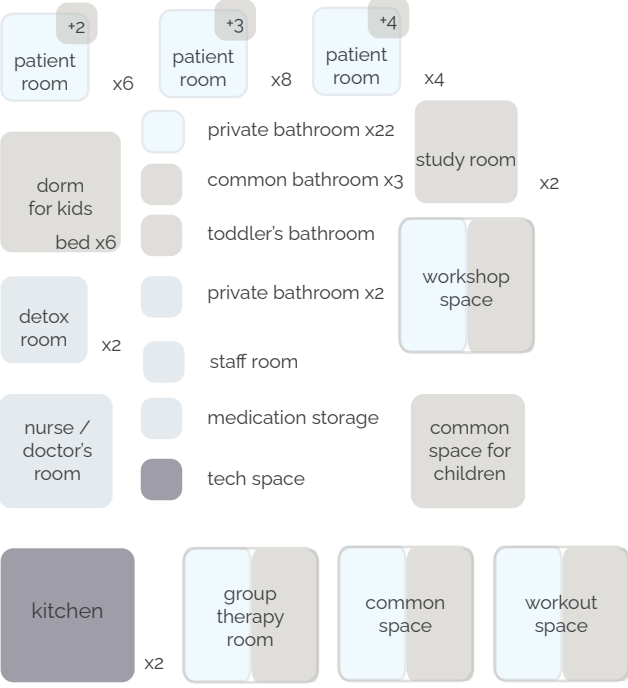
REGULAR

max. 14 patients + 36 co-patients
facility size meant for a town typology



EXTENDED

> 22 patients + 52 co-patients
extended scope of staff and infrastructure,
meant for bigger funds & more urban setting



FORM DEVELOPMENT

The documentation of process of coming up with the form for the building.

SIZE OPTIONS: ARCHITECTURAL FEATURES

The expression of the building will vary, depending on its size. The smallest facilities will have a clear focus on being affordable for rural areas, while the big ones will allow for more investment into architectural expression.

GUIDELINES TO FIND THE MODULAR GEOMETRY

General ideas for how to make the building flexible and fit any given site (with regard to the size options).

SKETCH STUDY OF MODULES

Diagrams and sketches regarding form of the modules, leading to conclusions for design.

THE CHOSEN GEOMETRY

Schematic drawings, showing in what way the geometry of the facility changes, growing from Compact to EXTENDED, advantages of the chosen geometry and connected strategies.

size options : architectural features

COMPACT

- attempt to keep the building shape compact for low heating cost;
- shape of the building thought-through in a way to fit on narrow plots;
- exercising a simplified, low-cost version of the facade

REGULAR

- in the process of expanding from COMPACT to REGULAR, embellishments on the basic version of the facade can be added

EXTENDED

- extra floor;
- adapting the versatile design to the given site, by adding custom elements.

guidelines for fitting in with most rural scapes* :

NOT HIGHER THAN TWO FLOORS

natural and neutral finish materials

PITCHED ROOFS

finishing touches of local style details

subdivided volumes

surrounded by greenery

*applies to COMPACT and REGULAR size options

ways to make the design universal (not one site specific)

1

the small-sized facilities should be of compact shape, to fit on a narrow plot;

2

there should always be a double pitched-roof to ensure at least one PV-profitable direction;

3

there should be a possibility of mirroring the design in accordance to views on a given plot;

4

the links and connections between modules should be a subject to easy adjustments;

5

There should be more than one fitting option for the main entrance;

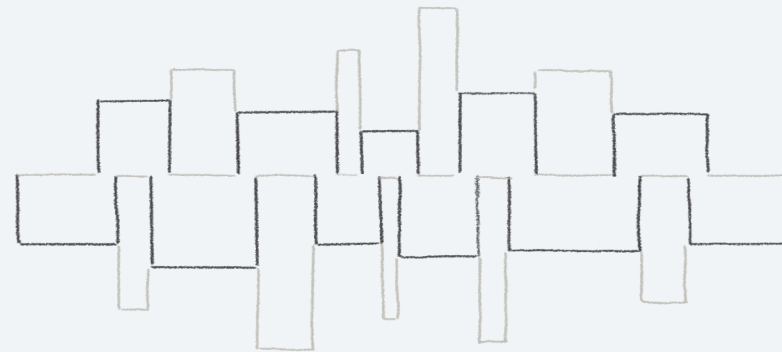
6

It should be possible to expand the facility beyond the REGULAR with geometrical ease.

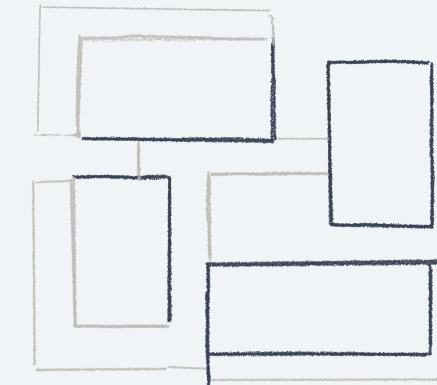
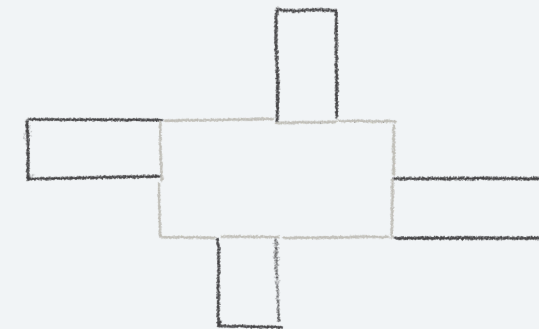


- ⊕ suitable for a narrow plot
- ⊕ easy to divide into units
- ⊖ hard to arrange central common-space
- ⊖ not very PV-efficient

- ⊕ easy to add modules / functions
- ⊖ many corners - expensive
- ⊖ long 'corridor' / sequence of spaces



- ⊕ all modules have the same size
- ⊖ not suited for narrow plots
- ⊖ hard to expand



- ⊕ nice patio
- ⊕ good proportions of buildings
- ⊕ expandable
- ⊕ big spaces, if necessary

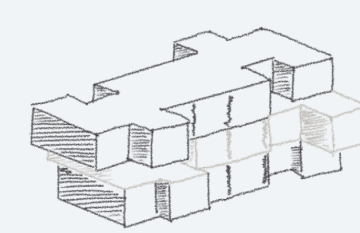
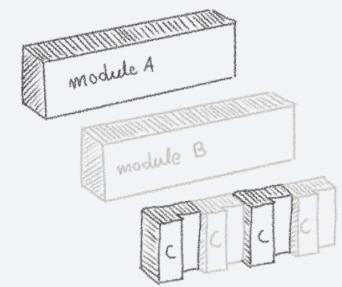
A2

TYPES OF MODULE ORGANISATION 'n FORM

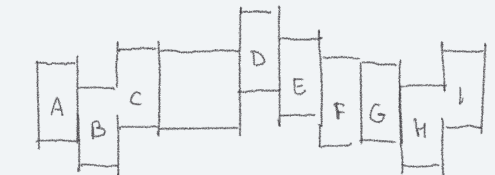
+ easy for growing depending on a site or in time

- hard to make the small type coherent with bigger ones or it would have to be more than one volume too

- separate volumes = bad heat loss parameters



possibility to add modules with time →

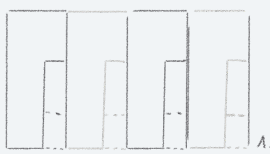


+ container-compatible

+ suitable for narrow plots

- linear communication
+ easy to grow upwards

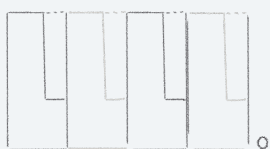
fancy top
simple bottom



+ interesting shape
+ overlapping modules, easy to add

+ really nice form for the small facility

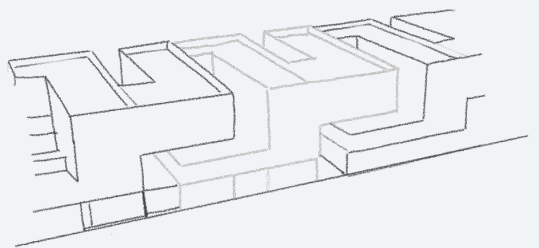
- impossible to add a second floor after some time



- expensive
- linear communication

+ can be used as just one module type, complemented by other ones

+ container-compatible



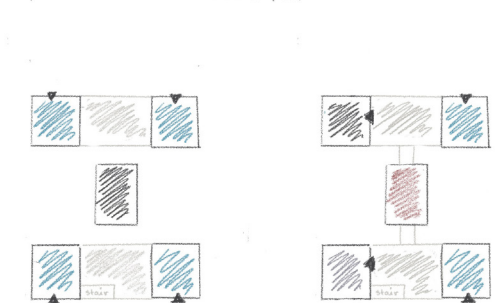
- expensive
- difficult to multiply



+ same qualities as the middle drawing, but probably cheaper

the chosen geometry

GROUND FLOOR COMPACT SECOND FLOOR



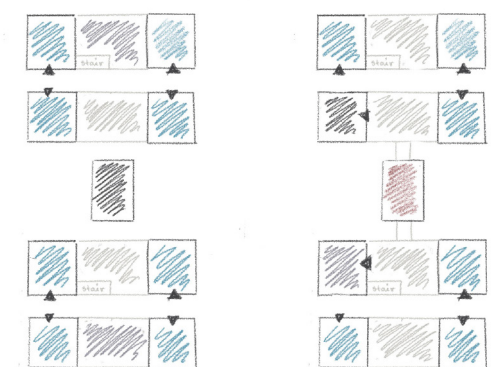
apartment
kitchen + dining / working tables
children zone
living room with division for four/fun zones

apartment
common space
detox unit
medical staff
dorm

COMPACT

two floors,
one row of apartments

GROUND FLOOR REGULAR SECOND FLOOR



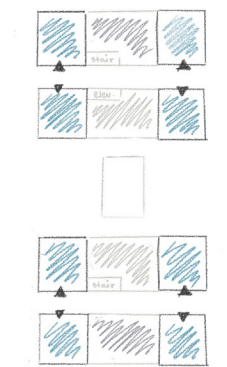
apartment 42m²
kitchen + dining / working tables
children zone
living room with division for four/fun zones

apartment 42m²
common space
detox unit
medical staff
dorm

REGULAR

two floors,
two rows of apartments

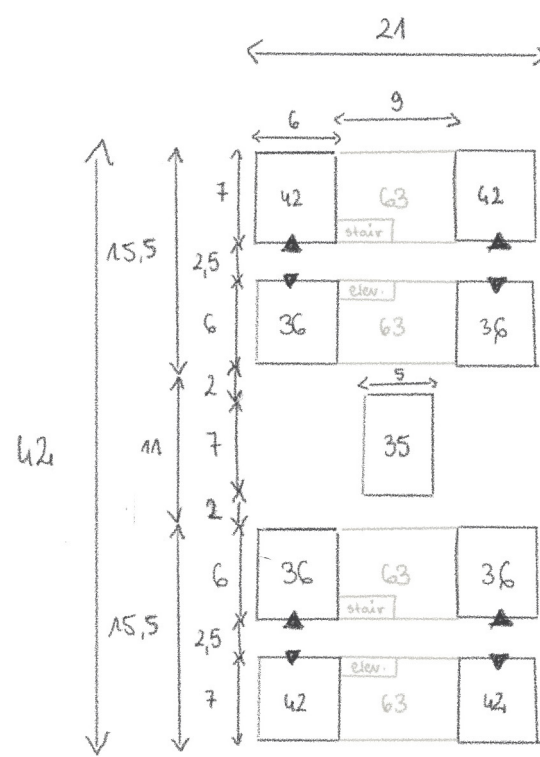
THIRD FLOOR - EXTENDED -



apartment 42m²
kitchen + dining / working tables
common space

EXTENDED

three floors,
two rows of apartments



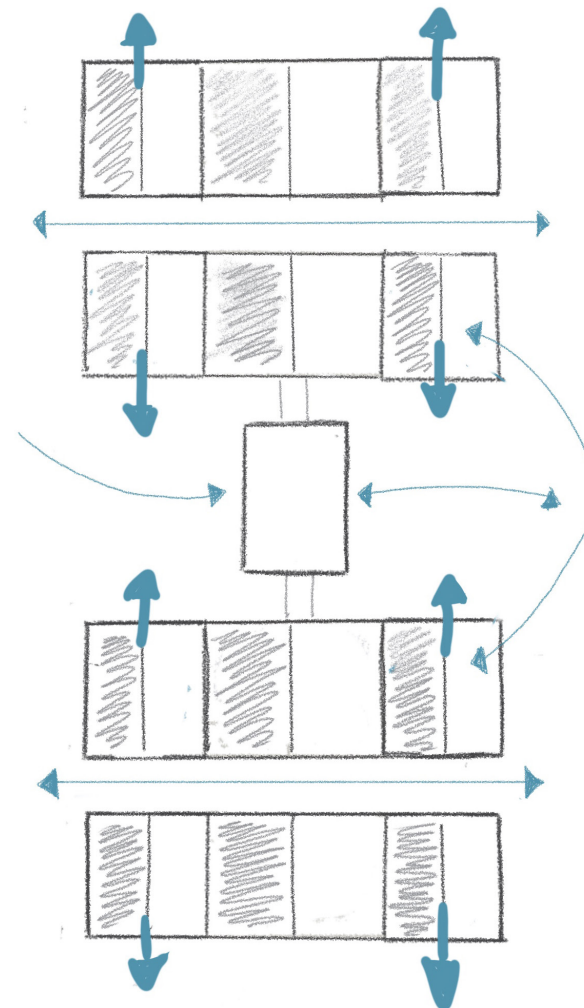
advantages of the chosen geometry

there is a clear scheme for expanding from COMPACT to EXPANDED and the modules are easy to spot

the daycare and medical staff unit are located centrally and equally accessible to all residents

and

the children playing in the daycare can access the in-between wings garden directly



there are always roof surfaces oriented towards south or west, for efficient PV-placement

there are two, mirrored 'wings'

all the apartments can look out at greenery, if there is a garden between the wings

there is a clear organisation and communication scheme and the apartments have entrances independent from the main entry point

what is generic and what is site specific?

GENERIC ELEMENTS

- shape of the modules; the expansion pattern;
- placement of functions in the modules
- furnishing from the angle of provided infrastructure

SITE SPECIFIC ADAPTATIONS

- materials used for insulation and finishes - making the use of local resources and opportunities;
- outdoor design / landscaping elements

ways of staying low-cost

COMPACT version of the facade, with reduced energy efficient building shape

easily replaceable elements

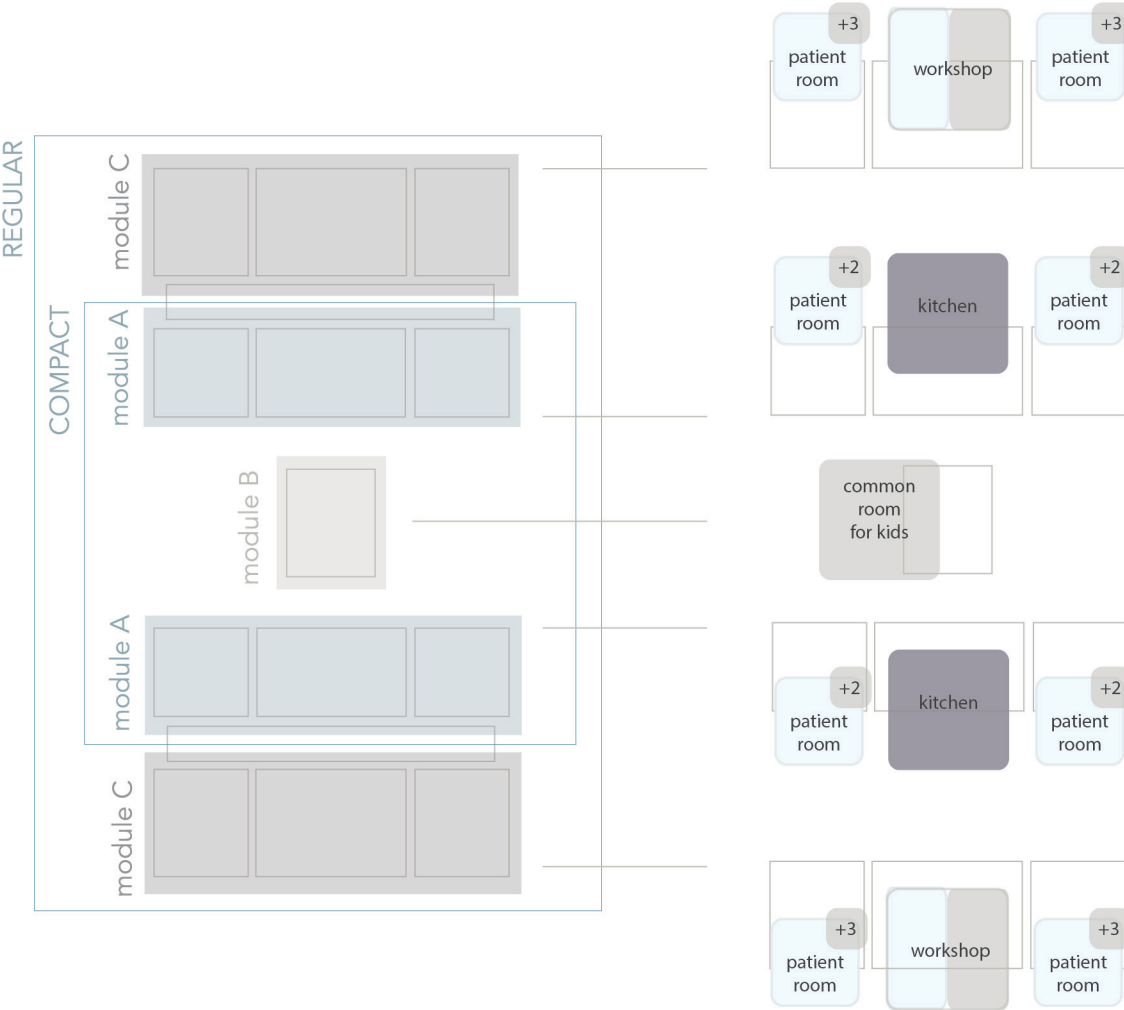
potential for in-house solar energy

avoiding unnecessary corners and joints
standard-sized windows & doors

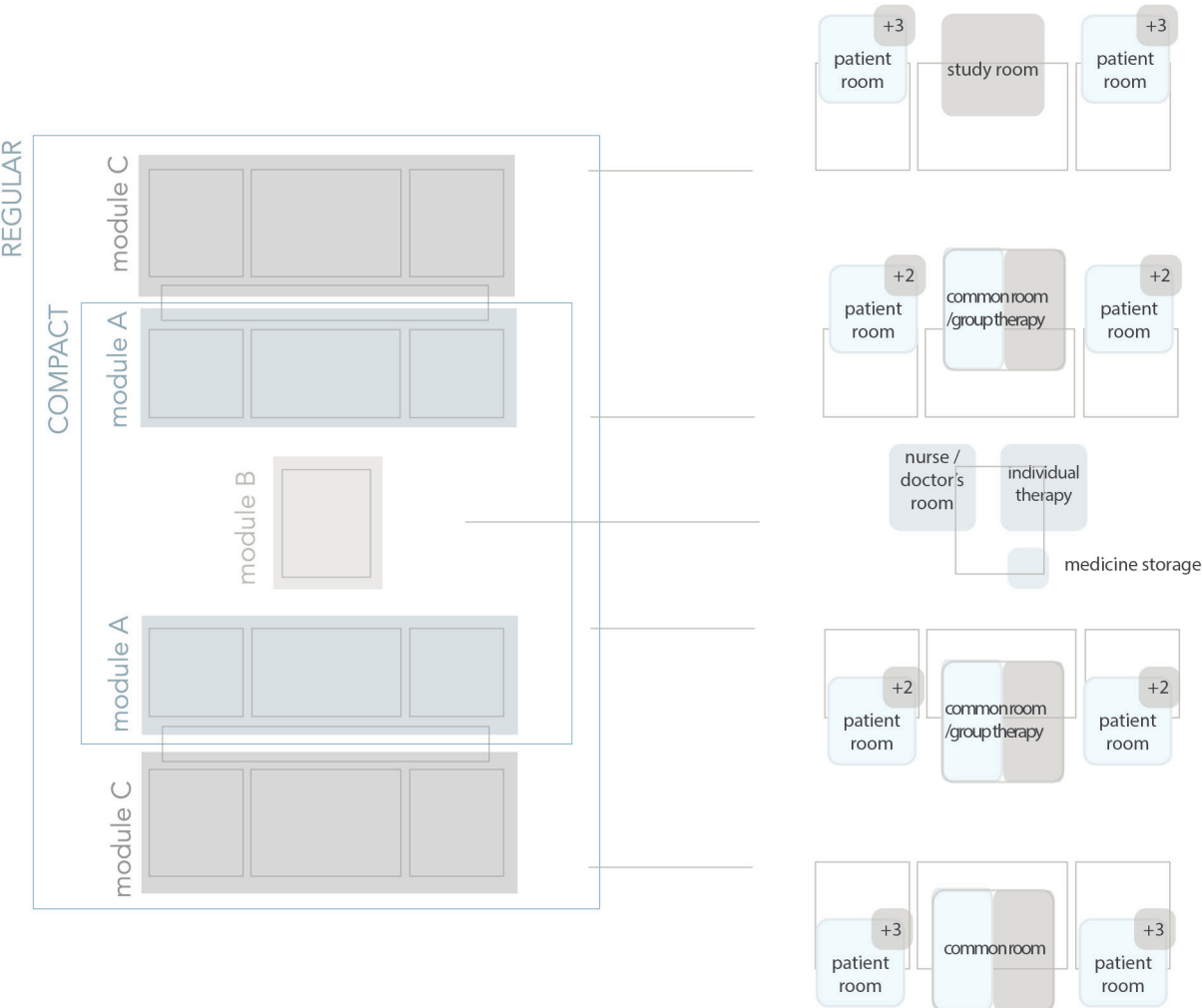
energy efficient building components

functions -> modules

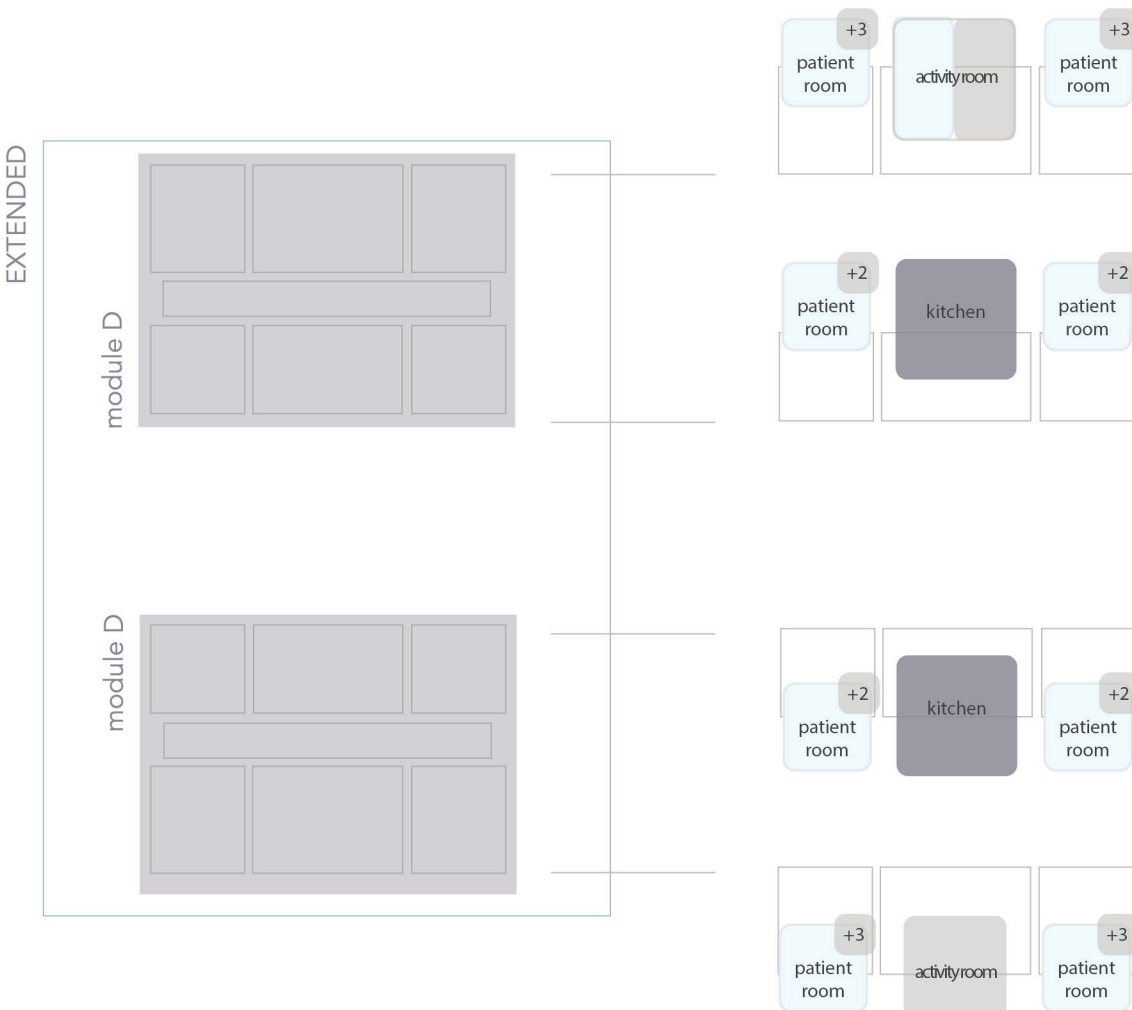
GROUND FLOOR



SECOND FLOOR

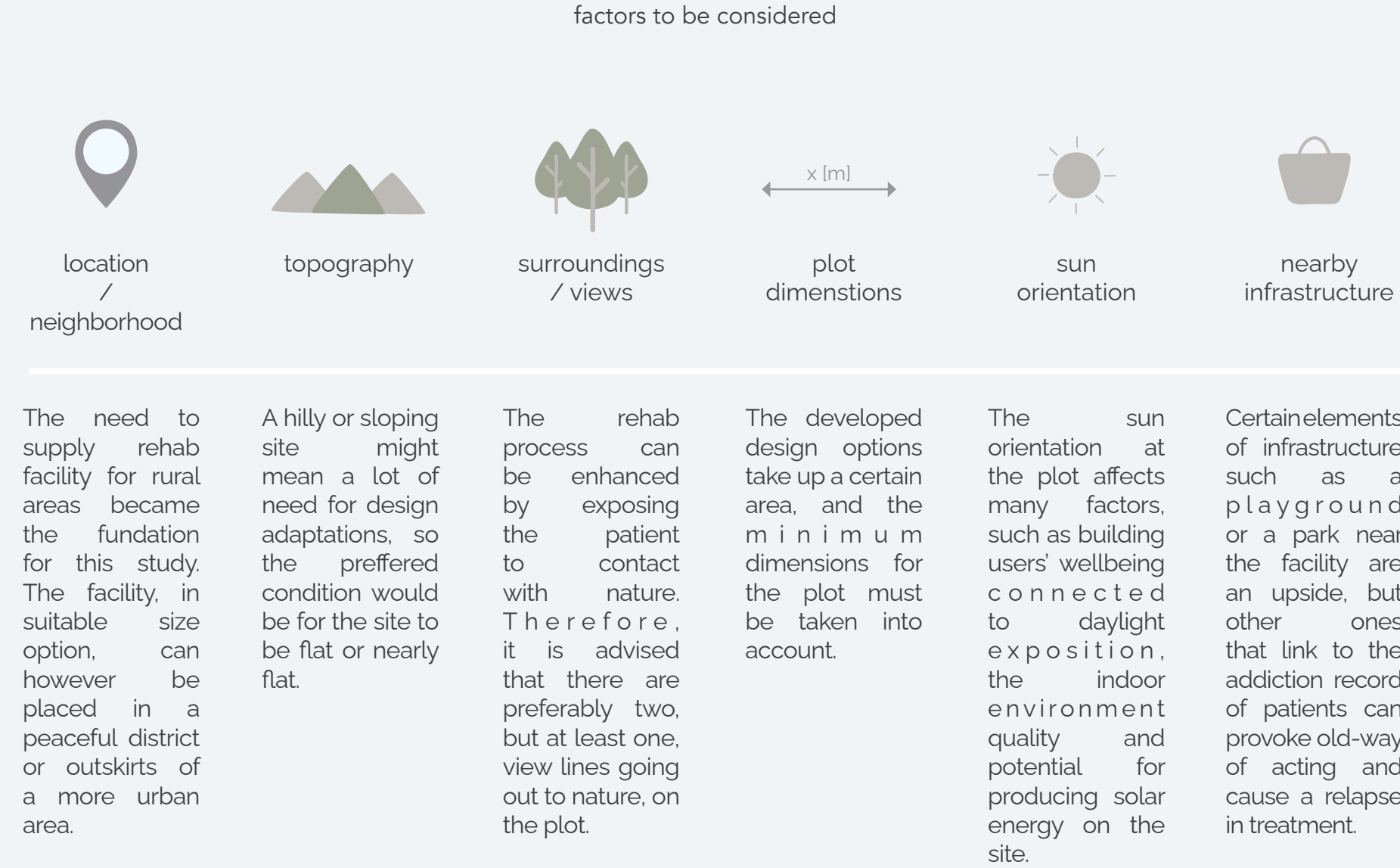
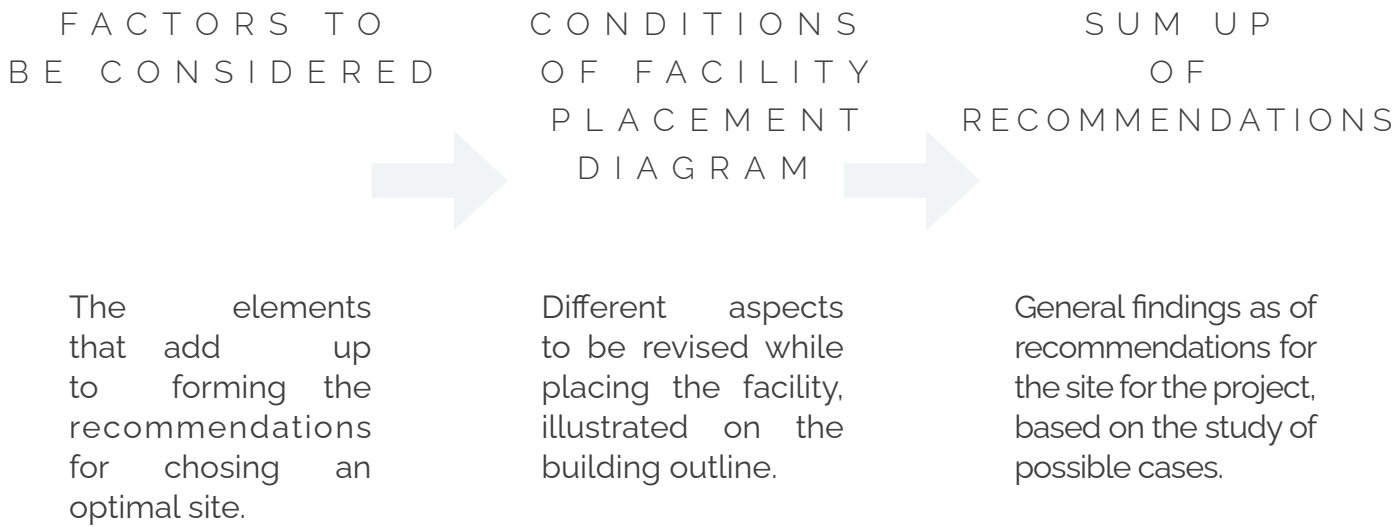


THIRD FLOOR



SITE RECOMMENDATIONS

Thoughts about geometry of the expandable facility and recommendations for placing it on various plot cases.

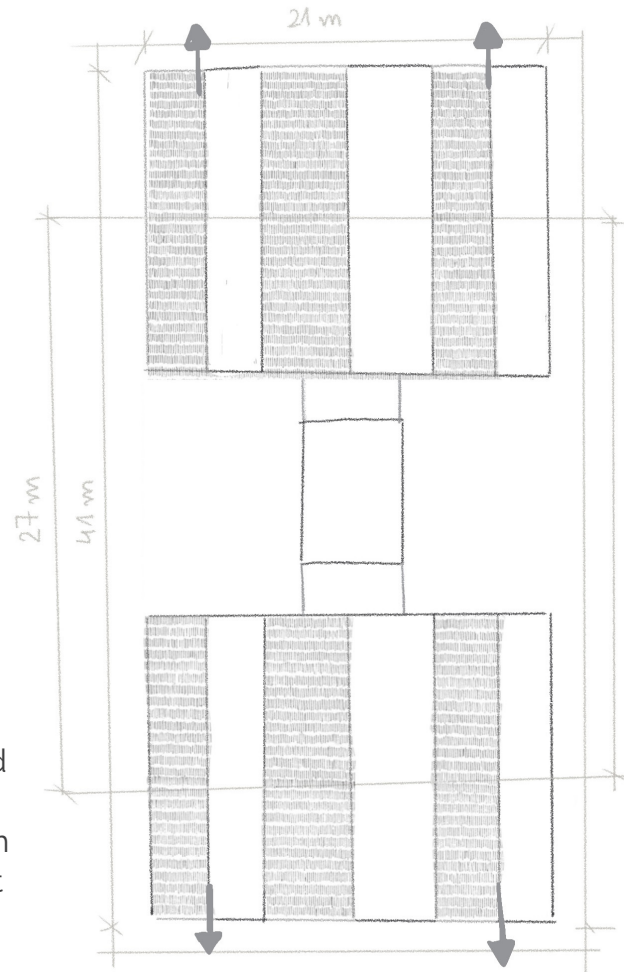


conditions of the facility placement

the gable views should be prioritized, since the apartments are located there

the distance between the volumes might be increased, if the length of the plot allows for it

the long side of the roof should preferably be exposed to southern sun, however western exposition can provide efficient PV production as well



the main entrance should be placed at either of the long sides of the facility

there should be an opportunity to plant greenery between the buildings

the facades landing on the southern or the western sides should get extra shading equipment

sum up of recommendations for the plot

COMPACT

- the site should be flat or almost flat;
- the site can be a simple rectangle, size of 29 by 35 meters, or 29 by 49 meters, in case there is a prospect of expanding to the REGULAR sized facility;
- it is best if the chosen site has a view over nature in two opposite directions;
- the longer side of the plot should preferably be on the east-west axis

REGULAR

- the site should be flat or almost flat;
- the site should be a rectangle, at least the size of 29 by 49 meters;
- it is best if the chosen site has a view over nature in two opposite directions;
- the longer side of the plot should preferably be on the east-west axis

EXTENDED

- the site should be flat or almost flat;
- the size of the required site is at least the same as for the REGULAR facility;
- it is best if the chosen site has a view over nature in two opposite directions;
- the longer side of the plot should preferably be on the east-west axis
- due to the 3-story height of the building, it should be located in the proximity of similarly sized volumes

DESIGN PROPOSAL

The chapter features in-depth development of an exemplary case of a REGULAR-sized rehab facility. Additionally, it showcases the design differences between the COMPACT, REGULAR and the EXTENDED design.

PICKED SITE - PRESENTATION

Brief summary of conditions on the site choosen for the exemplary design.

LAYOUTS

Plan views of all the floors of the facility, backed up with diagrams showing function placement and flows in the different size options.

VISUALISATIONS

Visualisations of interior and exterior of the facility, placed between other drawings, to facilitate the understanding of the space.

FACADES & SECTION CUTS

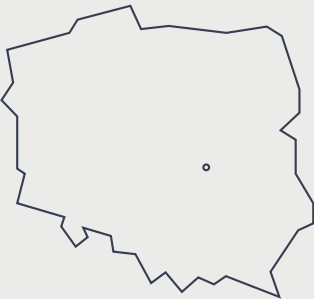
Images of facades / elavations and views cutting through the building.

how to read the chapter

The project consists of three alternative design options for the building and each of them introduces a different size of a facility. This chapter attempts at exhibiting them all in a way, which allows for comparison of the three versions. When applicable, they will be dispalyed next to one another and labeled with the SIZE tag. In terms of the layouts, the REGULAR and the EXTENDED facilities share the same ground floor and second floor plan, while the third floor only exists in the EXTENDED version. In terms of the facades and section cuts, they are in some cases the same for the COMPACT and the REGULAR size options and then the repeated drawing will not be displayed. Due to the fact that depending on the type of view, there is a different expansion pattern, it is impossible to repeat the same layout on all the spreads. Please look for the size guides on the top of the spread and in the drawing labels, through the entire chapter.

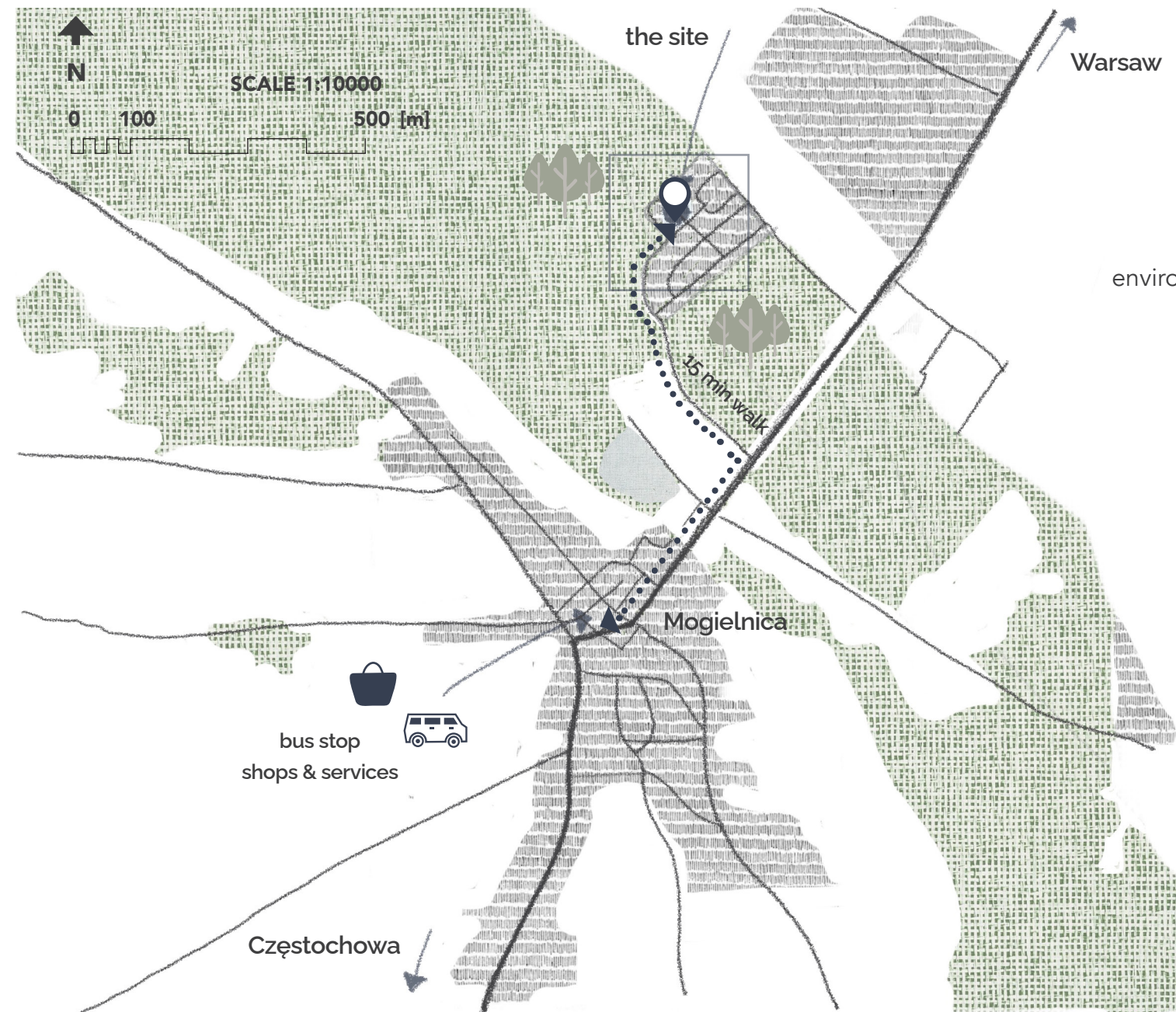
picked exemplary site - presentation

LOCATION IN POLAND



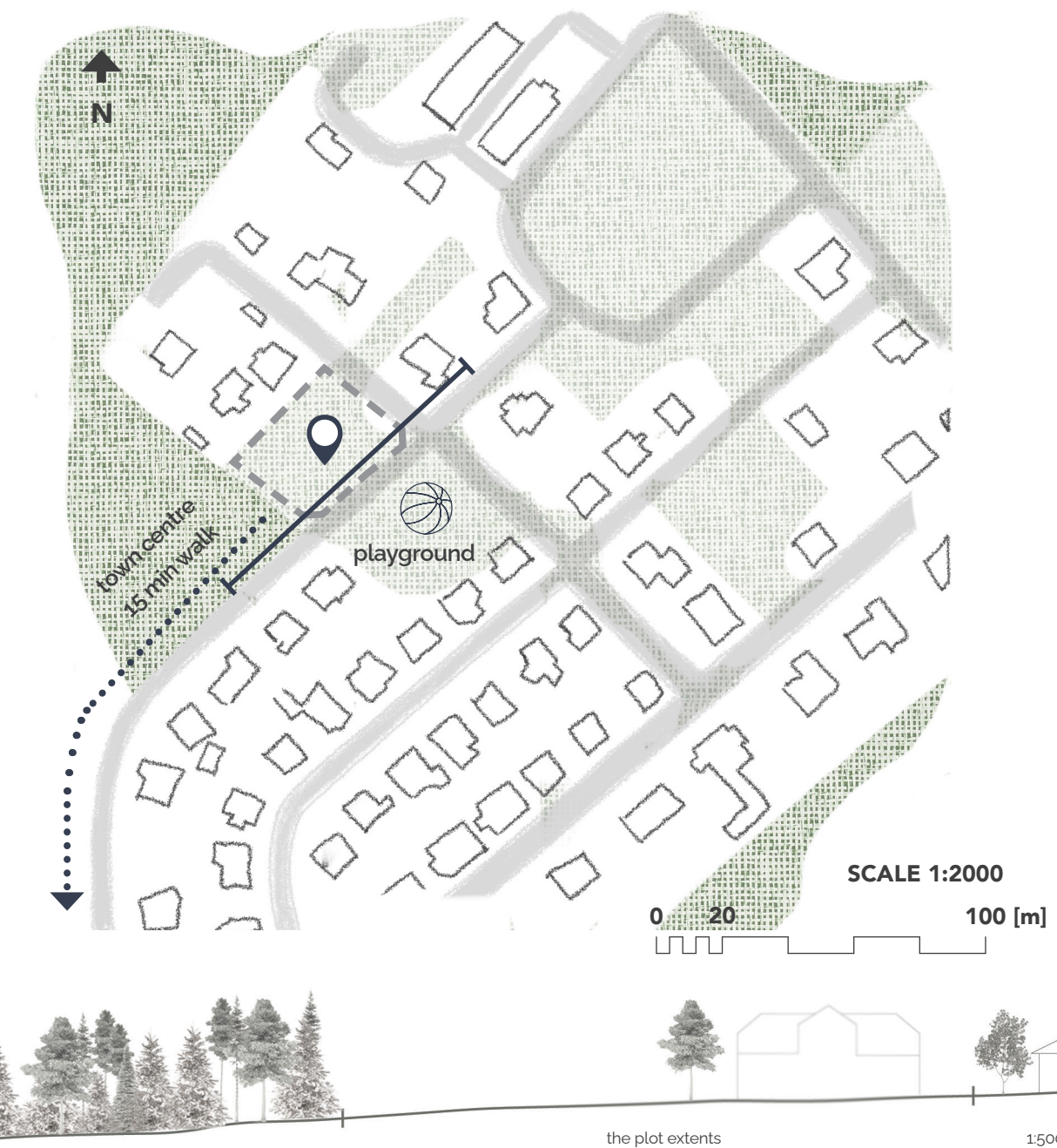
SITE CHOICE - EXPLANATION

I have decided to place an exemplary facility on a site in a setting which I am familiar with, in order to understand the atmosphere, the needs and the dynamics of the place; it will be located in Mogielnica, my ancestral town, located in central Poland, home to approximately 2300 inhabitants.



- forest
- overgrown plots
- built environment
- villa properties

- good for walks
- safe area for children to play around
- calm environment, a lot of greenery



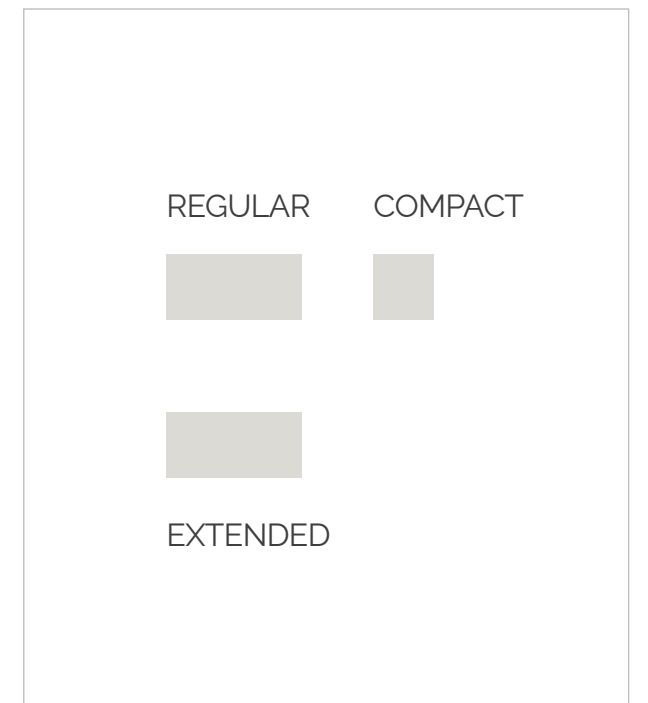
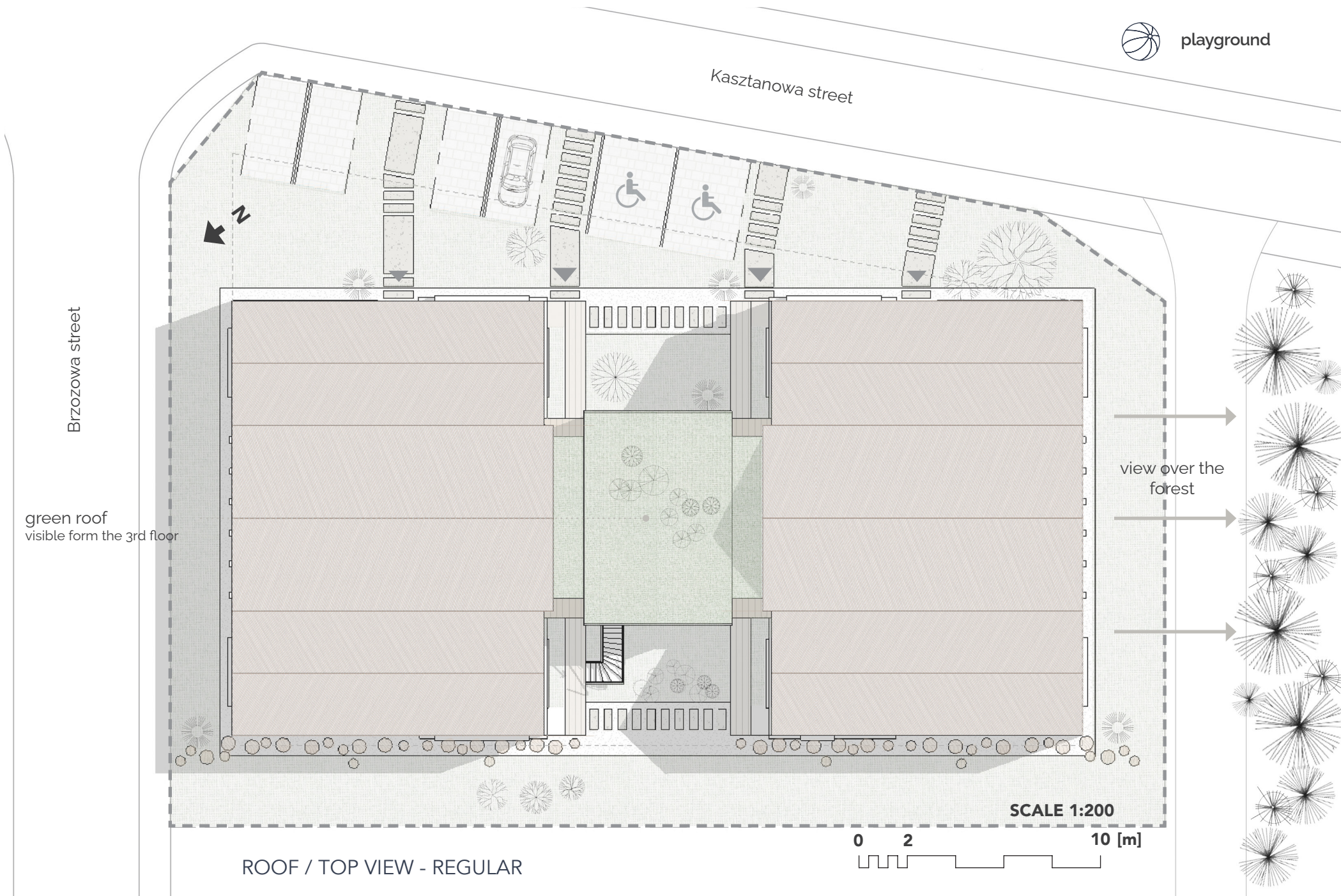
The town square in Mogielnica.



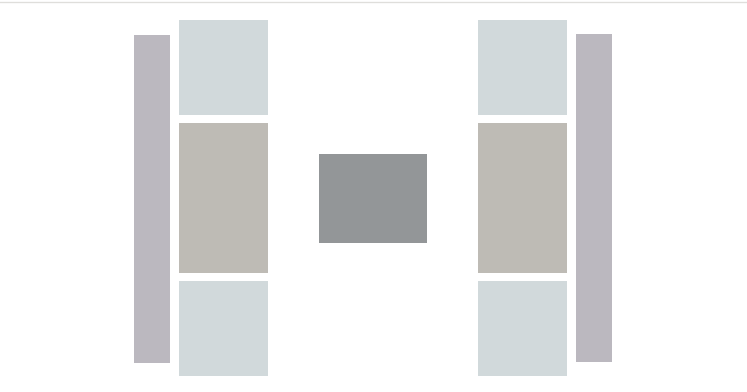
The site.



The site.

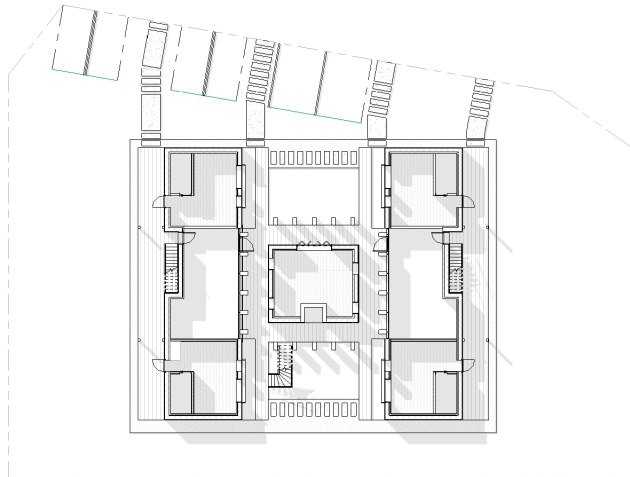


COMPACT VERSION



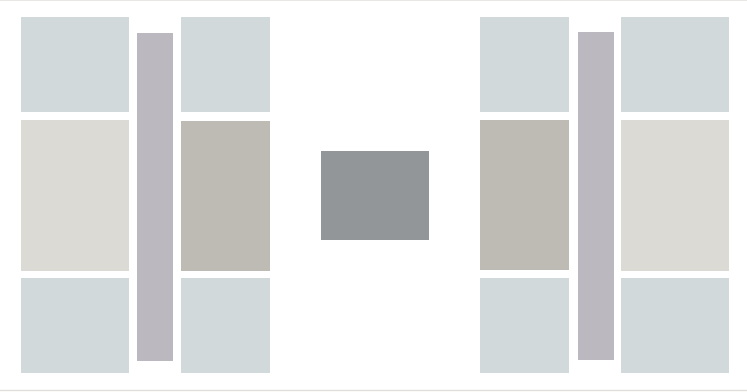
functions - diagram

- apartments 1+2
- common space
- kitchen
- corridor
- daycare



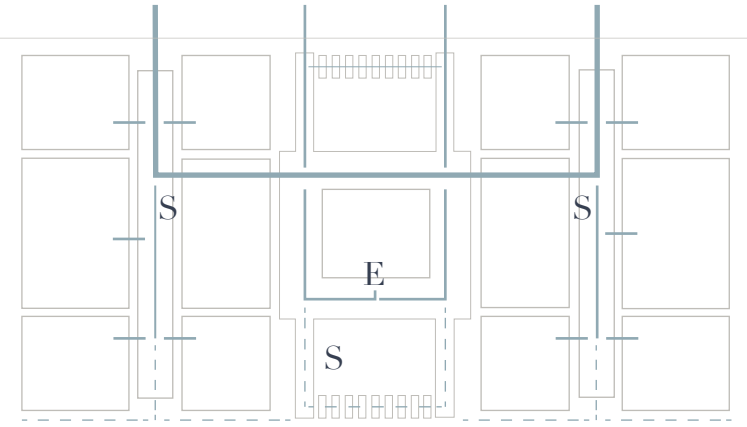
ground floor layout

- heavy traffic
- medium traffic
- seldom traffic
- S stair
- E elevator



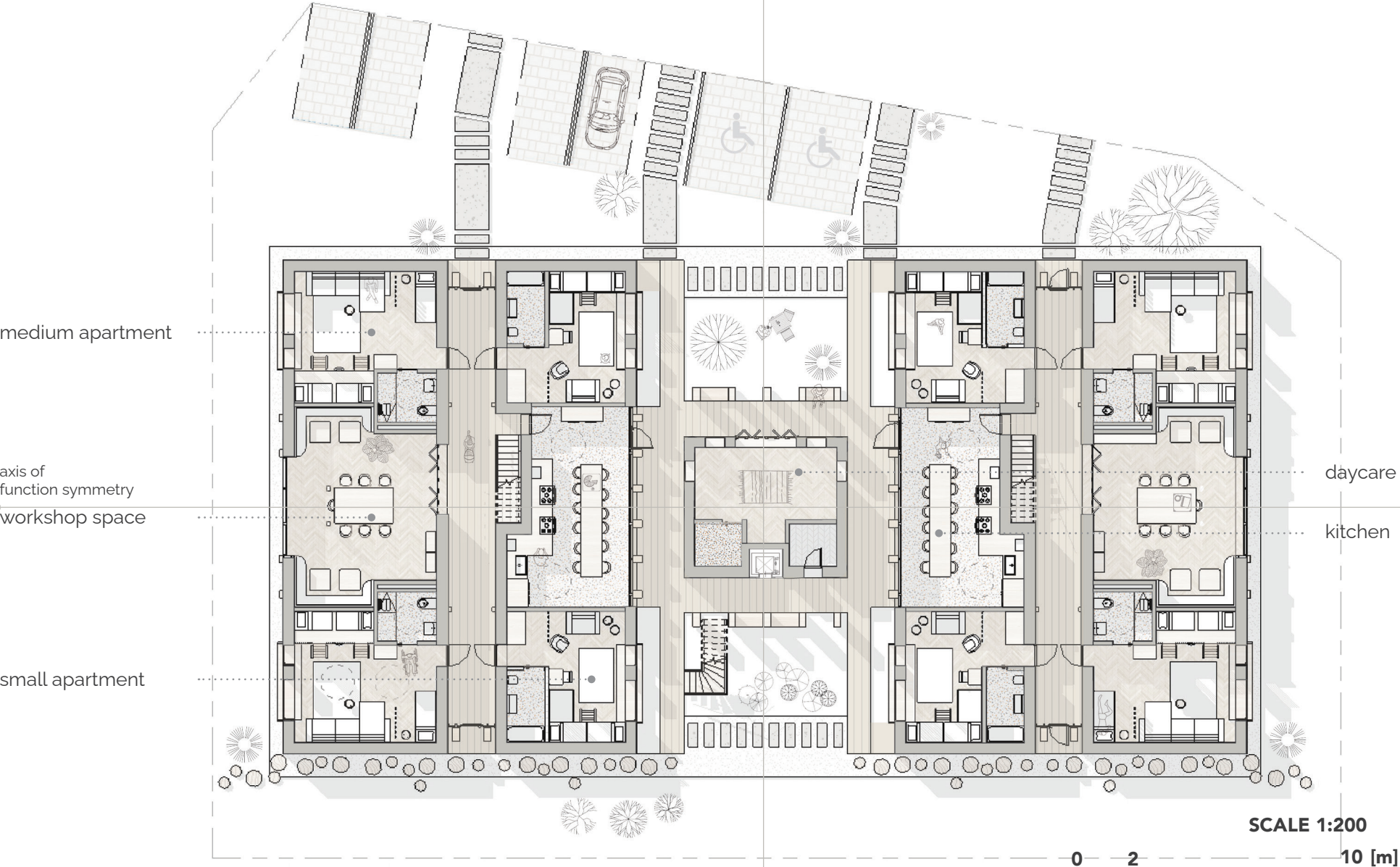
functions - diagram

The layout of the ground floor in EXTENDED version remains the same as in the REGULAR one.



flows - diagram

REGULAR & EXTENDED VERSION



medium apartment

axis of function symmetry
workshop space

small apartment

daycare

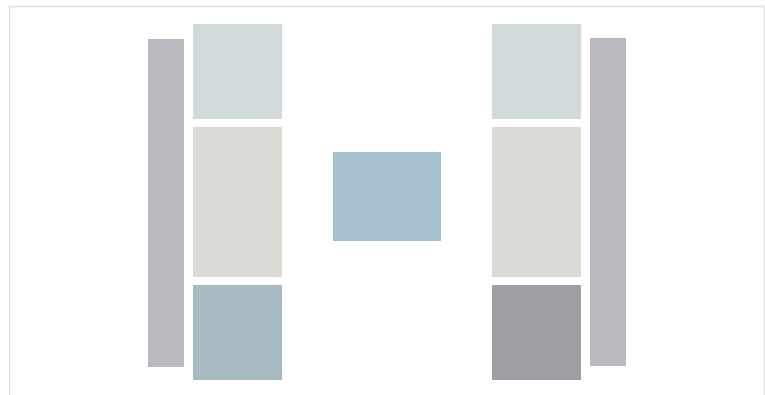
kitchen

GROUND FLOOR PLAN - REGULAR

axis of function symmetry

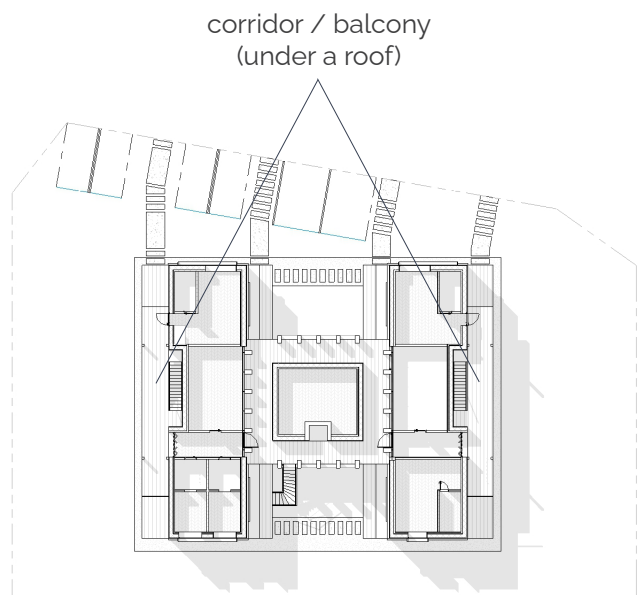


COMPACT VERSION



- apartments 1+2
- medical staff
- common space
- detox unit
- corridor
- dorm

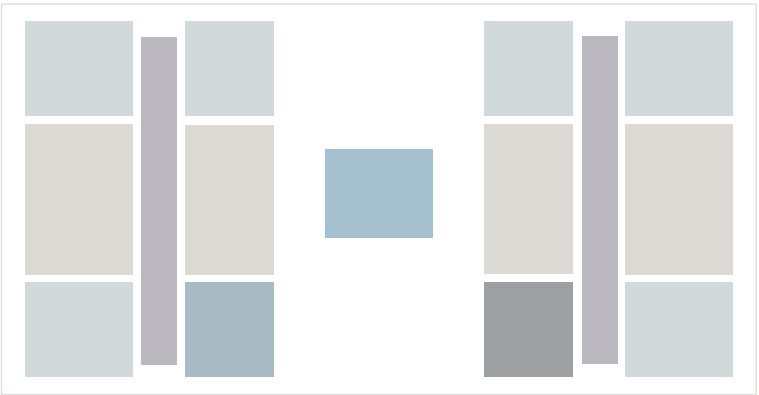
functions - diagram



second floor layout

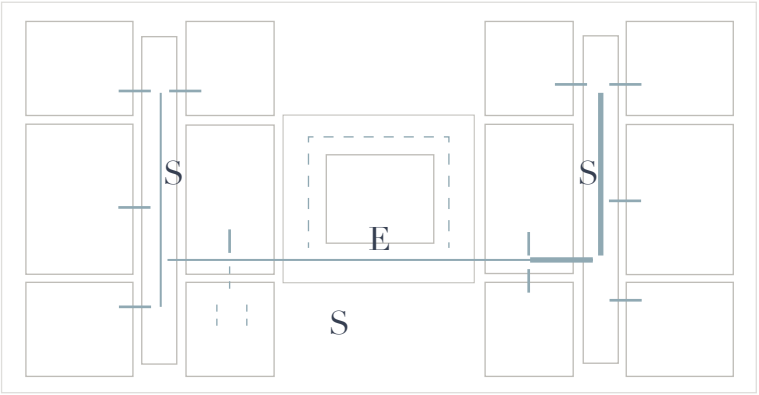
- heavy traffic
- medium traffic
- seldom traffic
- S stair
- E elevator

REGULAR & EXTENDED VERSION



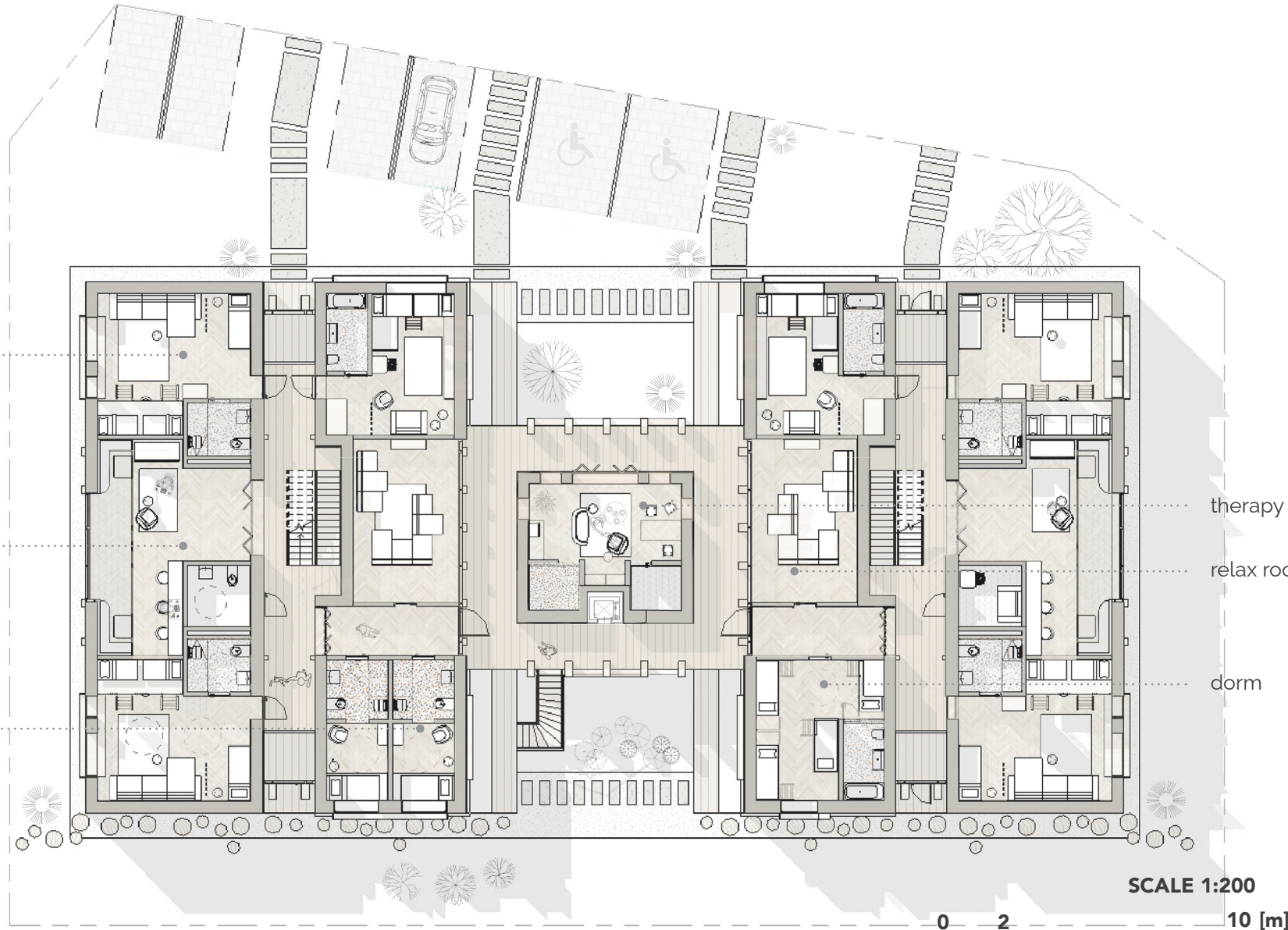
functions - diagram

The layout of the ground floor in EXTENDED version remains the same as in the REGULAR one.



flows - diagram

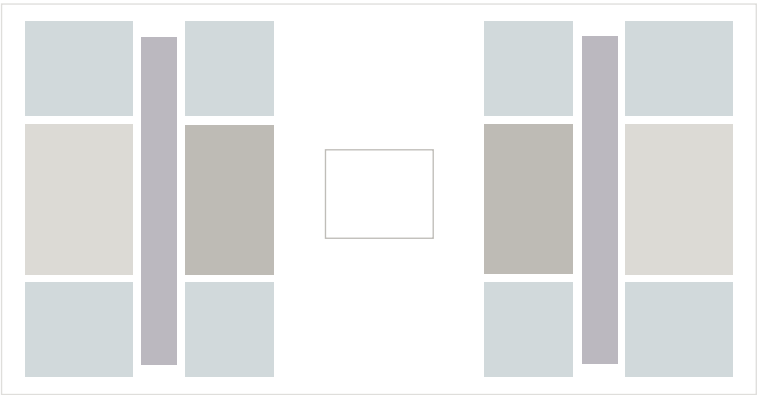
- medium apartment
- calm zone
- detox unit



SECOND FLOOR PLAN - REGULAR

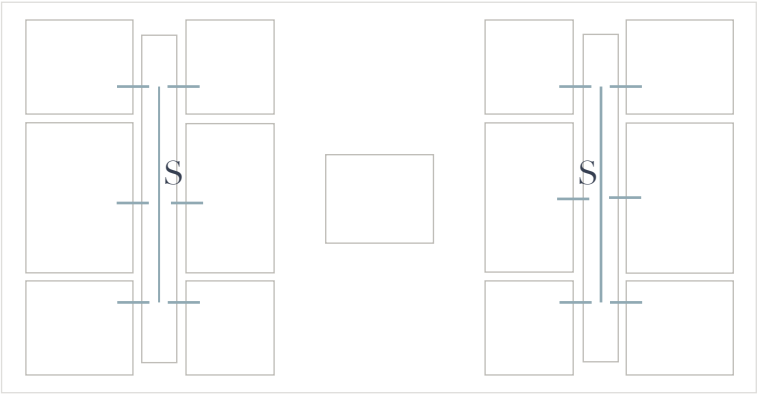
- therapy room
- relax room
- dorm

moodboard - interior



functions - diagram

The third floor only exists in EXTENDED version of the facility.



flows - diagram

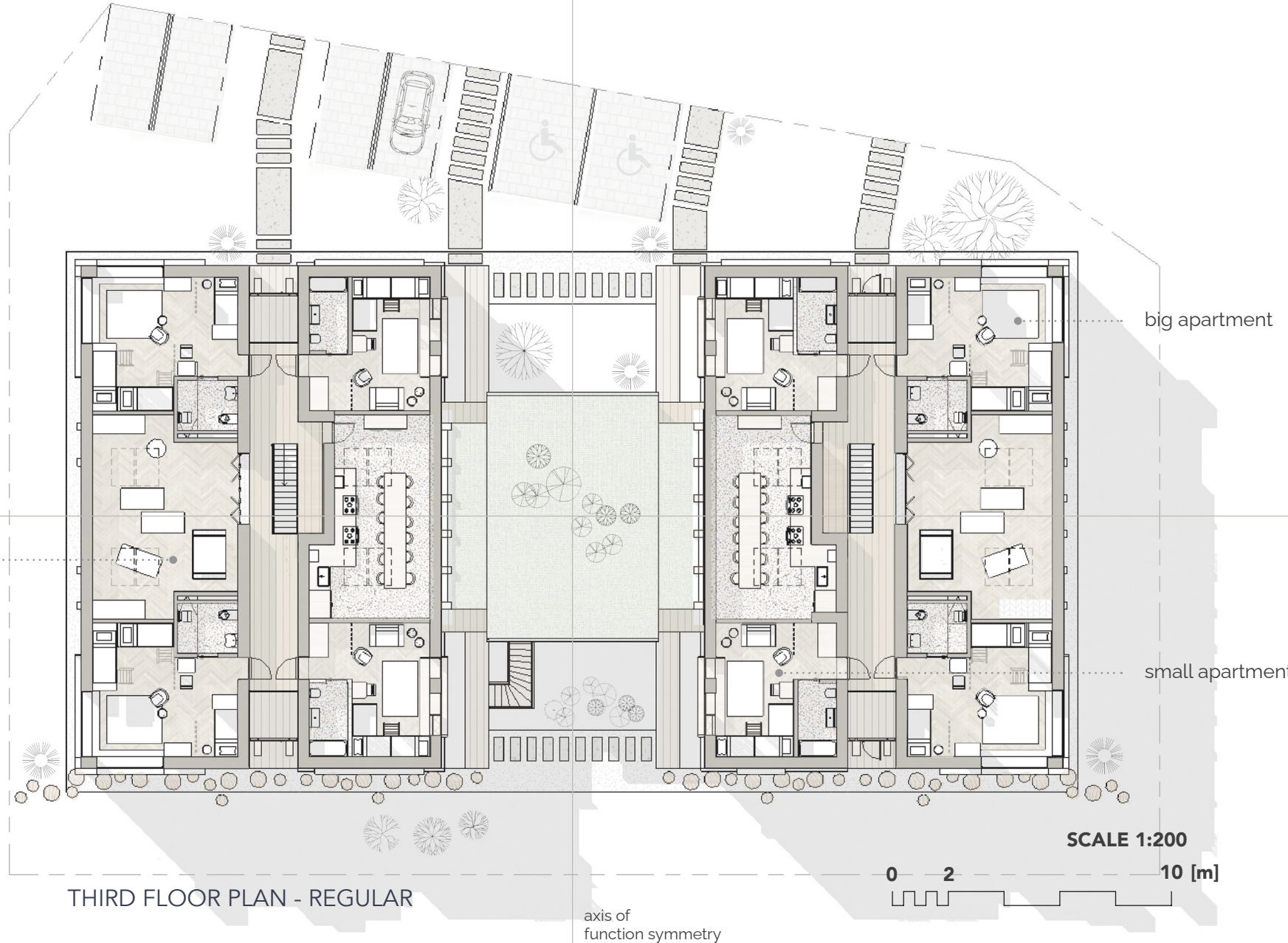
EXTENDED VERSION

- apartments 1+2
- common space
- kitchen
- corridor

axis of
function symmetry

activity room

- heavy traffic
- medium traffic
- seldom traffic
- S stair



big apartment

small apartment

SCALE 1:200

0 2 10 [m]

axis of
function symmetry

COMPACT VERSION



EXTENDED VERSION



corridor



workshop space

medium apartment (1+3)

the middle-sized apartment, added in the REGULAR version of the facility. Features one regular bed and two bunk beds for children.

dorm

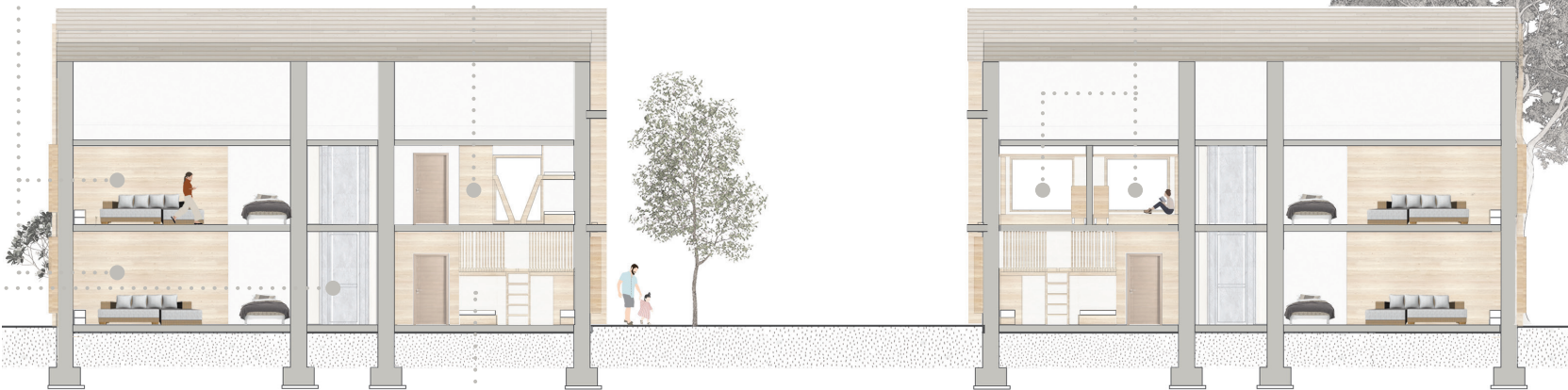
a common dorm for children of the patients whose parents are involved in the detox treatment and can not stay with them.

detox unit

single person detox units, equipped with a bathroom, accessible also for a handicapped person.

technical spaces

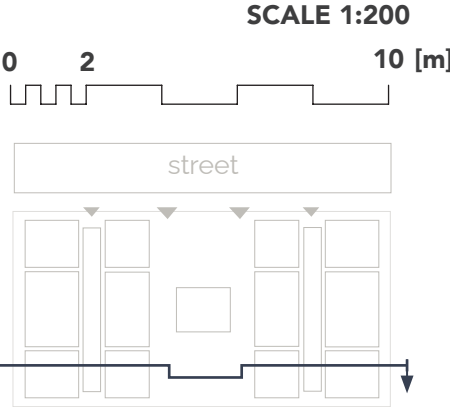
technical spaces are planned to be located in the attic.



SECTION CUT A - A

small apartment (1+2)

the smallest size of an apartment, available in all facility sizes. Features one regular bed and two bunk beds for children.

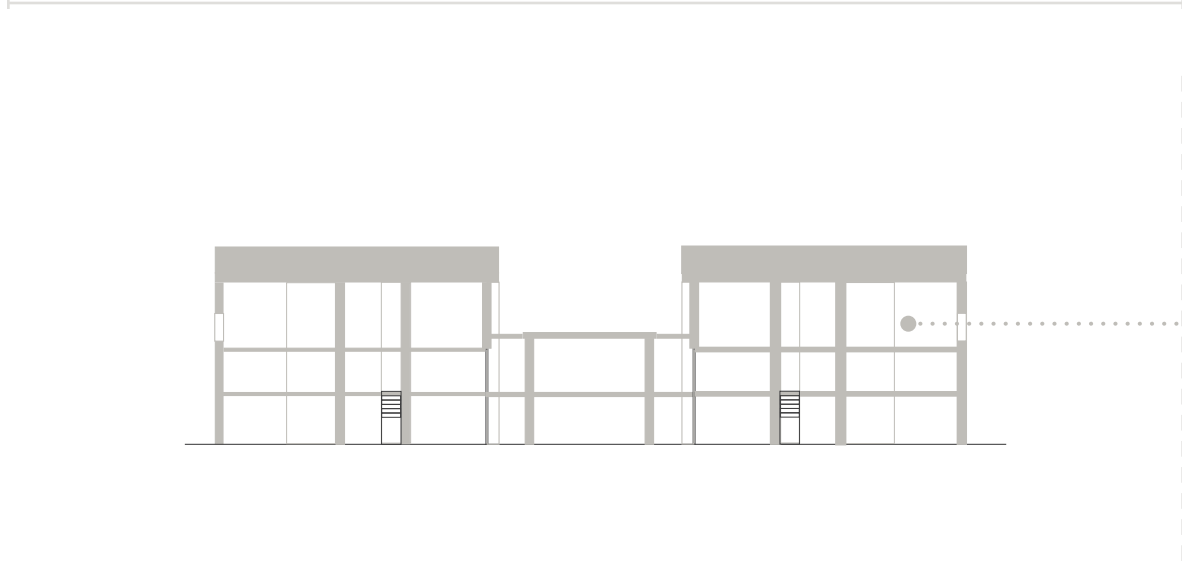
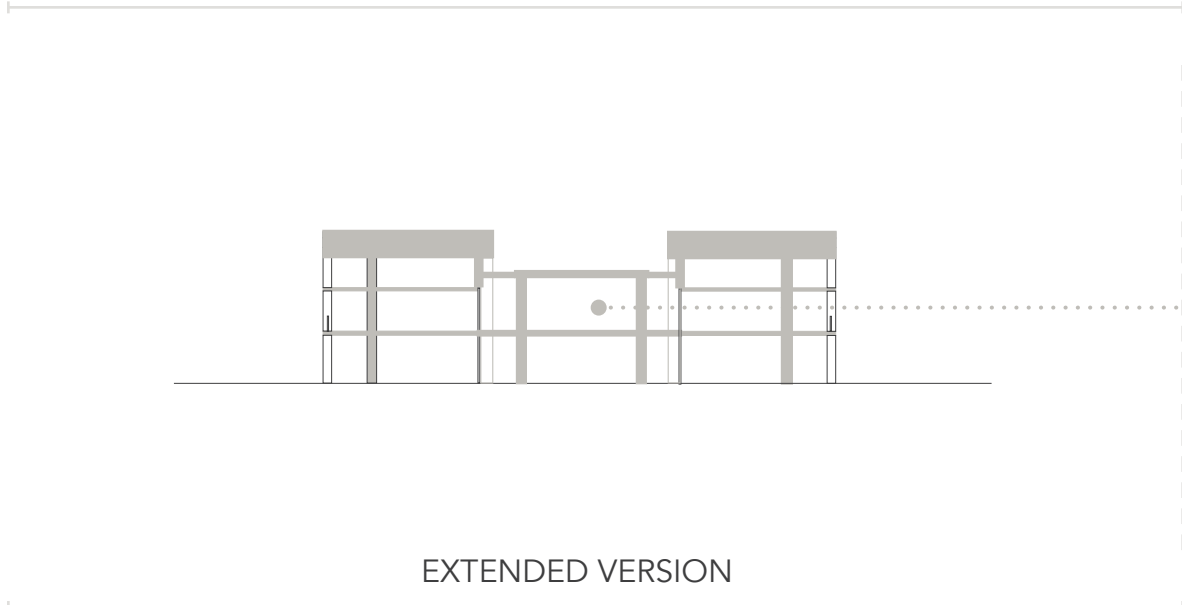


SCALE 1:200



street

COMPACT VERSION



therapy space



activity space

workshop space

can be used for creative classes or group activities, including group therapy sessions.

relax room

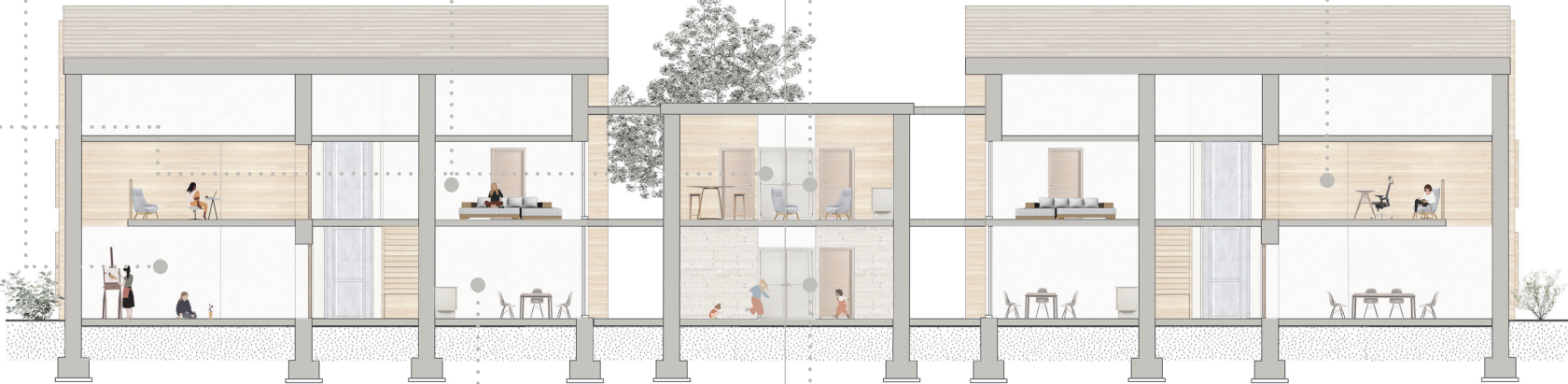
a space with sofas and TV corner, for group hangouts.

doctor's / counsellor's room

the space where a doctor / nurse / therapist resides and where the individual counselling sessions happen.

calm zone

work space meant for calm activities such as reading or working at the available computers.



SECTION CUT B - B

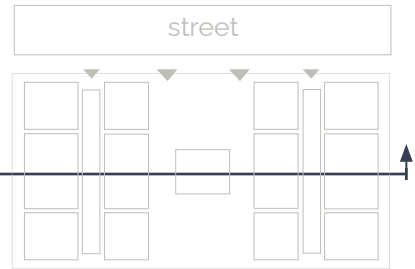
kitchen

common space. Also featuring laundry equipment.

daycare

a play room dedicated to toddlers and school age children.

SCALE 1:200



axis of function symmetry

COMPACT VERSION



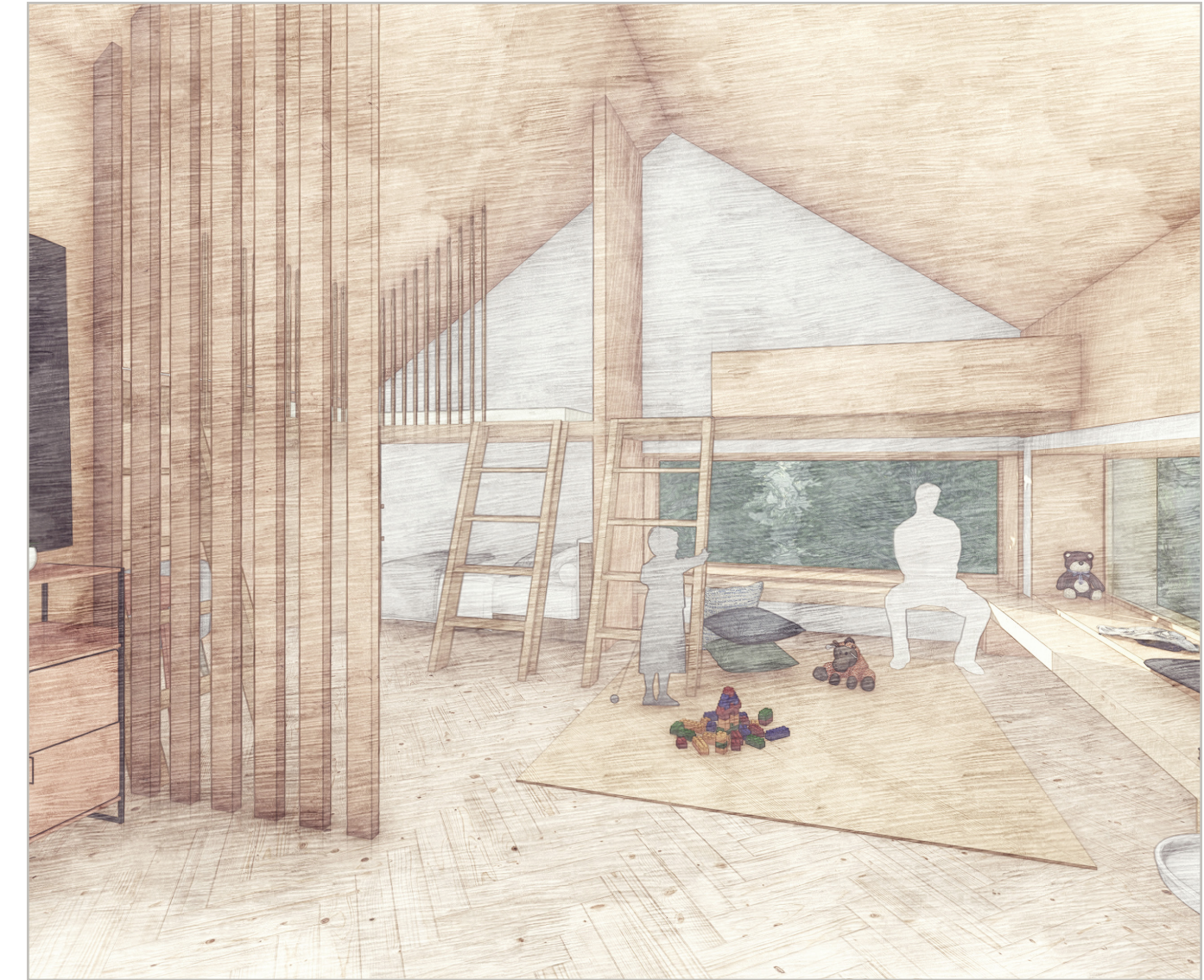
SMALL SIZED APARTMENT (1+2)

ADDED IN REGULAR VERSION



MEDIUM SIZED APARTMENT (1+3)

ADDED IN EXTENDED VERSION



BIG SIZED APARTMENT (1+4)

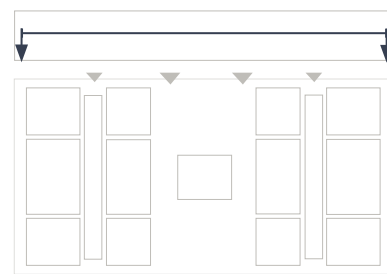
COMPACT VERSION



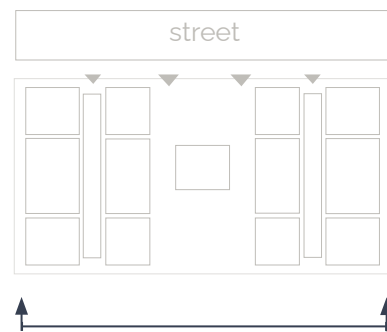
front facade



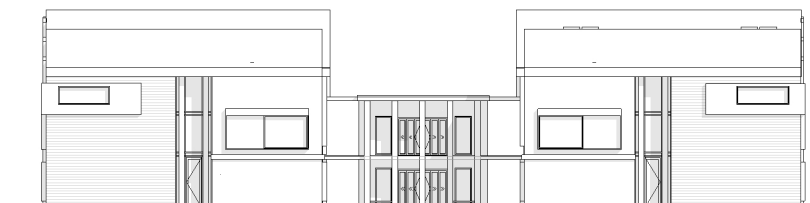
rear facade



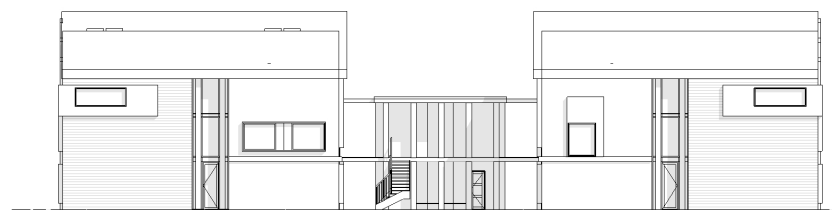
The finish materials proposed in this study are an example of eco-friendly and widely accessible solutions, which can and should however be substituted, if a certain case allows for usage of more local materials.



EXTENDED VERSION



front facade



rear facade

REGULAR VERSION



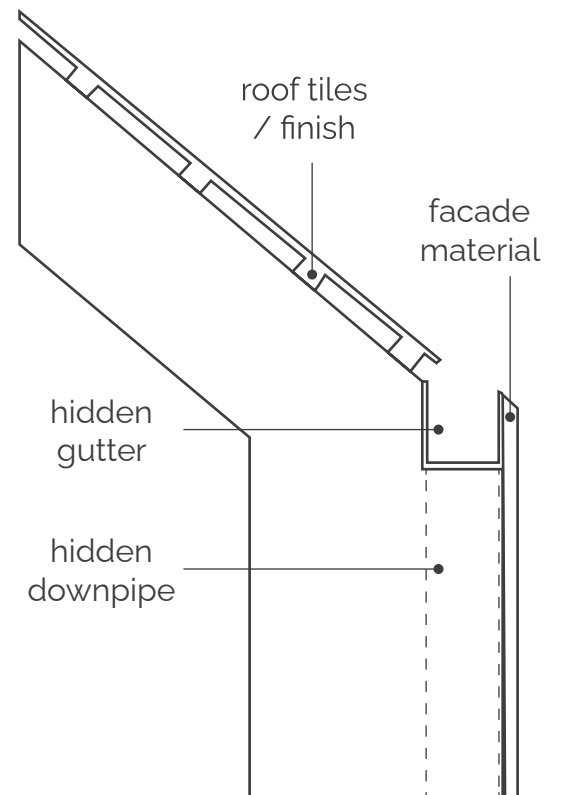
FRONT FACADE (S-E)



SCALE 1:200



REAR FACADE (N-E)

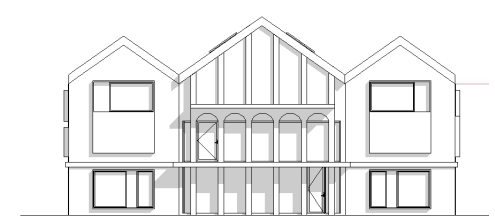


rain drainage scheme

All the facades in the project are to some extents protected from excessive sun glare, due to the use of the casings around the window frames, but it is recommended that in case of the chosen site being barely shaded, it is recommended to install extra shading on the southern facade.

The rain drainage gutters are designed to be hidden behind the facade finish material. The downpipes should be fitted inside the walls, between the wooden structure, with the proper insulation work to prevent the appearance of thermal bridges.

EXTENDED VERSION



courtyard facade



gable facade

COMPACT & REGULAR VERSION



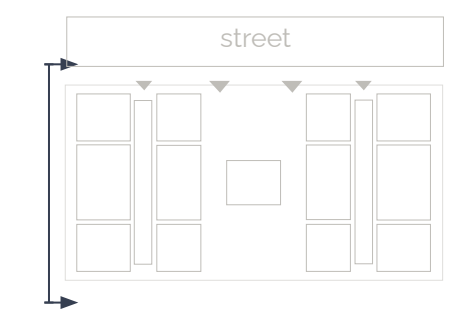
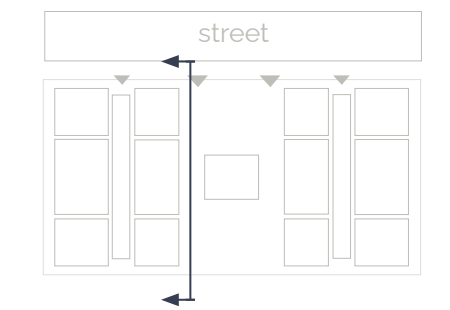
COURTYARD FACADE



SCALE 1:200



GABLE FACADE (S-W)



strategies for facilitating the expansion

1. BUILDING COMPONENTS

CAN BE STRETCHED / EXTENDED

- walls & divisions;
- wooden casings;
- columns;
- railings

The expansion scheme takes into account this division, in order not to lead to eg. a situation when an entire curtain wall would need to be replaced, in order to get an EXTENDED size one. The expandable elements are planned to be stretched, but in other cases, elements are planned to be added (for example the skylights in the 3rd floor common spaces, instead of the curtain wall).

CAN NOT BE STRETCHED / EXTENDED

- curtain walls;
- window panes;
- door segments

2. NO WASTE

The expansion is planned in such a way, not to waste building components by making the COMPACT elements redundant in the REGULAR option and the REGULAR ones in the EXTENDED one.

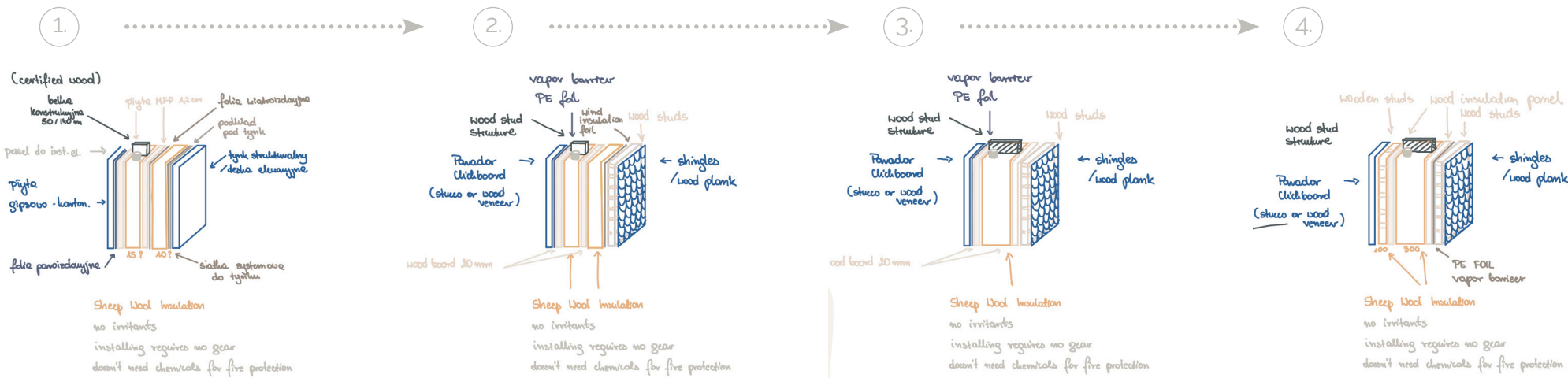
The exception is the corridor / balcony railing from the COMPACT version, but as it is designed as a wooden one, the material retrieved from it can be reused for other woodworks on site, during an upgrade.

expansion scheme - 3D



structure and materials - external wall

For the sake of providing realistic dimensions of the drawings and ensuring the environmental positivity of the basic construction element - the external wall, it has been designed carefully in terms of the used components.



1	Outer wall
No Building assembly description	
Heat transfer resistance [m²K/W]	inner Rsi: 0,13
	outer Rse: 0,10

Section 1	λ [W/(mK)]	Section 2 (if any)	λ [W/(mK)]	Section 3 (if any)	λ [W/(mK)]	Total width thickness [mm]
1. Wooden Studs	0,130	Wooden studs	0,130			20
2. PE Foil	0,230					2
3. Wood insulation panel	0,050					20
4. Sheep Wool	0,040	Wood beam	0,130			300
5. Wood insulation panel	0,050					20
6. Sheep Wool	0,040	Wood studs	0,130	Wooden studs	0,130	100
7. Parador Clickboard	0,129					12
8.						
9.						
Section 2 percent		Section 3 percent		Sum		
10,0%		1,0%		47,4		cm

U-value: 0,105 W/(m²K)

U = 0,105 W/mk Width: 47,4 cm

					Emissions [ton CO2]	Storage [ton CO2]	Transp [ton CO2]
Outer wall							
Area 100 km							
Type	Material	Thickness	cc	Trp km			
Wood	Lumber tech dri	0,2	0,3	30	1	5	0,00
Profing.films	Vapor barrier PE	0,002	1,0	30	1	0	0,00
Insulation.materia	Wood fiber insu	0,2	1,0	300	3	5	0,07
Insulation.materia	Sheep wool insu	0,3	0,90	300	2	1	0,02
Wood	Lumber tech dri	0,4	0,1	30	0	3	0,00
Insulation.materia	Wood fiber insu	0,2	1,0	30	3	5	0,01
Insulation.materia	Sheep wool insu	0,1	1,0	300	1	0	0,01
Add.your.own.epc	Parador Clickbo	0,012	1	300	0	2	0,01
-					0	0	0,00
Climate emission Outer wall					10	22	0,1

*this applies mostly to COMPACT version of the facility, as it is the one that puts emphasis on the economic aspects. Some of the solutions can however be continued after a size upgrade

** see: glossary p. 77

*** in this work, this aspect is left in a stage of primary sketch. but it can be developed further in another project

OUTRO

Conclusions and an addition of auxiliary content of the project.

REFLECTIONS CONCLUSIONS

Closing thoughts on the process of developing the project, the learning outcomes and the potential for further development.

SPECIAL THANKS

To those who contributed to finishing this work..

GLOSSARY

Explanation of vocabulary and terms used in the project.

REFERENCE LIST

Listing of bibliography and references used in the project.

reflections & conclusions

There is no doubt that the process of developing a master thesis feels much less of a vast task at the moment of its completion, than it does before and at the start of it. I believe that many students would agree, that due to time limitations, many of the threads that we pick up with genuine interest during the research and design phase, eventually have to be cut by the project delimitations and that almost always there is a desire to develop the work even further. I can, however, say that it was a rewarding experience to work with a design for a group of users that has a very scarce, if any, representation in the built environment and architectural studies.

The lack of such, leaves a lot of space for new findings and development of solutions to problems of various origins: practical, emotional and esthetic ones. The time of the COVID pandemic made it especially difficult to conduct interviews and fields trips at facilities which serve a function that overlaps, at some parts, with my project programme. At the moment of submitting this work, I can tell that it only touches the surface of what is a very broad and very complex topic, but I do hope that it can mean a small step towards establishing a more open atmosphere for discussing a range of issues connected to addiction treatment and the ways in which architecture can support addiction patients.

My angle of addressing this topic turned towards producing an adaptable, replicable, modular design, which could have the potential for going from no infrastructure for specific groups of underserved patients to a network of locally oriented facilities. I feel that I fulfilled my goal of delivering a design, which could provide the patients with different levels of availability: geographical, social and one that crosses the boundaries of handicap barieer. I like to think of this approach as a thorough attempt at socially sustainable architecture. I did, however, receive one more lesson, which proves that many of the truly eco-oriented and sustainable solutions in architecture have to be local, to such extent that it often gets difficult to exercise them in a generic, non-site specific design. I feel that there is a potential for at least one more similarly sized project, which would develop more on detailed, practical and technical issues stemming from my design. I truly hope that I will have an opportunity in the future to pick the project at the point where I leave it now, and conduct a further in-depth study on the aspects which I need to leave as loose ends in the project, for the time being.

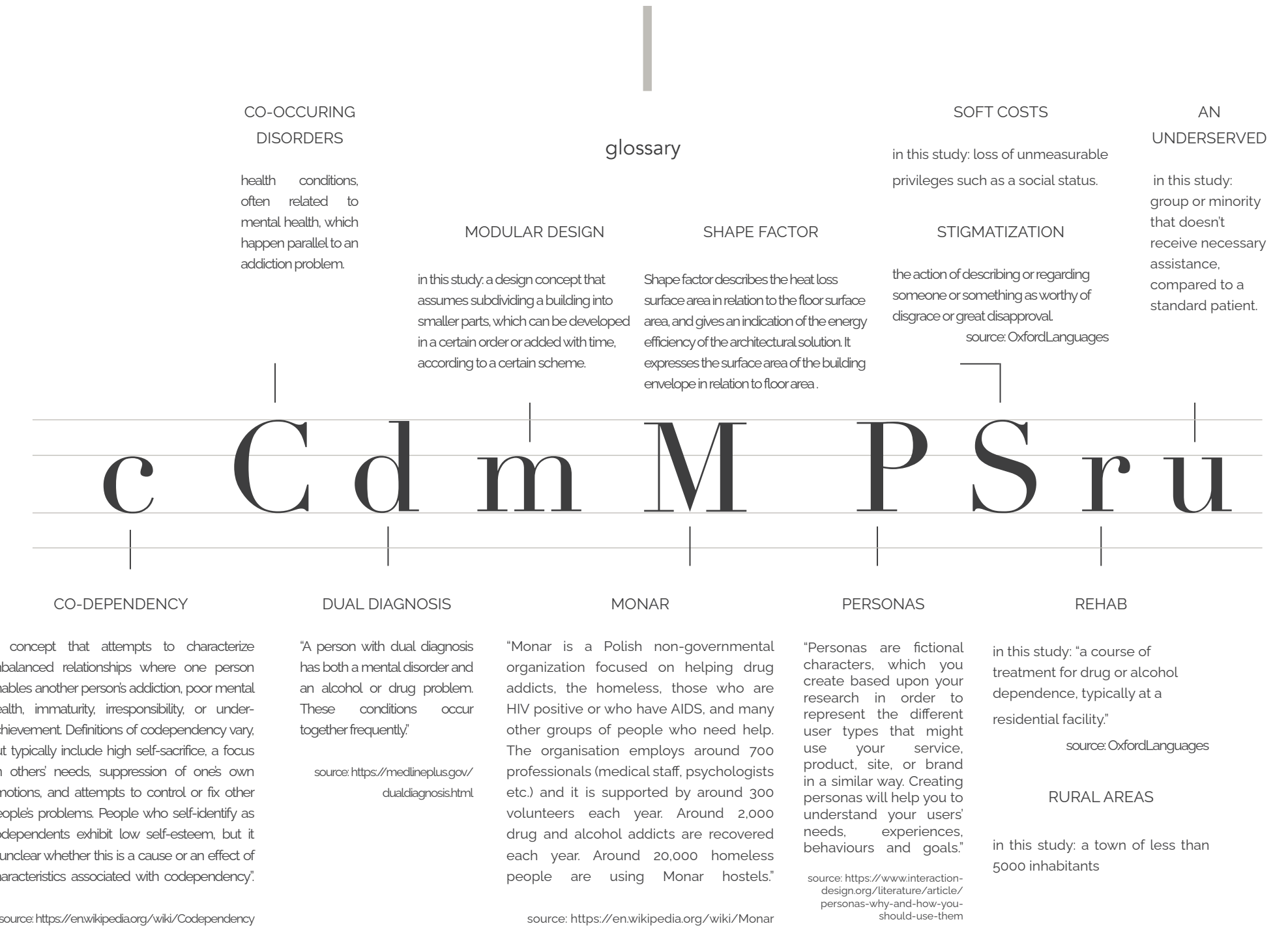
special thanks to:

Elke Midema

Johanna Eriksson

Agnes Engström
Agnes Ståhl

Chalmers School
of Architecture
2021



reference list

GENERAL

American Addiction Centers. (2020a, May 19). 12 Step Programs for Drug Rehab and Alcohol Treatment. Retrieved September 9, 2020, from <https://americanaddictioncenters.org/rehab-guide/12-step>

American Addiction Centers. (2020b, July 29). What Are the Barriers to Accessing Addiction Treatment? Retrieved September 9, 2020, from <https://americanaddictioncenters.org/rehab-guide/treatment-barriers>

Pullen, E. and Oser, C. (2014). Barriers to Substance Abuse Treatment in Rural and Urban Communities: A Counselor Perspective. Substance Use & Misuse, 49(7), 891–901.

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