THE INTEGRATION OF COOPERATIVE LIVING INTO AN URBAN BUILT ENVIRONMENT

Co designed Högsbo Community

Multi-faceted design

MPDSD DESIGN FOR A SUSTAINABLE DEVELOPMENT
Master thesis spring 2014
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Modular
Co design
Interaction
Sustainability
Participatory process
Cooperative Housing

Abstract

This thesis aims to develop a design proposal based on theoretical investigations into material types. The theory and design processes were performed in parallel.

This cohousing project is presented as a co-creation design including the concepts of innovation, co-design and modularity as well as the potential research that may impact the building structure design.

In this report, the problem statement of this master thesis is

'How does collaboration, between architects and a specific community group, manifest itself in a design project?'

In this process, I will focus more on the collaboration with a specific case: 'Co-designed Högsbo community' rather than the building process itself.
This Co-design project is an intense collaborative work between Helhetshus architecture firm, the Högsbo clients and me; in a participatory process as a tool to define criteria.

This master thesis is a process analyzing and contextualizing specific criteria for the Högsbo group into a design as one sustainable solution for responding to their demands in order to reach an experimental proposal and a resilient way of living together.

The project takes place in Högsbo, a district of Gothenburg in Sweden and exposes one possibility to answer issues regarding sustainability.

All the informations in this report were collected though different stakeholders 'Högsbo' clients interviews, Helhetshus architecture company, and literature review.

Indeed, this report contributes to general reflections around cooperative living by proposing a design proposal solution and answering specific communities needs.

The Högsbo case has shaped the methodology and approach to design, resulting in adaptable and modular design solutions for cooperative living.

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Acknowledgements

It has been a pleasure to work with all of you; so thank you to all the people that has been involved in this master thesis work.

I would like to thank especially my examiner Krystyna PIETRZYK and my great tutor Emilio Brandao; as well as my coordinator Lena Falkheden. They gave me constructive advices and interesting feedback during this period of Master Thesis.

I also would like to thank the Högsbo community group, that has been my target group during this co-design process where all those defined criteria could not be so real if they were not participating in my master thesis work and workshops.

Finally, Helhetshus Architecture company to has supporting me every days at their office in order to guide my architectural design. Thanks to them to trust on my work and for their constructives advices which made them involved in my designed workshops.

And at last, of course thank you to all my friends and my family for their mutual support and their awesomeness...

Thank you all,
I had an intensive great time !

Forword

The aim of this master thesis is to propose a designed solution for Högsbo community that might be built in the future on Högsbo, district area of Gothenburg in Sweden.

In closed collaboration with Helhetshus, Architecture company and me though the department of Architecture at Chalmers, the thesis defines the co-designed process, co-creation approach of designing a project that includes different stakeholders. This thesis takes part withtin the MPDSD program and was produced by Julie Boué.

The thesis period, from January 2014 to June 2014, where a methodological approach based on real needs community that has been implemented by researches, literature reviews and stakeholders discussions.

The thesis was conducted as a methodological approach to the design and conceptualization of a multi family housing.

I studied previously a Bachelor of Architecture in Grenoble National School of Architecture, France and I have been participated in the Solar Decathlon China 2013 competition, in the spring 2013 as a member of the HALO Team Sweden with Chalmers.
The goal was to designed and built a plus energy solar home around the concept of student housing that could live in a resilient way of living exploring new ideas of sustainable built environment.

Thanks to this project, I met Pär Thurjfell that was one of our sponsor for HALO project. We worked together and he was interested to follow me in the Co-designed approach during my Master thesis .

Moreover , it was a great chance for me to be part of a project like that which set up a professional framework where the thesis could be used and contributes towards the future design of this community living.

The project idea, as for me or Helhetshus was in-line with our personnal interest and gave us a chance to work with real clients «Högbo group Baugenmeinschaft».

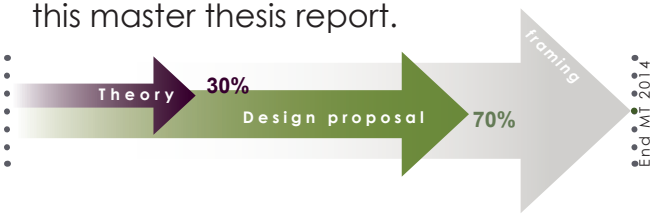
Finally, It provides me an opportunity to questions further the future needs for a more durable society.

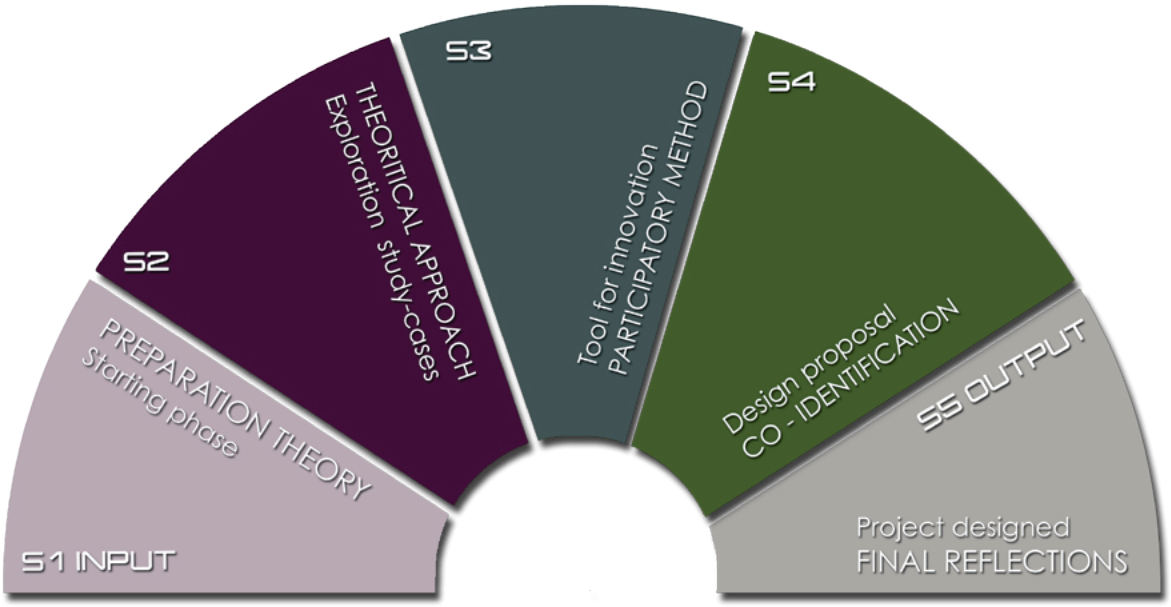
Overall approach

The overall process is working as a parallel process between theory and design work. Implementing the architectural design by researching the limit of the co-creation and taking these reflections as a input for the design work.

The methodology approach was defined by a participatory process where cooperation is a key and a tool for design, resulting an adaptable design solution.

This diagram shows the importance of the different fields and how I developed this master thesis report.





General outlines

1 Introduction
Cooperation

1. Intoduction

1.1 Background and Context

This thesis is written in a form of a theoretical report. It is a report combining the cooperative approach, as a tool for defining criteria and a participatory process, as a tool for designing solutions.

This thesis is an overall perception of complex topics that overlap each other and raise up issues concerning cooperative housing and modular system solutions.

The report, results in an adaptive and modular design proposal to respond to specific needs of the co-op community.

Today, the conception of sharing spaces in our society is more than a challenge. Sharing your own resources with somebody else is an intentional process, a manner of thinking, creating new habits by using spaces in different ways.

Since we are living in an independent society based on individualism, it is not a normal approach to participate in these processes.

Indeed, our resources start to decrease and the need of caring our planet becomes a necessity. The idea of re-thinking how people could be happy by living together including the concept having common areas is an important question.

Cooperative housing is growing in popularity as environmental sustainability which is becoming more of a necessity. In Sweden, the relationship with nature is an important asset of life. Taking care of the environment is a cultural need which is fostering the formation of cooperatives within communities and urban areas.

Today, one key service that is required by young couples or families, no matter where they are from, is to have an affordable, accessible and appropriate housing.

Indeed there is a lack of diversified offers in the existing policies and infrastructures, where people does not have so many possibilities and are feeling restricted in their choices (purchase, rent etc.). This model of life based on independent society is a source of numerous issues.

Social isolation, rising housing costs market, increasing energy consumption etc. These issues are only a fractions of life sequences in Sweden. These problems have led to alternatives, more sustainable and more affordable ways of living.

In many European countries, the strategy to obtain a more sustainable environment is part of development policies. The process of compacting cities because of the urban sprawl is a real strategy/ intention concerning solutions against urban sprawl.

Participating in these current social issues is part of my challenge for this thesis and tries to give one answer about the crowded urban environment by designing a modular solution within cooperative housing.

This thesis contributes to the general reflections around cooperative living by proposing both, a concrete design solution and laying out a framework for the design.

The issues and approaches have shaped my work from an innovative way of experimentation prospective testing «sharing spaces» and set up different manners of thinking «mentalities» and living «habits».

This thesis seeks to explore the potential of cooperative housing as a model of modular system that may help to address some of these challenges in housing.

This booklet raises questions about social needs in our built environment and how to feed those needs.
The dialogue process is the main focus of this report rather than the real issues regarding sustainability in the design which are still valuable for this type of projects.

1.2 Aims, problem definitions and limitations

The aim is to propose a theoretical approach and build a fresh mind-set focusing on a new vision of cooperative living.

Harm from 70s on community living are seen today as cults involving people who cannot afford an initial independent residence; They couldn't choose their situations and has been devoted to these types of living. This mind set has to change and need to respond to new type of thinking that firstly should be seen, as an answer of being resilient and responding to sustainable issues by sharing same facilities. Secondly, it respond to economical purposes. It needs to be a co-creative approach where people have the opportunity to get more for their money by interacting with each other.

By creating communities groups, people are more aware of the sustainable questions and are more closely working together in order to compromise and reduce their needs. Those groups are clearly aware of the ecological footprint which makes them more vulnerable to act for their future built environment. Indeed, living together enable to reduce the ecological footprint but also enables a better maintenance of their building.

This research thesis aims to preserve a qualitative way of living. Participating actively in a sustainable process to live with each other and accept to share resources. Having the capacity to step forward in order to develop further a new way of thinking and sharing services. I propose to define the relationship between architects and inhabitants during the architectural conception process through a participative dialogue to facilitate exchanges with the community. I trust combining the co-design housing with modularity within a building as an implementation of my design approach.

This report is focused on modular imbrication system and integration of sharing spaces into a Cooperative living. The goal is to tend to an affordable building project based on prefabricated structure that could help to live more sustainably. Articulating an architectural project with a social notion where participation is one of the main qualities has provided me with a framework to show a new concept of living in a modular building.

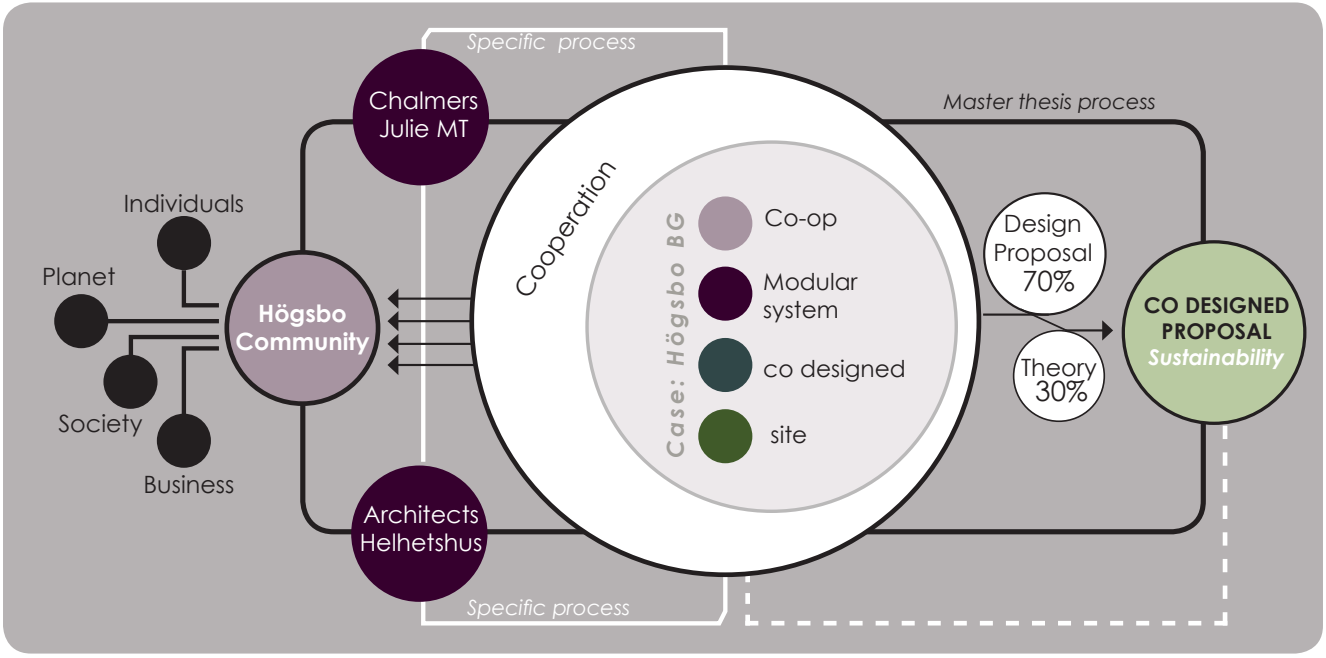
1.3 Thesis Outlines

The following chapter explores the concept of 'Co-design' and identifies key elements such as co-creation and innovation into a co-development process approach.

The Co-design concept is a development process where professionnal designers and students are working together ,encouraging and guiding users to develop theirs ambitions, ideas and solutions collaboratively. This process is a methodological approach based on cooperation between the different stakeholders which will make the final design result more appropriate and acceptable to the users.

Co-design is a development of thinking which has impact on creation and conception as a tool for innovation, since communities help to define criteria regarding their expectations; taking into consideration a shared vision, a social learning and mutual understanding among all key stakeholders.

Different perspectives and wishes that must be heard and respected during the entire co design process.



1.4 Cooperation

General cooperation

Cooperation is the process of groups of people working or acting together for their common/mutual benefit. It can be established at different levels or scales; members must always be involved in the process.

The approach of *'community architecture' is a voluntary membership open to all who make use of it services and are willing to accept the responsibility of membership'(Nick Wates, Charles Knevitt)*.

In practice, it means that anyone could be part of this process until there is a real collaboration with stakeholders by communicating collectively.

How to make it happen?

I propose in this part to explain more in detail the relationship between architects and community during the process of architectural conception and devices set up by the architect to facilitate exchanges with the community group.

How does collaboration, between the architect and a community group, manifest itself in the project spatiality?

Co-housing is between the 'standard house' and the apartment building, dwellings and stands today as a third way of accessibility to housing.
This unconventional way of living seems to be an alternative today for a new way of living that can meet many requirements related to sustainable development. It is a lifestyle that is positioned in line with the environmental, economic and social habitat requirements of tomorrow.

Living in collective housing in order to share commons spaces, is convenient for the inhabitants because this solution allow them to afford a project that could cost less.

The rising cost of housing is a main factor in the increasing popularity of cooperative housing solutions.
Because of economic pressures people are more willing to participate and invest themselves in this cooperative process: Collaborate together.

This alternative allows them to participate in the project on site until the finishes phase and reducing the

cost of labor for the project.

More than economical reasons, cooperative housing is also a social project that blends people together creating a living community.

What sets co-ops apart from private rental housing is that they are democratic communities where the residents make decisions on how they cooperates.

The social character of the habitat group as co-op living is a concep that makes sense in a way of community life.

This new way of living takes a stand against individualism and brings people closer together based on sharing their knowledge; their values, solidarity and mutual support.

From my point of view, cooperation is an effective partnership necessary to reach common objectives.
Therefore, the community is playing an active role in the 'partnership' but should not neglect the question of coordination between all the members.
*'To be successfull, participation must be an on-going dialogue, extending over a considerable period of time, based on individual commitment and respect between all the interested parties, drawing out the best from each other in a constant and ever-questionning search for better way of doing things. It is a team effort and there can be no weak links in the chain.' (*John THOMPSON 1984).

To reach a good cooperation, responsibilities must be delegated and members must be able to rely on one another. Making decisions is a difficult process that takes time and should be coordinated through organizations to facilitate those exchanges between members.

Specific Case:
Högsbo community cooperation

I was offered the great opportunity thanks to the architecture office Helhetshus to create a link between my work and a cooperative community group from Högsbo, a district of Gothenburg in Sweden.

In this case, the cooperation was established between a 'Multi family' community and a group of architects Helhetshus office and by my own.
The cooperation is based on a

common work called '*Co-designed Högsbo community*' which is a multi-faceted project where there was an opportunity to implement my master thesis in an already existing project focused on cooperative housing in Högsbo.

This thesis work is a basic process which has been adopted to a specific case community and their real needs.

The co-design work can be seen as a tool to support the co-creative process to facilitate innovation.
The Co-designed project with the Högsbo community, aims to bring research into a real-life context, where experimentation can be performed to develop innovation to more directly meet the needs of the community.

Currently, the community wants to cooperate with me and Helhetshus to get a better understanding and overall picture of future possibilities and to create a real approach to evaluate the real advantages surrounding the communities needs.

The collaboration today is made in a specific way. Together we considered, the communities needs and common ambitions in order to define goals and design strategies. These criteria were collected and discussed through workshops that I designed to refine my work. The wishes of the Högsbo community group has set the framework for this thesis and challenged me to reach the level of their expectations.

This 'Multi-family community' wants an adequate and appropriate building to live in, in a more resilient way of living, which focuses on sustainability, communal socialization and 'sharing'.
The community envisions; a lifestyle characterized by an intense cooperation to be more social friendly-sustainable.

Therefore the cooperation and collaboration with us (Helhetshus and myself) is a real process that has impact on the community which has helped them to redefine their expectations towards possible parameters in order to reach there goal of life based on qualitative aspects rather than quantitative (current situation).

The challenge is to promote and co-design by collaborating together to fullfill their requirements without sacrificing any of their criteria/ parameters.

There are many parameters to takes into consideration such as energy efficiency of the building, cost of the building construction, cost of the living rent, the quality of the inner living space, the integration of sustainable technics to reduce the cost of the housing: maintenance, solar systems, use of rain water, materiality etc.

A building conception is a long process, life cycle where many criteria should be settled during the participative process in a close loop.

Unfortunately, only a fraction of those criteria will be treated in order to show as much as possible the process of co designing with a community rather than the actual design proposal.
The interpretation of the design is one solution but could be something completely different during the co-creative phase, even with the same clients.

In this Thesis report, the collaboration was the main focus as a exercise of co-designing with real clients in order to meet the requirements of the Högsbo community group which were taken into the future program of the housing project. I developped the criteria as inputs for the actual design. The aim is to create a program that could provide social interaction and foster sustainability.

In this Thesis report, the collaboration was the main focus in order to meet the requirements of the Högsbo community group which were taken into the future program of the housing project. I developped the criteria as inputs for the actual design. The aim is to create a program that could provide social interaction and foster sustainability.
The social factor is the main element during the participative process instead of focusing on construction technical aspects. However, all the aspects are extremely important and needed in the process of conception.

In a restricted time period, we will only focus on certain parts of the design such as the co-creation process, the co-design concept within the collaboration, the modular construction system and the current program which integrates some technical aspects regarding the materiality of the building.

A lot of experimentation has been done, only a fraction of it, is the resultante of our intense collaboration.

Cooperative community/ Study cases

2 Investigations
Theoretical approaches

« Adaptability forces design to become an ongoing social processbetween designer and user over time. The designer must focus onenabling adaptation to take place; as opposed to attempting to control experiences and anticipate the future »

Robert III Schmidt et al

2. Investigations

2.1 Co-housing theoretical approaches

Co housing: 'cooperative housing'

In considering that cooperative housing can help to address a challenge for people ; especially families that want to live more sustainably and more affordably, two key questions have shaped the research:

• Can cooperatives be perceived in a different way?
• How could cooperative housing be introduced into a new innovative and resilient way of living?

The following chapter explains the relationship between the research literature and the result of what I have experienced through various interviews and discussions.

This study focuses on a theme that has been controversial for many years. Cooperative housing, should be seen as an innovative way of addressing specific needs of today's communities and built resilient environment.

2.1.1 What is a cooperative housing?

A cooperative is a legal entity that owns the real estate, which means that a cooperative is a distinct form of ownership that takes into consideration many criteria. (National cooperative law centre 2011)

Cooperative housing differs from condominium type or family ownership. It is another type of residential housing sharing based on purchase «shareholder» and gives the right to occupy the housing units «membership».

When you buy into a co-op, you become a shareholder in a corporation that owns the property. As a shareholder, you are entitled to exclusive use of a housing unit in the property.
A cooperative, operates for benefits of its members and provides intrinsic privileges in order to lower the practical cost and offer them good services and facilities.

Cooperative housing is relevant for many different types of communities : families, aged care people etc.
The current model that I am using in this specific case is a cooperative 'home

ownership' and acts as an alternative to acquiring a primary residence.

From my point of view, it is really important to offer to families the right to possess a proper residence apartment to increase their level of education and their capacities.

The perception of complete sharing life enables co-creativity and social interaction in housing and is always an attractive way to respond to sustainable conditions of life.

2.1.2 Why a cooperative housing?

Co housing is a profitable process of cohabitation and sharing knowledge. (Holtzman 2012).
The Cohousing model involves participation of the inhabitants and encourages the relationship between neighbours. It is a co-evolution process that instill the feeling of belonging to something. (Ganapati 2010)

Cooperative housing has been employed as a model for providing affordable housing with a community spirit, or element of mutual support, since the early twentieth century.
Co housing consists of communities that are searching for common interests based on equity: Indeed it is a wish for residents to live in a pleasant environment and transform their daily lives toward sustainability through common activities.

Developing social structures within the co housing facilities, such as common spaces allows social flexibility in the program and becomes a shared interest for the community creating ans strengthening links between inhabitants.

« This is an experience for people to shape their needs, to construct their identity and promote community responsibility »

2.1.3 What are the benefits of a cooperative housing?

Five key notions had emerged from the literature analysis and reflections.
The benefits of cooperative housing have been categorized into the following themes which were created upon discussions and interviews with the BG Högsbo community:
Real involvment, Affordability, Adaptability, Autonomy, Well-being and economic efficiency.

a) Real involment
The perception of being personally involved in the process relates to the maintenance of the spaces and how much people care about what they have.

In this case, personnal investment is part of the process adding to the feeling that you are part of a supportive community.The decisions made during the collaboration process fostered this real involvement.

b) Affordability
This thesis focused on a coop renting scheme, or equity- model of cooperative housing which means that menbers own shares. The idea is to maintain its affordability through time by ensuring a flexible way to finance arrangements for residents based on different communal agreements within the community group.

It is a good way to guarantee the social diversity in the group and offer different qualities of spaces which will preserve the social balance into the building.
Indeed it can allow different social categories that don't have the same incomes to be able to share as much as they can get and learn from each other.

c) Adaptability
As a family situation, we expect a lot of change during your life, your needs are changing with the time and have to answer various specific situations.

Most of the time, it is a problem to adjust or adapt unit dwellings because the structure and layout are fixed.
Cooperative housing should offer a modular way to change over time and allow adaptability in differents situations.
The author Glass confirms that cooperative housing is adaptable in its capacity to address the priorities of different groups. Therefore, cooperative housing should provide

the capacity to give solutions and specific answers for the changing needs of residents.

d) Autonomy

Having the capacity to still feel at home and private within the larger shared community.

The most important idea when it comes to sharing, is to define clearly who owns what and how public and private are treated to define the limits of the project.

The culture of multi family housing can preserve autonomy, by configurating boundaries to functionnal living units which are based upon intimacy sphere 'private' and maintain the right of sharing facilities in a different area 'common or private'. It is only in a second time, that you can provide sharing facilities that could improve the living conditions of the inhabitants.

Cooperative housing in a primary sense means; 'sharing things together, get more facilities and educate your own family'.

Thanks to this type of living, you can expect to get much more than in a standard private house .

The perception of living becomes more relevant and resilient when you can define your privacy within the community.

keeping the approach of living independent, preserves autonomy of residents and helps foster positive responses to opportunities of interaction.

e) Well being

Improving the well being of families living together by supporting each other to live better thanks to facilities; helped to maintain interest with other people.

It is a really important passive surveillance to live with many households in order to benefit and take care of the guards of the children for example.
It is helpful for every families within the community to have the possibility sometimes delegate some responsabilities sometimes to other families.

The co-interaction reinforced links between members and creates a specific identity of the community; a well being feeling, atmosphere to belong to the inner community.

f) economic efficiency
Cooperative housing is an economically efficient model for families.
It is a cheaper model that allows change for bigger families and adaptability.

The perception of cooperative housing has been adopted as a beneficial housing model accross many parts of the world. (Ganapati 2010). Indeed, It is a benefit for the people that have many in the household.

The economics that have shaped most of our existing built environment which in turn has caused degredation of the earth's natural ecosystems, can also be a main reason to co-create housing.

2.1.4 Analysis Cooperative Living: A new resilient way of living ?

Today many new forms of housing have emerged; an autonomous living arrangements adopted by a range of people who are not satisfied by the real estate market today. The Building compagnies, are not thinking in term of evolutive housing which must be adjusted over time to specific needs but rather to mass production and to densify the urban environment.
Those groups realized that they are not satisfied by the real estate market but don't have any other possibilities.

However, in parallel, new housing forms have grown in importance in order to respond to these specific needs, generally community-oriented forms of living, for involvement.

In many cities, the dynamic of our population is changing fast and we have to be aware of this evolution in order to adjust and (re)configure our living spaces. Urban spaces should respond to our needs and to demographic changes. This type of living is especially known in Scandinavian countries. Germany, Switzerland, Denmark and some other Northern European countries resurfaced this type of habitat.

This model was created in the early twentieth century to respond to a lack of housing and need to provide affordable housing especially to those who were relocated people.

This model of living has been particularly succesful and popular in the nothern

European states.

There are so many ways to tend to a cooperative housing project including notions such as lifestyle, affordability and priorities of communities (community spirit or mutual support).
For instance in France, co-op housing makes up 5-10 % of the nation's housing stock compared to sweden which makes up 18-21%; which is a big difference.

According to Gun-Britt Mårtensson, swedish president of HSB Riksförbund living lab;

« We live together and we have influence together.»
(Gun-Britt Mårtensson, swedish president of HSB Riksförbund living lab.)

It is working well in the Scandinavian countries, because it provides good quality of life, that individuals are proud to live in.
However, the current situation does not bring satisfaction all users in Sweden.
It is a global issue that has been discussed many times.

For example, in France, is still behind these nothern countries since this type of living is seen today as an economic means or social housing key. It is seen only as an answer to affordability and not as a response to sustainable resilience.

Whether in France, Sweden or somewhere else; the idea of living 'co-operatively' is not trivial.
It is a necessity to develop a new mindset which is concentrated on parameters such as co-creation which can be a tool for innovating a new type of living together.

In our mentality, can be shifted; co housing start to seen as it should be; a resilient way of living in our society that makes people socialized and educated.

Co-housing organisations provides a whole host of community activities, creating an atmosphere of mutual trust and buildings self-esteem.

In this next part, we will see different cases studies which have impacted my analysis surrounding the theories of cooperative living.

The following cases were chosen from around Europe in order to more tangibly discuss and understand what potential

aspects and criteria are relevant to keep for the design work.

We will explore cases in Germany ‘Baugruppenhaus’; in France ‘Habitat groupé’ and ‘Baugenmeinschaft’ in Scandinavia.

There have been many examples of various forms of experimentation where researchers, architects, engineers, artists, and others have transformed spaces to test and develop new innovations.

The following are a small selection used to guide the design and collaboration process.

« Creating Co-housing: Building sustainable communities »

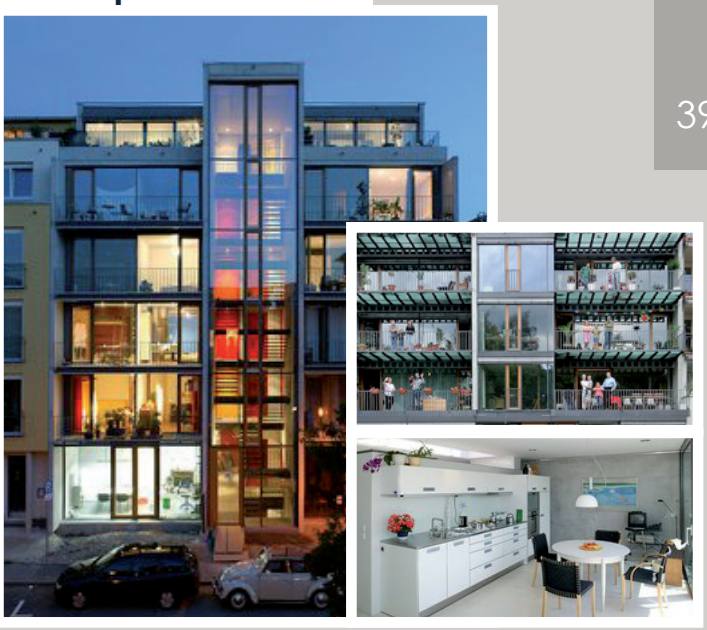
Kathryn McCamant Architect

Case study 1
AN URBAN THEATER

'Baugenmeinschaft' in germany
Baugruppenhaus/ Multi family housing

Delivered in 2004, this building is an example of baugruppen located in the german city of Tübingen, near Stuttgart.
A collaboration of eleven families has been created with architects to co design this multi family facility.
This building expresses an industrial identity in favor of cooperative habitation. This project is called Prisma and takes the form of an urban theater due to the disposition of elements and materiality used to separate the different functions. For instance all the commons areas have been placed in the central of the building creating a core which is painted in red. This has been done to define clearly the relationship between private area and common areas. The communication/ circulation along the glass facade creates transparency and lets in natural light. It is an experimental project thanks to this juxtaposition of theatrical scenes created by these different functionnal spaces.

Porosity
Transparent



PRISMA BG GERMANY

Localisation 72072 Tübingen
Design by NOENENALBUS ARCHITECTURE
Rosy Noenen †- Lothar Albus
Tübingen builder
Client
Jutta Baitsch and Birgit Peter -Tübingen
Program
Multiple family dwelling
- Eleven families units
- red commons area
- extensible area by balconies

Materials
-concrete
- steel joinery
-steel staircase
- glazing
- Cement slab

Case study 2
FLEXIBLE LIVE

‘Baugenmeinschaft’ in germany
Baugruppenhaus/ Multi family housing

The concept : Flexible live
The basic concept for the living is a combination of closed and open personal loft dwellings.

From floor to ceiling; wood windows are usually in lines of sight and allow the view from the street to the garden. This generosity brings an experience in a dense urban area which is playful due to the volumes and views offered.

The structure is six storeys consisting of two residential units. The 135 m² apartments can be linked together.
The 2.80 m high structured by column free space can be designed freely between the walls and around the staircase/elevator core, which also allows for changes in the needs for apartment size and layout.

The ground floor units are connected to the first floor to duplex apartments.
In addition to the common garden, the house has a 100m² roof terrace, which has a guest apartment that can be use alternately by the residents.

Playful

ROEDIG . SCHOP ARCHITEKTEN, BERLIN

Localisation Anklamer Straße 52, Berlin-Mitte
Design by Christoph Roedig-Ulrich Schop
Client Baugruppenhaus in Berlin

Program
Multi-family housing
Extendable units dwellings
1 Private outdoor area
2 Refuse containers
3 Timber deck
4 Sanded area (sand from site excavations)
5 Lawn
6 Dry construction (division of dwelling possible)
7 Roof terrace
8 Guest dwelling

Cost 1,600 per m² of living space / construction costs about 1,000 € per m² of living space.

Case study 3
Environmental family housing
'Habitat groupé' in France
Multi family housing

After a collective willingness to share 'Another way of living together', la Salière' is a collective housing structure that contains both indoor and outdoor common areas, thereby reducing its footprint and the use of space available. Responding to the need for a resilient way of living, the building was designed to minimize environmental impact. The structure consists of a mix wood, concrete and natural insulation. A solar water boiler was included to optimize and reduce the need for heating and ensure summer comfort.

A central staircase on the exterior provides access to every units. The inclination of the west elevation of the building follows the desire to adapt surfaces closest to the wishes of the families. The ground floor is intended for shared spaces that includes a large common room opening onto the garden, a home studio, a workroom, cellars, and a boiler silo. It is a 3 storeys building containing 100m^2 private apartments, each offering an outdoor room, a terrace, a balcony and a patio.

Environmental Impact

LA SALIÈRE GRENOBLE- FRANCE

Localisation Grenoble (38)
Design by TEKHNE architects, Christian CHARIGNON et Sarah VIRICEL 2005
Client Collectif de la Salière 5 Familles
Surface 745 m^2 SHON

Program 1 housing Building
8 dwellings with commons spaces in the ground floor.
(studio guest, parking cars, tool storage, bikes local, common terrace, garden)

Cost 826 000 Euro HT

Case study 4
VERTICAL VILLAGE
‘Habitat groupé’ in France
Housing for Social purpose

The vertical village Villeurbanne is the first co-inhabitants building in France. The particularity is based on three fundamental values: collective ownership, non-speculation and democracy. This includes fourteen homes ranging from one person to families with three children. This is intergenerational community with ages ranging from child to 70-years.

Initially, it was a small group of households concerned with economic pressures.
Vertical ‘villagers’ inhabitants want to create an «eco-home» with the desire to integrate social housing and friendly home to welcome people.
The future life of the Village is thinking ahead through a development of the common areas (room with common kitchen, laundry room, terraces, hall and garden, guest rooms ‘bed and breakfast’).

The project is based on sharing, exchange, user-friendliness and willingness to initiate an innovative movement.

Friendly eco-home

LE VILLAGE VERTICAL- LYON

Localisation Villeurbanne
Design by Architects 2012
Stéphane Castets / Arbor&sens and Detry&Levy
Client Communities:
The Village Vertical
Rhône Saône Habitat
Surface 3 446 m2 SHON

Program 24 social housing accession
Cooperative housing:
-14 units including 4-PLS-
social-housing
- residence PLAI
Shared spaces: guest rooms common room, laundry room or garden.

Cost 1 361€ /sqm HT

Case study 5
URBAN VILLAS
'Baugenmeinschaft' in Sweden
Collaborative housing

Today's reality is that we should solve our housing needs in the city to live a durable society. 'UrbanaVillor 'proposed a project which is answering these demands by creating Villas units apartments.

This is a project where the concept is based on the stacking villas one on top of the other, without sacrificing any of the qualities within a stand alone villa.

Urban Villas consists of two buildings: the lower one has a courtyard building the looks inwards on the precinct, and the higher one faces the street.
The courtyard building consists of two symmetrical three-storey buildings with private gardens on a fourth storey.
The street building consists of six storeys with one villa and garden per storey and a communal rooftop shared by all the inhabitants.

Construction has been based in its entirety on a lifecycle perspective, so as to achieve a long-term economic and ecological investment.

Home comfort qualities

URBAN VILLAS MALMÖ -SWEDEN

Localisation Brf. Urban Residential, Vimpelgatan 9, 211 14 Malmö
Design by Pontus Åqvist&Cord Siegel 2013
Client BRF.urbana homes by Chairman Kim Freimann, Christina Freimann, Cord Siegel, Karin Larsson, Pontus Åqvist and Ylva S Åqvist
Surface 1200 sqm

Program Residential 2 terraced houses /5 flats
Collaborative housing | 7 units
7 x 140m ² BOA
stacked residential area
communal roof terrace
common garden
social kitchen -common living room

Case study 6
ALTERNATIVE COMMUNITY HOUSING
Social residence housing in Norway

Trondheim's alternative community, Svartlamoen, has built a housing block that has changed the path of Norwegian massive wood industry. The project is a 5 storey high housing block, that welcomes a student community into an affordable housing. The community has been persuaded to consider massive wood as an exciting building material.

Given Svartlamoen's low cost budget and it's mix of young alternative and student types taking up the residence, along with an obvious low energy remit, it does not come as a surprise that the architects incorporated as many adaptabe features as possible.

Each of the four residential floors, containing either five or six rooms, was designed for communal use. The solid wood elements throughout the building, whether walls, roofs or flooring, have been left exposed so that when people moved in, they could build their own shelving and generally adapt the rooms as they wanted.

Unfinished adaptable

SVARTLAMOEN, TRONDHEIM, NORWAY

Localisation Strandveien 37, Trondheim
Design by BRENDELAND & KRISTOFFERSEN 2005
Client Trondheim's alternative community: Svartlamoen housing trust
Surface 1040 sqm

Program
Social housing, Residence 5 storey building-

Mix of young alternative and students. It consists of two buildings flanking a south-facing rear yard: a five-storey block of communal housing units with offices on the ground floor, and a two-storey block of six studio flats.

Cost 2000 € per sqm (purchase)

Reflections

To conclude this chapter, there are many criteria that make cooperative living a real interest for many people. It has an educational value that can teach us to live more sustainably.

It is also seen as an active way to foster sharing and socializes through the use of common spaces. This social-architectural prospective of living is an appropriate approach providing affordability and refine needs. 'Cooperative housing' is a model that provides support for adaptability and flexible solutions and enhance requirements for access to housing. Having the possibility to interact with spaces into the community housing due to adaptable features allows changes over time and evolution of the needs.

Finally cooperative housing strengthen my project focus by challenging the constructive sector to be innovative by using co-creation and the user involvment to bring about a sustainable type of living.

What do I bring with me into my program

Social Interaction aspect
- Adaptability approach: Concept of own configuration / user involvement
- Unfinished spaces: Mechanism for engagement

Materiality aspect
- Porosity and materiality
- Living home qualities of spaces
- Playful

Environmental aspect
- Environmental impact: Low footprint
- Eco home

Tool for innovation: Participatory process

3 Methodology
Tool for innovation
Co designed work

« Architecture should offer an incentive to its users to influence it wherever possible, not merely to reinforce its identity but more especially to enhance and affirm the identity of its users »

Herman Hertzberger

3. Tool for innovation: Co designed proposal

3.1 Participatory process

3.1.1 Participatory method to co- create design

The participatory method is an approach to design attempting to actively involve all stakeholders in a common process in order to ensure the product designed meets the needs of the communities and is usable.

Participatory design is an approach which is focused on processes and procedures of design, that takes into considerations political dimensions of user empowerment and democratization.
This approach is seen as a way to repeal design responsability and innovation by designers.

In my thesis, the goals are to design workshops to make people understand the process and allow them to contribute and cooperate to create a design.

In the following chapter you will see the tools used during the workshops and see how it was implemented in the common design.

The result of the design participation, influenced my criteria and allow me to refine the conception.

In this part, we will have the opportunity to see the results of these three workshops including reflections about the communities real needs to better understand the program for the design proposal.

Building value with participatory method enables to strongly centered the design conception criteria on methodologies and foster co-creativity during the process.

3.1.2 Architectural Toolbox

RESEARCHING

Point of departure of the project. Collecting facts and knowledges of the area through different support. (Statistic, articles, books, drawings, graph, visits, discussion, interviews.)

KNOWLEDGE SHARING

Through discussions and dialogues, emerged from the multifacetted diversity of knowledges and experiences. This should be a basis- both in the process and the daily activity of the built product.

DOCUMENTATION

Open-source methodology. Stay on the track to the area that has been already studied before. Keep up-to-date about the field area through different medium.

CO DESIGN

Involving the actual users in the design process and let them create their own product by catalyzing a definition of their ideas, will result in a beneficial outcome.

SCENARIO TESTING

Visualize future scenarios by asking a series of questions « what if..» will root out which problems are present. By trying to answer these ideas, a response to their specific needs will be lift through creative means.

VIRTUAL PLATFORM

Forming a base platform from existing actors that have different roles in the process. By collaborating with them, the input becomes multispectral and the various fields of expertise completement each other.

DIY

The method of **do-it-yourself** is based on desires by individuals to create alternative changes. It is a potential to questioning the current structure form in our society by self-managed initiatives.

WORKSHOPS

Through different mediums, hands on small sessions allowing groups of participants to achieve a steady base for the design steps and work creatively together by developing, planning and designing their ideas.

PROGRAMING

Analyzing the context and user group, defining the functions which hold activities for improving living patterns. Including actively local participants,local experts, to reach an high objective of the product.

MODEL EXPLORING

By using the medium of modeling, local actors and participants will get involved in planning and design. They are particularly useful for generating interest, presenting ideas and helping people think in volume 3 Dimensions.

MAPPING

By mapping the commons and local actors of the area, a clear understanding of the basic conditions is made. This will locate possible sites and serve as a core for the programming.

CHOICE CATALOGUE

Design Choices provides and are useful for helping people to understand the range of options available and provide a way for making choices where large numbers of people are involved.

GENERAL ADVANTAGES /COOPERATIVE BUILDING

In 10 points: why to be involve in this process...

1- ADDITIONNAL RESOURCES
Local people can bring a specific interest regarding the local area.

2- BETTER DECISIONS
Local people are the best source of knowledge about their surroundings.
Better decision making when you know what you are talking about.

3- BUILDING COMMUNITY
The process of working together and acheiving things together creates a sense of community.

4- DEMOCRATIC CREDIBILITY
Community involvement in planning accords with people's right to participate in decisions that affect their lives. It is a important trend towards democratisation of all aspects of society.

5- EMPOWERMENT
Involment builds local people's confidence, capabilities, skills and ability to co-operate. Individual and collective challenges

6- APPROPRIATE RESULTS
Design solutions are more appropriate with what people needed and wanted.
Better satisfaction, better maintenance of the area.

7-SATISFYING PUBLIC DEMAND
People want to be involved in shaping their environment.

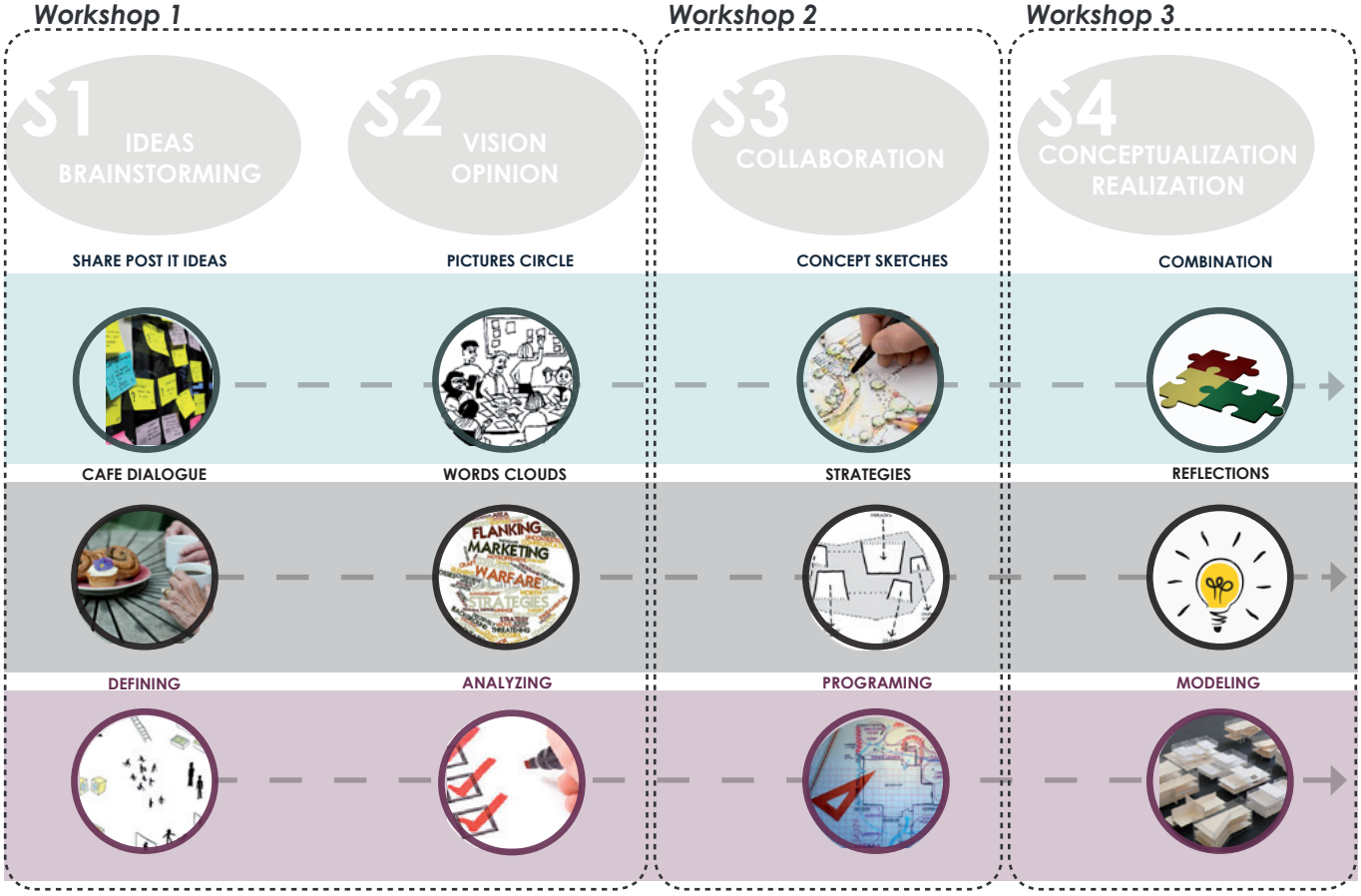
8- PROFESSIONAL EDUCATION
Working closely with local people helps professionals gain insight into communities they seek to serve. More effective work, better results.

9- QUICKER DEVELOPMENT
People see more easily the picture of what are the possibilities, so they understand more the realistic options available and start to think positively. Less time-wasting.

10- SUSTAINABILITY
Attachment to their environment, reduce vandalism in the neighbourhood, and better management and maintenance in the local area.

3.1.4 Hösgbo Community design workshops

• WORKSHOP 1
Intoduction Brainstorming
• WORKSHOP 2
Public / Private / Functions
• WORKSHOP 3
Modeling- adaptable Unit design



Workshop 1

WORKSHOP 1/ Intoduction Brainstorming

« Invite people to
see who you are...»

from BG Högsbo community

3.2 Designed Workshops

3.2.1 WORKSHOP 1/ Intoduction Brainstorming

Introduce ourselves: Who are we?

CHALMERS

Julie Boué
Master Thesis Student
Architecture
Chalmers
University of technology
boue@student.chalmers.se

HELHETSHUS

Pär Thurfjell
Helhethus
Arkitekt MSA
par@helhethus.se

Joakim Haglund
Helhethus
Arkitekt SAR/MSA
joakim@helhethus.se

PROCESS

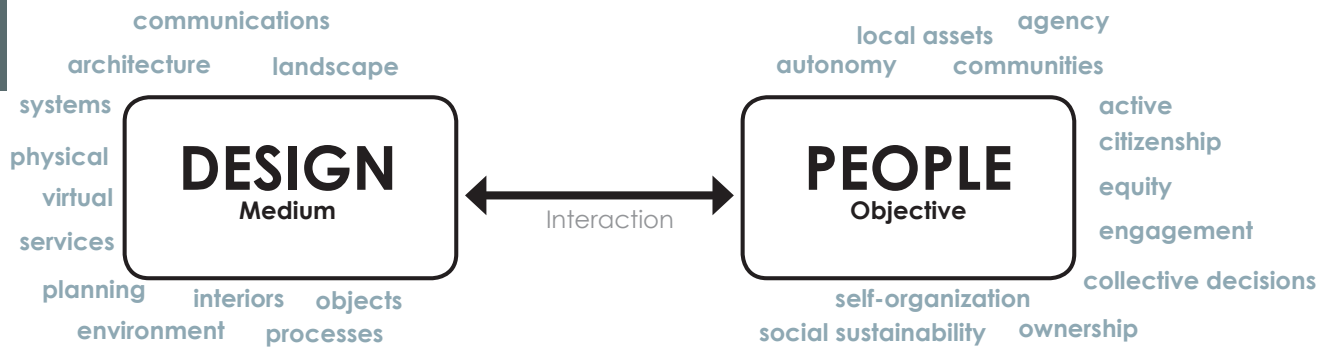
1- LEARN
FROM EACH OTHER

2 - EXPERIMENT
A METHODOLOGY

3- INTERACT
WITH CLIENTS

4- DESIGN
& PLANNING

What is a participatory design ?



The interaction between the medium called Design and the objectives is a tense link that depend on one to another. The Design takes into considerations criteria regarding the current environment that has to be combined with the wishes and goals from people objectives 'values'. In this intense cooperation that makes a good design proposal.

IT IS IMPORTANT TO KNOW THAT.....

- People have the right to participation.

- Designers have a social responsibility to people.

- Everyone is an expert at something.

- Participation creates ownership of the product or outcome.

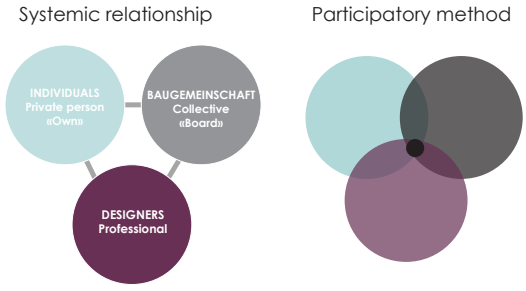
Who are the stakeholders?

A participatory design is a design approach:

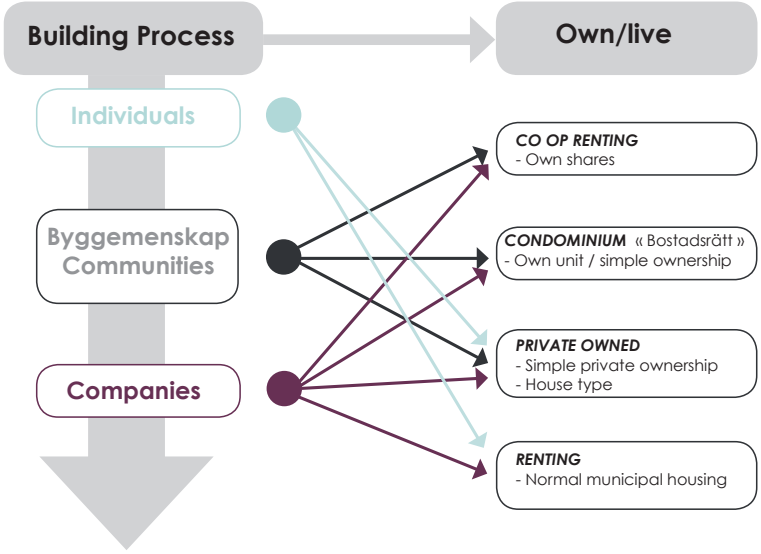
Involving people in the same process and procedures of design.
Informing people that it is a one way process to sharing, delegating roles.
Defining design criterias through workshops and discussions.

Stakeholders relationship Diagram into participative method

The individuals devote themselves into a design process by cooperating with designers. Beforehand they create a community 'BG collective' where they elect a'board' to lead the process.



How to get finnancially involved?



This diagram shows the importance of customers 'investment finnance' within the building process.

The main process 'Building process' is in relation with the 'own/live'. What is the current situation on the real market today and how can different stakeholders be involved in this process?

All these different users are devoted to different possibilities that are explained in the adjacent scheme. The solution choosen is Coop renting (own shares)for this specific Högsbo case).

Why get involved ?

The table below shows some keywords that are important to take into consideration before becoming involved in the process. Forming a base platform from existing actors that have different roles in the process.

By collaborating with them, the input becomes multispectral and the various fields of expertise completement each other. This is profitable for everyone, either for the company than a group of person that want to co-create.

Some Themes to start...

ECONOMY	FINANCE/ AFFORDABILITY SURFACES / QUANTITY
SOCIAL	PRIVATE / PUBLIC FUNCTIONS / COMPOSITION
ENVIRONMENT	SUSTAINABILITY/ QUALITY FUNCTIONS / COMPOSITION
EXPRESSION	SHAPE / VOLUME MATERIALITY

VISUALIZING
the overall process trough my work and images.
Use me as a starting point to see what you want and need.

EVALUATING
the possibilities for this specific project.

ANALYZING
the site from an early stage.

GETTING ACQUAINTED
with the place and your future environment.

COMMUNICATING
Start communicate with everyone about design
and criterias to be more confident in the design phase.

QUESTIONNING YOURSELF
Get to know what you are expecting for
your own.

GETTING DECISIONS MADE
Quicker Development.

REDUCING RISK
to miss understand each other.

• **WORKSHOP 1**

Intoduction Brainstorming

This workshop consisted of explaining to the community, what the process will be in order to reach the design. How will we make it happen?

In this first step, we presented ourselves around a coffee 'Fika' and we heard from everyone to get a clear idea of theirs expectations. When the discussion started, we could discuss criteria for the future design. It was a long debate about what they should share or not based on their own life principles.

This brainstorming was a benefit for everybody to better understand the difficulty of agreeing on common ideas within a community. Trough this conversation we defined common criteria that could help us to decide the ambitions of the community.

Many exercises such as circle pictures or words cloud, generated discussions surrounding sensitive topics and gave a clearer understanding of how they need to support one another, and that the investment needed to make this project happen depends on them.

It was a realistic way of communicating the procedures of design and how the community menbers could take part in the process.
This is definitely not a easy way to accomplished a project but this is the most relevant approach for this community.

From my point of view, it seems much important to focus on the specific persons' needs in order to respond actively to existing situations instead of designing for mass production.

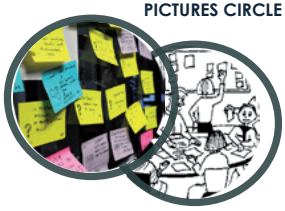
PARTICIPANTS INFOS

Number of participants: 5
who: Community Högsbo
Date: 3/02/2014
where: Helhetshus architecture Office

INTRODUCTION MEETING / FIRST WORKSHOP

SHARE POST IT IDEAS

PICTURES CIRCLE



BG Högsbo Community, Sweden

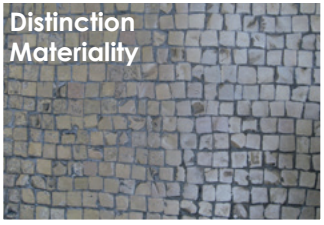
Debriefing workshop 3 February 2014 at Helhethus AB:

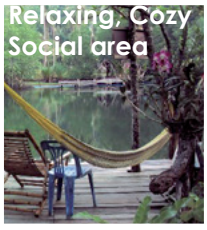
This introduction enabled to ensure the community group to a common line in order to define step by step their design criteria and shaped a common vision which is building the social identity of this community.
We did two exercices, the first one was a brainstorm about ideas on post-it notes, where we wrote down some key words.
The second exercise was to pick up two pictures, one that represented a negative vision and one positive vision.
The main ideas that emerge from this brainstorming were, social-friendly, inclusive and subversive as main criteria to include into the design proposal.

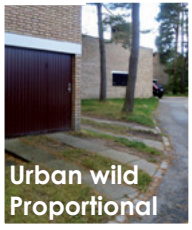
Social-friendly, as a main factor to enable attractivity and dynamic into the community; inclusiveness as an autonomous system which includes the major functionnal spaces ; subversive as criteria for non-standard esthetical looking building and experimental as a key element to engage the users interacting with the product.

Words cloud from BG Högsbo workshop

CIRCLE PICTURE

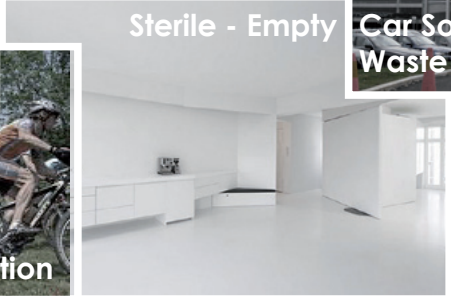


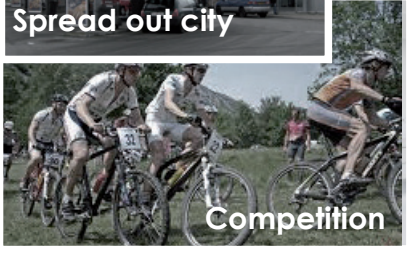


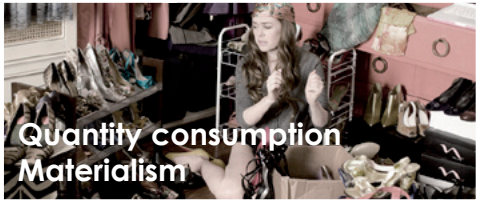


Positive aspects for the community:
Social interaction
and
Educational values

Negative aspects:
Quantity without qualitative values







Interpretation and analysis from this workshop

The community of Högsbo brought up plenty of interesting ideas concerning the current state of the built environment composed of scandinavian nationalities, this group was enriched by their diversity of experiences and opinions surrounding living conditions.

«Co-op housing is missing today in Sweden» said the community.

Our built environment today offer a range of possibility that limit the satisfaction of the users.

Co-designed housing enables the satisfaction of the communities due to direct answers to their needs. The negociation is a important part in this process because it need to compromises between all stakeholders. However, it creates and shape social links in order to incite people to retain better their environment and maintain themselves what they have co-designed. It is definitely, a more durable way of living where peoples take care more about their reslience. (self-management, their ability to manage strong identity feelings in the community.)

«Express our desires and our needs» seems to be a key aspect for the community. It feels the need to be part of the current society by implementing, shaping and building together their intrinsic wishes**.**

What is the fear of the community?

«Do not become the typical nuclear family»
Be included in the society seems to be a conventional way to live within the city without having control of what happens in our urban environment.
The city is devoted to some specific professions, others feel aggrevated by the inability to participate in the construction of their interactive environment.

Affecting our current environment is difficult for people that are not in the profession; the collaboration seems to be an efficient way in order to operate with customers to design on measure their spaces where they will wish to interact with.
Live somewhere is a need, but reaching the desire to live in a pleasant area

close to facilities, becomes a challenge for everyone. Co-creation enables to reach these challenges even though it is a intensive collaboration work.

Being different than someone else, seems to be a challenge today in Sweden. Individuals don't have the possibility to decide what kind of apartment they would like since all dwellings are controlled by the buidling construction companies. Their limitations, has shown insatisfactions regarding the offers on the market. Which means, our built environment is consisted of typical and standardized housing which does not satisfy people anymore.

The qualitative demand, is increasing having the ability to expand or adjust units seems to be an important aspect to shaping the future urban environment.

One key word that the community wanted to lift up was the word:

D E V E L O P

Adapting architectural spaces that allow the sociability through the design of spaces.
For instance, people do not meet often each other in front of their doors because the building does not allow it. The reason why they can not, is because the building is locked in the plan units system; which means that the building does not enable modular system and the private living units cannot become commons, which does not permit any reconfigurations.

Permitting an inhabitant via architecture, to meet unconsciously and socialize more with people is also a requirement from the community group. Indeed, invite people, discuss with them, is a good way to educate ourselves thanks to interactive spaces.

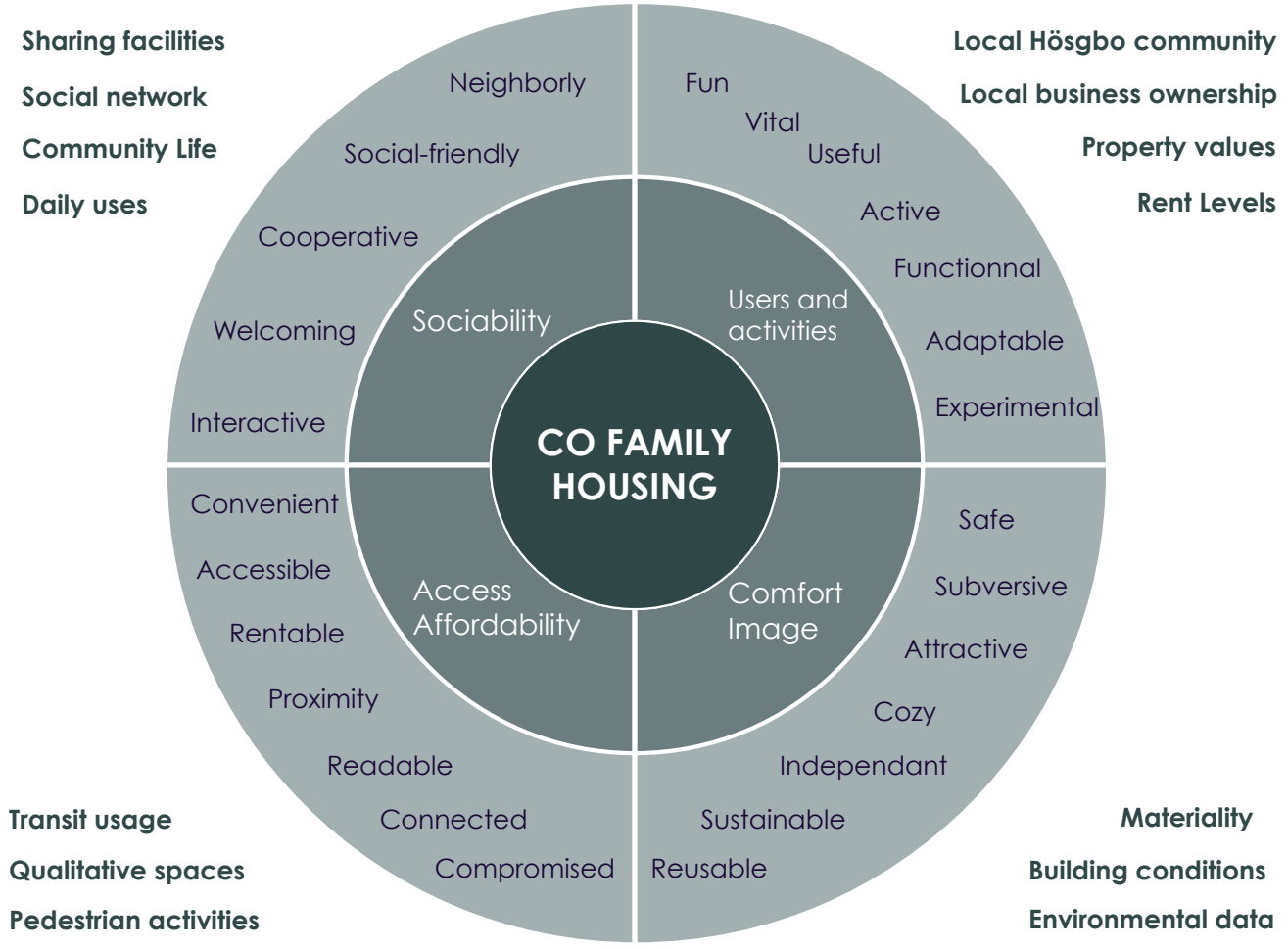
Being part of society through a process involving all stakeholders is an advantage and benefit for everyone.

« It should not be a competition but rather a cooperation.. »

(Quotation From Högsbo community group)

CRITERIA WORKSHOP 1 SUM UP DIAGRAM

The following diagram is an implementation scheme of their criteria-ideas, settled in different stages of the building process conception. These key attributes led my work during the architectural process.



Workshop 2

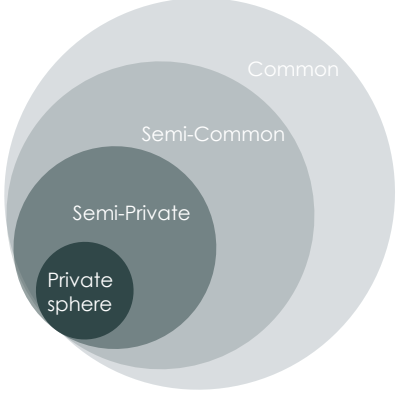
WORKSHOP 2/ Design interaction: Public / Private / Functions

« Adaptability as the design characteristic embodies spatial, structural and services strategies which allow the physical artefact of malleability in response to changing operational parameters over time»

Schmit Robert III, Toru Eguchi,Simon Augustin, Alistair Gibb

Scalable Interaction

This workshop focused on the relationship between the social interaction and the quality of spaces.
The private sphere (in dark green) shows an independant household which is interacting with the other spheres that surrounds it.
The transition between private and common seems to be an important factor that linked all the cells together.
It is important to be isolated in some ways from the common to keep privacy and autonomy.
The common spaces, aims to open up and integrate social life into the program. How much, am I ready to share?



Relationship privcy-common

Interacting with the building seems to be an important key for the design. The sucessful adaptability may not always need to come from the capacity of the building itself, but from the users or owner's capacity to adapt to any number of variables which supports the dynamic interplay between building and context.

In this sense, it is a relevant point to capture life through different types of spaces with different scales, situations of interaction to test the level of privacy. The community menbers could start to discuss and see the possibilities regarding what are their expectations in their future environment.

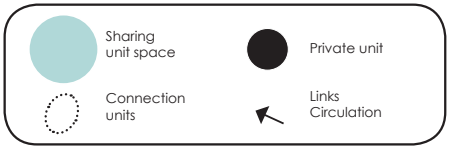
DEFINE STRATEGIES REGARDING SPACES
Human dimensions:
Scenario Testing
Scalable situations

Private-Public questions:
Level of identification:
«I belong to the space»
Level of appropriation:
«The space belong to me»

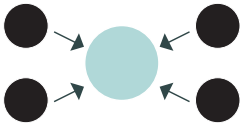
Perception of adaptability-flexibility:
Spatial approches
Design Functions

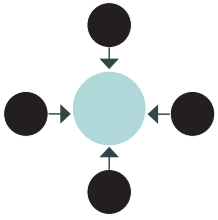
Common- Private Design perception

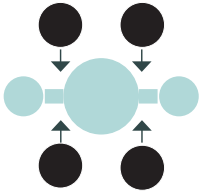
This analysis is a design interpretation showing different pragmatic situations. These situations represent the relationship between the private and the common spaces. The level of identification shows the link between common and private. The result of this analysis allows the combination of those elements to create rationality and enables adaptability in the building system. The disposition of the units are restricted but still offer a large range of possibilities.



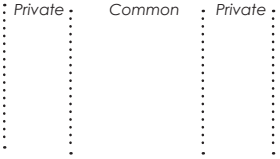
Pragmatic disposition

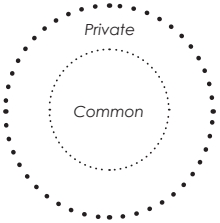




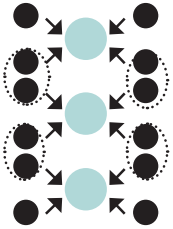


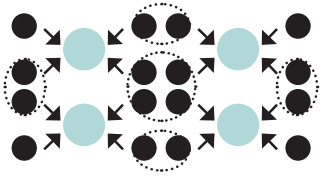
Level of identification

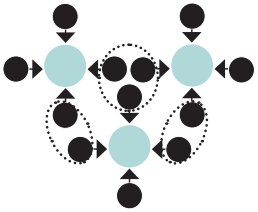


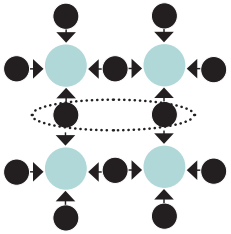


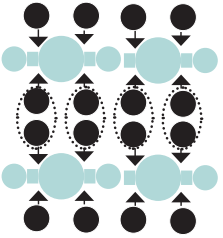
Perception of adaptability-flexibility

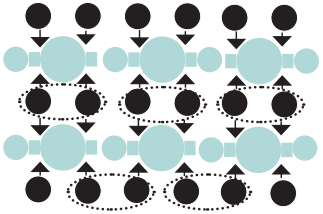












Spatial disposition/Spatial Qualities

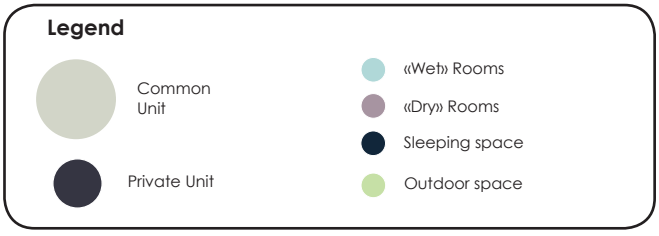
Interpretation and analysis from Högsbo community group

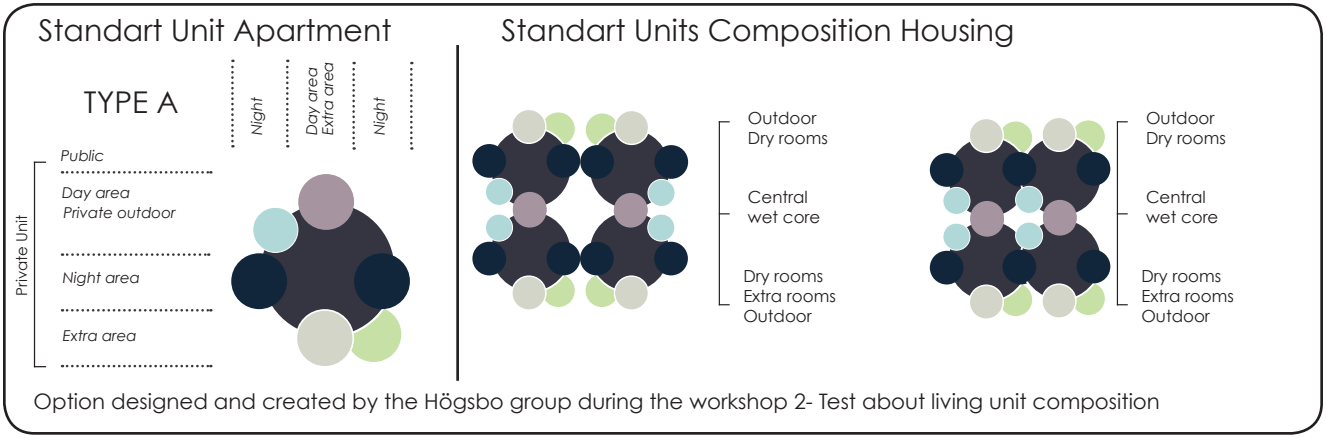
This analysis is the result of a work based on my design perception (see common-private design perception); using different compositions of living unit typologies.

The type A is an option that has been designed and created by the Högsbo community by discussing the qualities of the living space during the second workshop with the Helhetshus architects and myself.

They chose this configuration regarding the organization of what they would like in their private living unit. For instance, sleeping rooms should be positioned near the bathroom with a central open space that could be accessed easily and directly from the entrance. This open space which is the core of the living unit should contain a kitchenette and possibly an outdoor space (box or balcony) that could be shared between two households.
The combination below is a pragmatic scheme showing their intentions. The size of these color circles shows a proportion of rooms with specific functions.

Finally the aim of this exercise was to start to discuss and think about the future program.





Option designed and created by the Högsbo group during the workshop 2- Test about living unit composition

• WORKSHOP 2
Design Interaction

This workshop consists of adapting the design characteristics to the spatial plan design in order to bring qualities into their specific program. This workshop was mainly interactive and demonstrated the typical perception of space and how they could implement them. We played with small colored circles which were printed in order to represent different functions of spaces. The rules were to place them to configurate a typical living unit in order to have a projection of different spaces that they were expecting.

We discussed in-depth the placement of each element and the spatial interconnection between all these components. The composition of the elements are very important and define the interactions.
For instance, the level of adaptability could be different in any cases if the elements doesn't complete each other. They need to be relatively place in strategic points to allow flexibility on the open plan. Otherwise , It locked quickly the plan and doesn't permit any changes over time.

PARTICIPANTS INFOS

Number of participants: 5
who: Community Högsbo
Date: 23/02/2014
where: Helhetshus architecture Office

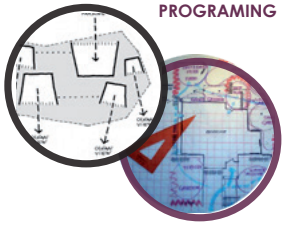
«Incorporating physical flexibility is consciously admitting to social flexibility and diversity and is one way to engage people in actively participating in exploring and reflecting on the way they live.» (Tajana Schneider and Jeremy Till 2005)

Flexibility, in this sense is extremely relevant as the purpose of Högsbo community living. Flexibility can be applied to both internal and external changes and be acheived by altering the physical fabric of a building by joining rooms. (Tatjana Schneider 2007).

Second Workshop: Sum up

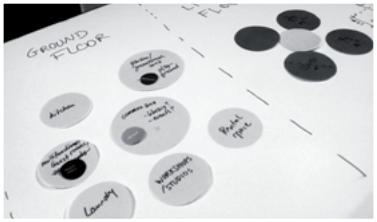
STRATEGIES

PROGRAMING



«Increase/ decrease the numbers of rooms for changing life phases»

« Natural meeting places and Opportunity for privacy»



Photos Julie- BG Högsbo Community. Sweden

Debriefing workshop 23rd February 2014 at Helhethus AB:

This second meeting allowed us to go further in the process with discussions concerning spatial disposition, functions of rooms and develop more detailed flexible unit arrangements (open plan). We talked about the size of one «standart unit» and its specifics. We came up with ideas that distinguished, private and public as two entities separated from one to another but private and common as two entities that complete each other.

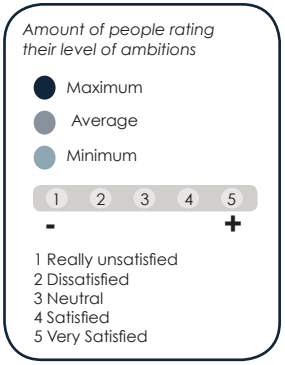
We engaged in two exercises, the first one was a quiz, evaluating scenarios of a household. All the families fullfilled the quiz (see appendix). The second exercise was more social interaction exercise where people were asked to create their future situation.
The medium here, was color circles that corresponded to different functions. The goal was to combine these circular «units» in order to create different living situations.

These ideas will be integrated in the future design and will contribute and influence my work regarding the community members needs and wishes.

Quiz Evaluation Feedback

Themes that we met during the first brainstorming workshop, were discussed even further in order to evaluate ourselves. We defined what feelings existed concerning social, economical and environmental notions.

Rate your overall experience in the city due to your memories by taking into consideration the level of interactivity.



Environment / Expression criterias
Character of the building

Innovative

Experimental

Sustainable/ recycling

Energy efficient

Ecologic building

New technologies

Standardize materials

Prefabricated

Interactive

Functional/ practical

Flexible

Adaptable

Social criterias
Interaction with users

Indecisive

Friendly person

Social interactivity

Experience in Public-spaces

Outdoor feeling

Indoor feeling

Sharing level

Unnecessary / Vital

Economic criterias

Rent price

Sqm size unit

Ecologic LCC label

Evaluation Quiz Interpretation

Based on questions quiz in the annex, I made this graphical interpretation demonstrating their level of ambitions which was incorporated the design proposal that will follow in the next chapter (Part 4 Design proposal).

An example of one of the questions is: How much would you like to have an experimental housing project?
The answer that came up after the quiz was mainly positive. For most of the people, they rated 4 to 5 because they seemed confident about the idea of experimenting with new type of building system; which means that the majority were happy to have a subversive, different looking building.

An other example, relevant in this quiz was the social interactivity between the users. How much they would like to share facilities together.
I was surprised by their answers because on the quiz they were split into two categories. The first group, were the people that were really happy to share most of their services such as kitchen, living room etc. The other group was a little bit more sceptical about having everything in common spaces. They were a bit afraid to spend too much of their time within the community group and would rather have their independant kitchenette.

There were really long discussions about what should be shared or not and how much they would like to interact with each other. The notion of private vs. public has been an issue for many years in housing projects and design. Many still are uncomfortable when it comes to the 'share more than normal' discussion. The group, however, collaboratively decided to balance the project though a program that allowed for common spaces on the ground floor but that still keep the qualities of an independant household.

In the next pages of this booklet, you will see how they decided to share facilities and what are my suggestions to address their needs and criteria.
This proposal is one answer that has been studied with this case community and responds specifically to their requirements.

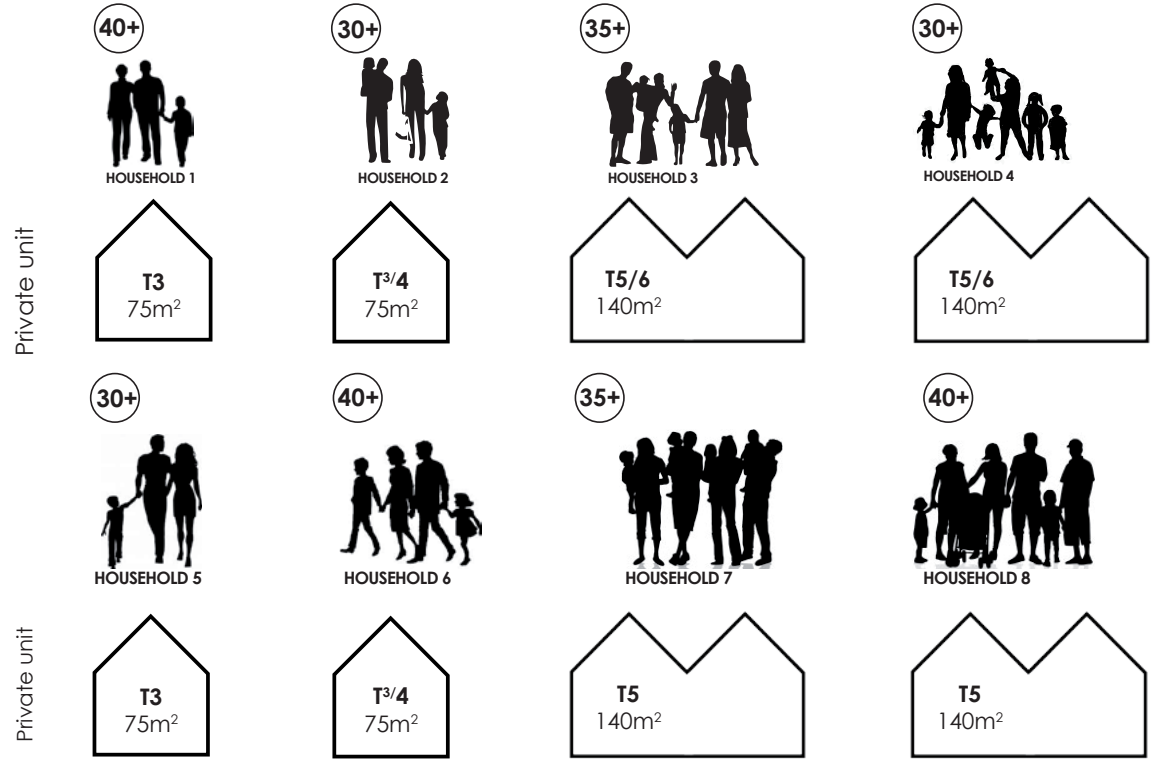
Scenarios testing design

Current expectations from the households for their future living in community...

First, I asked them to return a sheet about their wishes and described their own family situation. (see attachment annexes workshop 2 scenarios Testing)
The idea with this participatory process was to obtain a maximum amount of information about the community/ target customers and adapt the design to them.

The Högsbo community is mainly composed of young families of two to five persons. They might extend their family size in the future and they mainly want adaptable units that could be modulable.

SPECIFIC CASE Högsbo community menbers/ 8 Young Families = 20/25 Persons



Preliminary Program : Multi family Co housing

This program contains a prerequisites from the Högsbo community.
Trying to meet their requirements by estimating a building size needed.
To be able to estimate, we listed a pre-program below.

Category	Type	Size (sqm)	Function
Common area	**Open Plan concept**	**approx. 650**	**Socializing**
Ratio 20%	•Rental space •Shared kitchen •Big open space • Interactive Workshop • In/out Playground •Laundry •Guest apartments • technical room • Bikes local/garbage room • Sauna • Common Library	•100 • 80 • 70 • 70 • 40 • 40 • 35 • 20 • 50 • 50 • 50	• Renting out • Needed • Socializing • Interacting • Enjoying • Needed • Inviting/Hosting • Needed • Needed • Relaxing • Relaxing
Private units	**Modular- imbrication units**	**approx. 800**	**Living**
Ratio 80%	• Household 1 T2/3 • Household 2 T3/4 • Household 3 T5 • Household 4 T6 • Household 5 T3 • Household 6 T4 • Household 7 T5 • Household 8 T5	• 70 - • 88 • 120/130 • 130 + • 70 • 88 • 120/130 • 120/130	• Simplex • Simplex • Duplex • Evolutive unit • Simplex • Simplex plus • Extended unit • Duplex +

Mental map Program

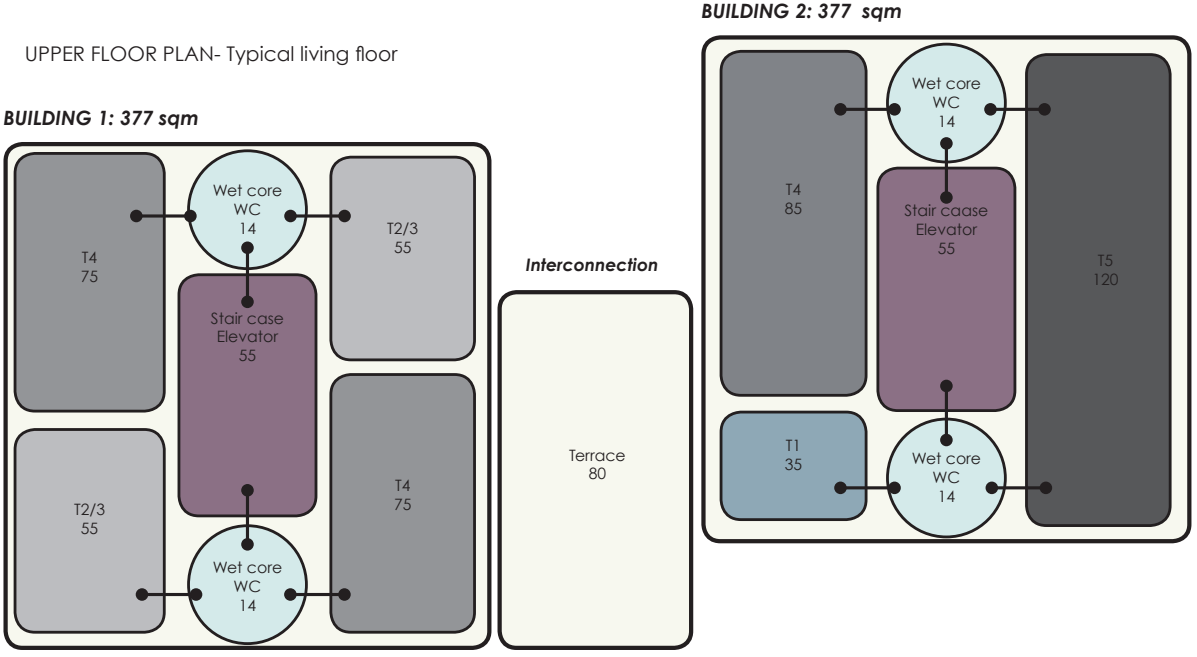
Typical living unit plan

The disposition of the apartments are settled on the two external parts of the building attached to the core, similar for all the dwellings. This creates an inner area devoted to the stair case and circulation.The plan can be adjusted to extend or reduce the size of the apartments even though the technical core/ shaft is fixed. All the living units have to be attached to this core.
The aim is to make the users engaged in the building by adjusting their apartments according to their needs.

In designing an open plan system, the dwellings can be previously adjust and modulable to satisfy the needs of the users. The capability of internal changes (partitions) makes the building modular based on unit components.

Adapting the building for changes and alterations to adjust the environment to the changing needs of the occupants in time; Users achieved satisfaction by changing the physical characteristic of their environment.

UPPER FLOOR PLAN- Typical living floor



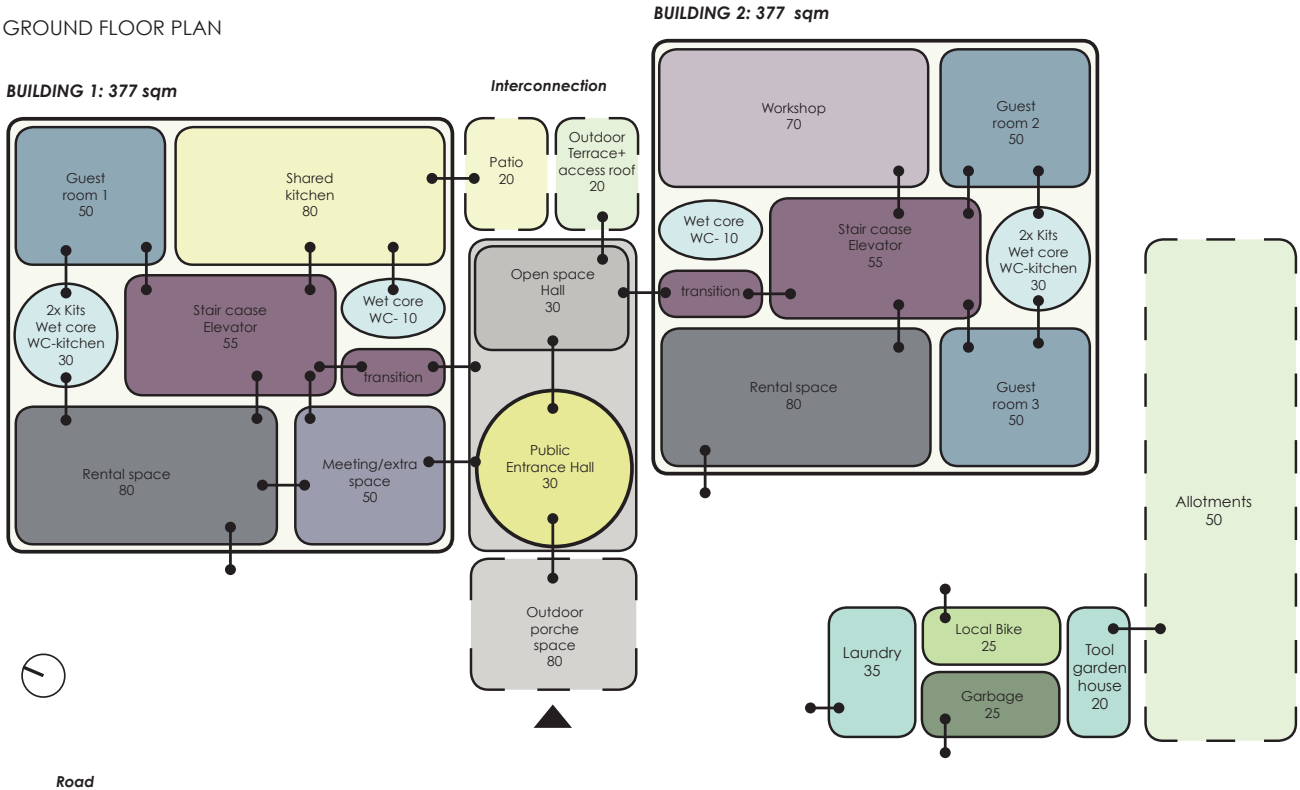
Ground floor /commons area

The ground floor program aims to support an active participation within the building increasing the quality of living and adding educational values.

The Program based on the Högsbo communities specific needs, consists of having an open ground-floor plan contains adaptable functions and features so changes can be made over time.

The two buildings are linked in order to connect and share more services. More common spaces are created which enables more engagement of the users to interact and dynamize the space. The possibility for the users becomes more interesting because it offers more qualitative spaces and social flexibility to share functions and similar activities: An open plan meeting place.

GROUND FLOOR PLAN



Workshop 3

WORKSHOP 3/ Modeling- adaptable Unit design plan

« We focus on the relationship between the built environment and people's quality of life »

Jan Gehl , Cities for People (2010)

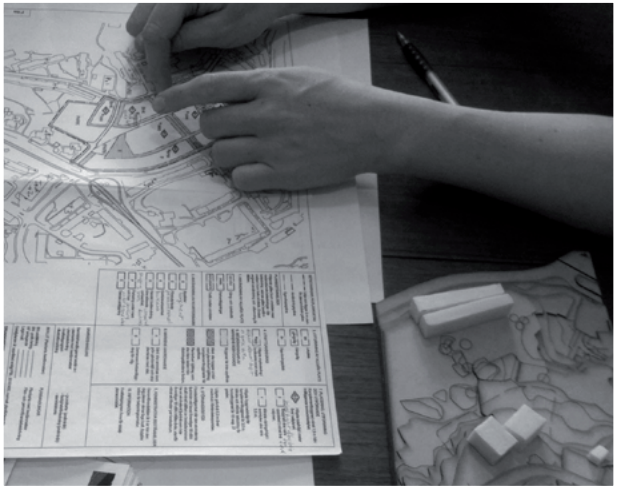
Last-step workshop process
This workshop was a step to finalize and show to the community group, my design work. We discussed the actual plans and models; they gave me feedback regarding their perception on my design work.
Added, qualitative aspects gained more importance in this stage than at the beginning. They realized they wanted to have a more balanced project that could be much more affordable but which is still bringing private living qualities into their independant units (for instance having perhaps a proper kitchen in their unit). Maybe they were ready to share facilities on the common floor but also keep those facilities in their own dwellings as well. They still seemed unsure about their real expectations.

«Residential satisfaction on dwelling space is the function of three groups of variables.» (Nur Esin, Atlas Ahsen, Özsoy 1997)

These three variables are users characteristics, physical attributes of a space and beliefs and perception of the user about the experienced space.

In that sense, the Högsbo community group needed to work further on beliefs in order to convince themselves about their engagement in this co-creative process and lifetsyle.

Moreover, they also realized that this work were a fine line which is balancing in order to reach the right proportion size where they will have to actually make compromises together. They need to refine the more valuable activities and functions of rooms and make an estimation cost.



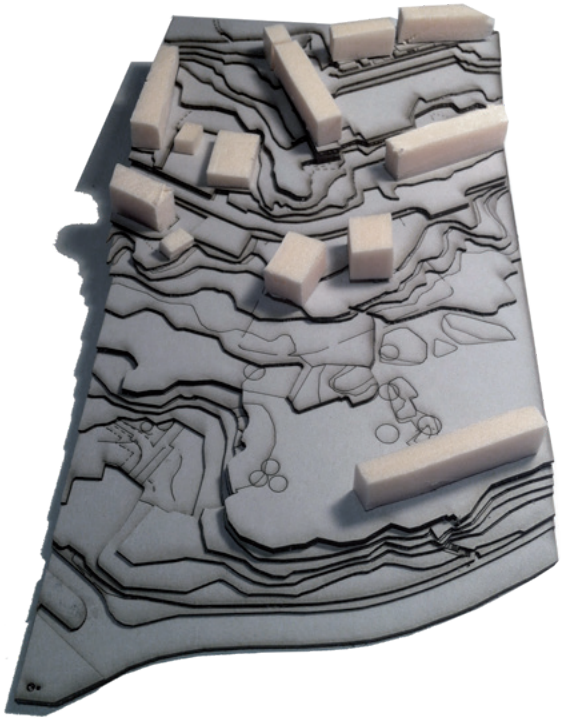
Goals for the Multi Housing project

At that workshop, we needed to reconnect our minds, and redefine the aims for the design project. The project was in-line with their personal criteria and interest in developing new ideas for the housing sector.

1	Create Co-operative housing **A resilient way to live together**	Socialize and collaborate
2	Create Modular building systems **Functional use housing and modularity**	Experiment and experienced
3	Create Autonomous unit system **Distinguish private/ public**	Shape and design
4	Create rentable /affordable building system **Toward energy efficiency housing**	Gain and Benefit
5	Engagement for an adaptable building **User involvement and interactive housing**	Interact

During this condensed workshop, the aim wasn't to do any specific exercises but rather provide me feedback. We discussed a lot about the configuration of the apartment units and also about common spaces.
The ratio of the common vs private should be re-work in depth which will balance more equally the project.
They saw all the variations and combinations of this modular sytem and we could discussed functions and possible adjustements for the project. A long discussion came up around the extras and how the project could be implemented by adding smalls extras to make the difference. The extras are additionnal features that are optional that can be placed anywhere in the unit. From this stage, it was an extremely important meeting to conclude the co-design process and make a stand for them in order to positionate themselves in the co-creation process.

I have enjoyed working with the Högsbo community and it was interesting to collaborate with a real group of people bringing new thoughts into my design approach.



Volumetry study model- Högsbo site

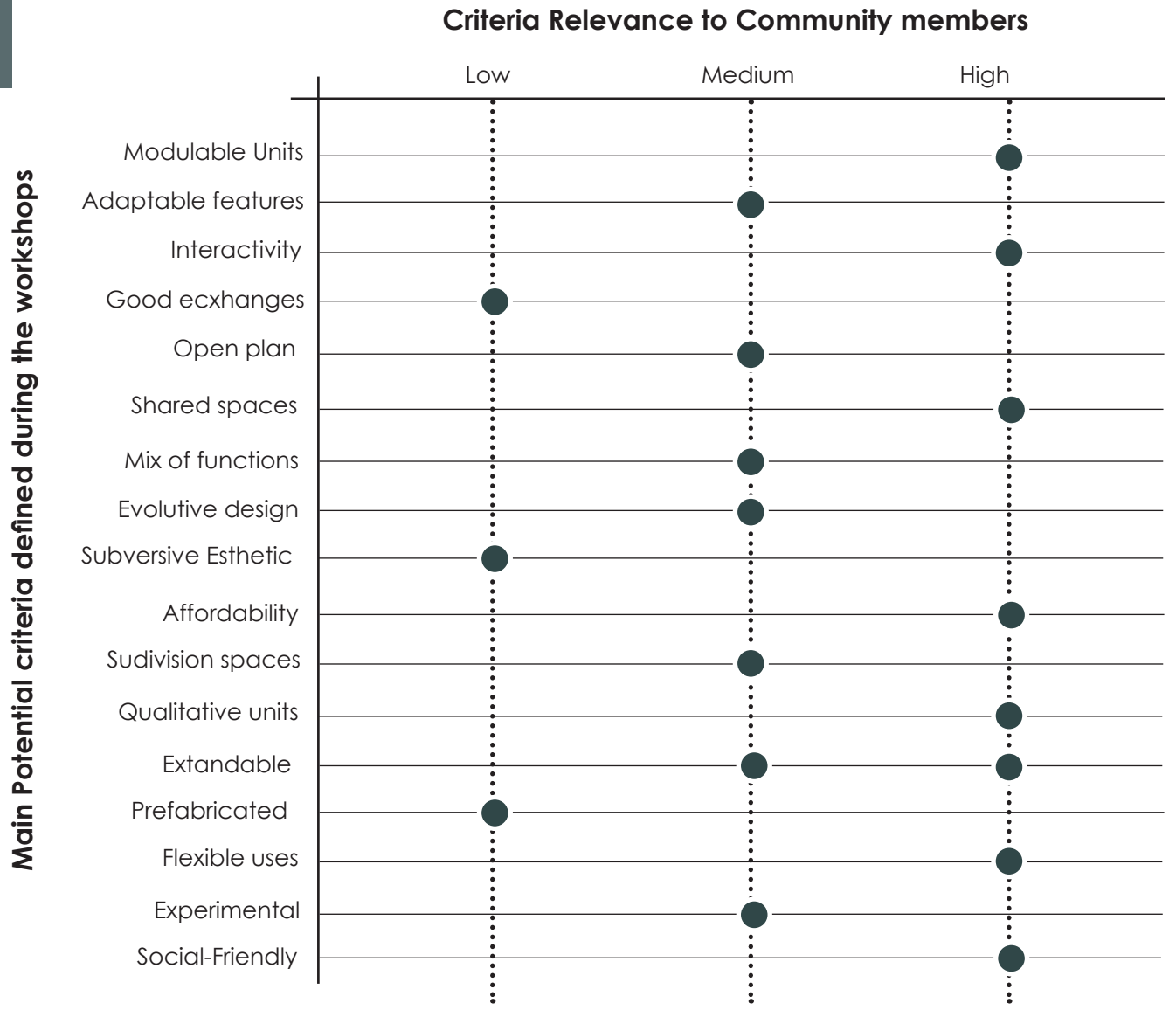
In this study, I am particularly interested in the collaboration between inhabitants, architects and shared spaces that make the specificity of this type of project.

The arrangements put in place by architects to facilitate trade with the inhabitants are, in fact, tools that they are using in practice which adapts to the participatory approach to allow greater involvement of residents in the project design . These workshops allow residents to share, learn more about themselves and defuse conflicts. This will facilitate future collective life.

Finally, in terms of spatiality, architects set up in housing projects together to enroll in the continuity of this shared understanding. Working architectural form , distribution housing, shared spaces ownership, diversity , changing housing public/private and articulation with the city limits... architects confirm the desire of people sharing spaces.

I think this spatial interpretation of the division in architecture ensures exchanges between neighbors over time.

Today, these spaces operate fully and participate to the urban quality and architectural spaces and well-being of these clients.


Criteria Relevance to Community members
Low
Medium
High
Main Potential criteria defined during the workshops
Modulable Units
Adaptable features
Interactivity
Good ecxhanges
Open plan
Shared spaces
Mix of functions
Evolutive design
Subversive Esthetic
Affordability
Sudivision spaces
Qualitative units
Extandable
Prefabricated
Flexible uses
Experimental
Social-Friendly

From collaboration to designed cooperative

If the trend of the first cohousing wave from 1970-80, approached a lifestyle quite closed regarding the choice of neighborhood, we note today that cohousing projects are more than a current movement that tends to emerge from each other.

I really trust that cohousing projects are in favor of opening the city and the mindset toward a more resilient way of living together.

Collectively, people are active and organize events where residents are invited to share and exchange. I could even noticed during the workshops that the Högsbo community group where closer to each other than at the first meeting. It linked people and created their identity during this collaborative process.
On the other hand, this type of housing suggests more frequently associating the social lessors to make this lifestyle accessible to all in favor to the social mix and the exchanges through the various stages of the project.
During this co-designed work, I led my work thanks to this Högsbo community group in order to learn more about cooperative housing in Sweden.

Indeed, political contexts are divergent from a country than another one; for instance, the french philosophy of cohousing is really different than in Sweden. If, in France, there is most of owners in cohousing projects , swedish cooperatives inhabitants are mainly accessible for rental housing.

Furthermore, the role of cooperative living is recognized for a long time, in Sweden. The visited projects show a certain advancement of the awareness of those communities into a more durable way of living. In this sense, communities life are more generously open to the city and the constructive and technical equipments, are more accomplished.

However, it seems essential that cohousing retains its autonomy and the

development of this initiative is always made through people, so they have the opportunity to really invest themselves in a common project.

Cohousing is not the only solution to produce a sustainable architecture but rather collaboration which is generating a new mindset and awareness regarding different type of living together. A strong feeling from the community start to build up the project which leads to new sustainable architecture.

Nevertheless, it seems that this mode of living, is viable. The architects who are producing them, develop creative solutions, in term of shared spaces.

The grouped housing environment, is a fashionable architectural production which invites the project managers to be inspired by these devices of design conception and the spatial qualities of these buildings; to design our future built environment.

Reflections

To conclude this chapter, a structured workshop procedure was implemented in order to emphasized the most relevant criteria.
Everyone was encouraged to develop their ideas by discussing or making adjustements to the model but it was difficult to bring them to a final conclusion.

The Högsbo community group worked with architects at Helhetshus office and myself, and we overed many different topics, scales. The collaboration was a slow process that gave me some time to refine further the wishes from the Högsbo community. This auto-analysis work was an interesting way of working with them even though it makes it a slow approach to design. Designers work alongside people to guide the participatory activities. Our role was to allow people's beliefs and contexts, aspirations and behaviours to emerge in a spontaneous and genuine way: then we use our design expertise to transform their ideas and insights from the process into visualisations, suggestions and prototypes, which were all be used in creating the design concept.

What do I bring with me into my program

Social and environmental aspect
- Social diversity and social interactivity
- Natural design which resulted meeting spaces

Economic aspect
- Maximum optimization of the building construction and materials used
- Renting Coop housing shares

Design aspect
- Clear delimitation between common spaces & private living units
- Variations and evolutivity of the housing
- Work at different scales fosters better understanding: Restrict criteria

Design for a adaptable living co housing

4 Design Proposal
Co identification

4.1 Site Analysis

HÖGSBO, Västra Götaland

District area of Göteborg Metropolis

4.1.1 Site plan

HÖGSBO

a city district of Gothenburg located on the Swedish west coast. Högsbo is situated south of the city centre of Gothenburg.

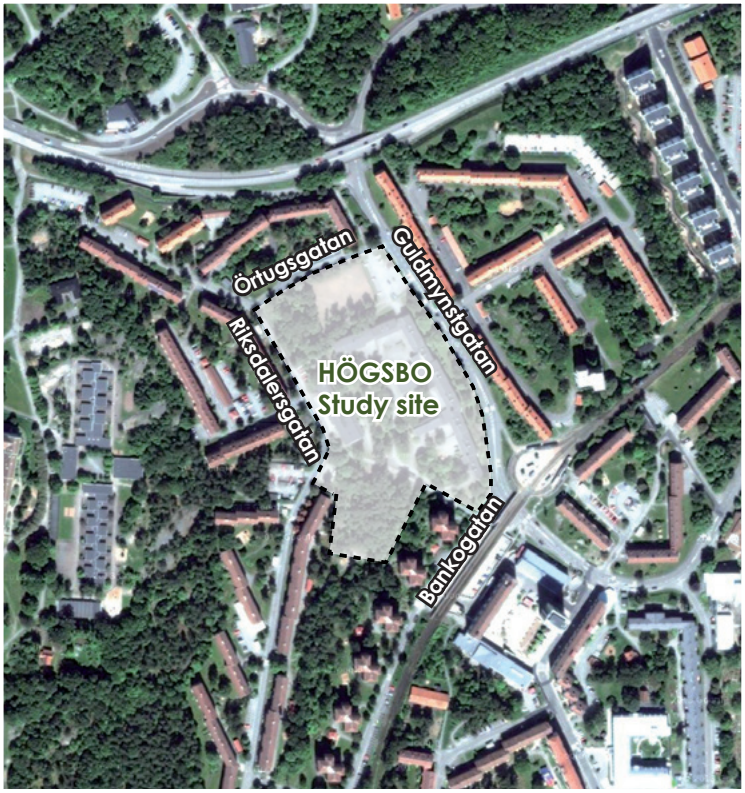
HÖGSBO AREA

- Country: Sweden
- Sweden Population: 9,045,000
- Province : Västergötland
- Göteborg Area: 447.76 km2
- Göteborg population: 549,839

Population Högsbo: 17881

- Kaverös 4297
- Flatas 3427
- Högsbohöjd 3709
- Högsbotorp 6448

4.1.2 Current Aerial plan area



Plan conditions

The general plan for the municipality of Gothenburg indicates built-up area with green spaces and recreation areas and the area covered by the local plan. The proposed zoning for rentals at Guldmyntsgatan consistent with the structure plan intentions. In a program from 2005 that densification is specify location for Högsbo and also some plots will be devote for community living rental urban dwellings.

4.1.3 Local Context

Figure from sweco- SGU's earth map of the planning area

Figure 1. Facing east dominated the skyline of Axel Dahlströms Square

Figure 2. Towards the west, the landscape in the spotlight with rock and retaining walls in natural stone. Star houses of brick are placed together and twisted to be experienced in perspective. The low buildings follows the height differences in the terrain and bricks of different colors are the dominant facade material.

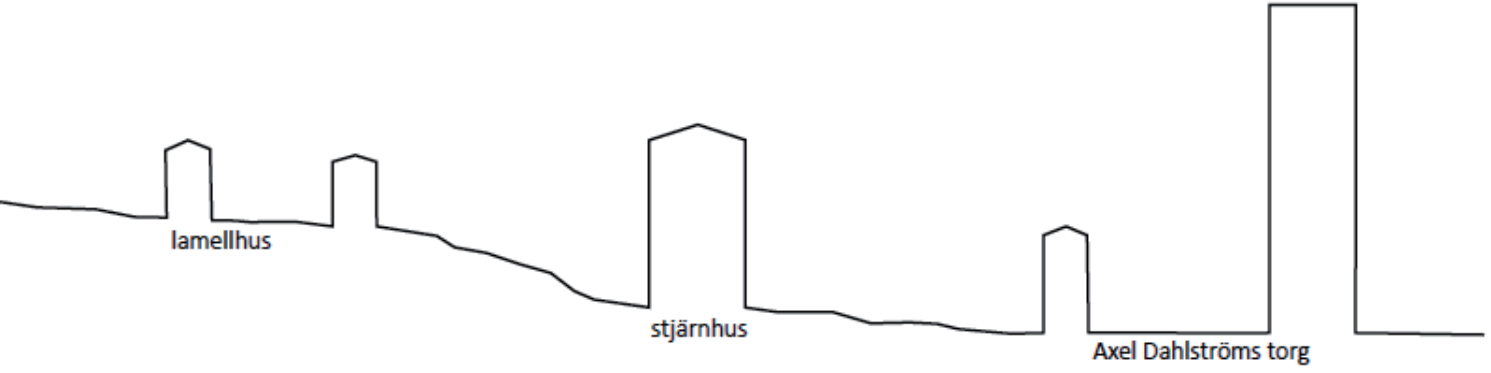


Figure 3. Topography section of Högsbotorp area.

Alternativ tower blocks ‘Punkthus’ Alternativ lamella houses ‘Lamellhus’

Illustration: two possible alternative designs of the planning area proposed by the municipality

The zoning means that around 300 houses with the option for activities in the buildings’ ground floors and a new preschool / school with four dwellings can be built into the planning area. The plan allows buildings along Riksdalergatan, Örtugsgatan and Guldmyntsgatan.

A new walkway in the east-west axis connects the area with Dollargatan and Silvermyntsgatan. Other streets and footpaths in the area arranged in blocks of land. Parking is coordinated in the garage, in the first instance in the plan area’s northern part.

4.1.5 Location site options

Implantation possibilities

A

Option A

> Maximum 4000 m2
> 4-5 storeys max
> + 60.00 total high of the building from 0 level = 16m total high

Option A has been chosen regarding to requirements from calculation table below. This option fitted perfectly the prerequisities from the community Högsbo for co families housing

Option B

> Maximum2600 m2
> 4 storeys max
> + 60.00 total high of the building from 0 level = 15m total high

Calculation Table

based on my own design proposal

Buildings footprint	834 sqm
Building size sqm	Building 1= R+5 377X5 =1885 Building 2=R+4 377X4= 1508 Extra building= 70 1885+1508+70 = 3463
Building size Efficient solution to be affordable	3463< 4000

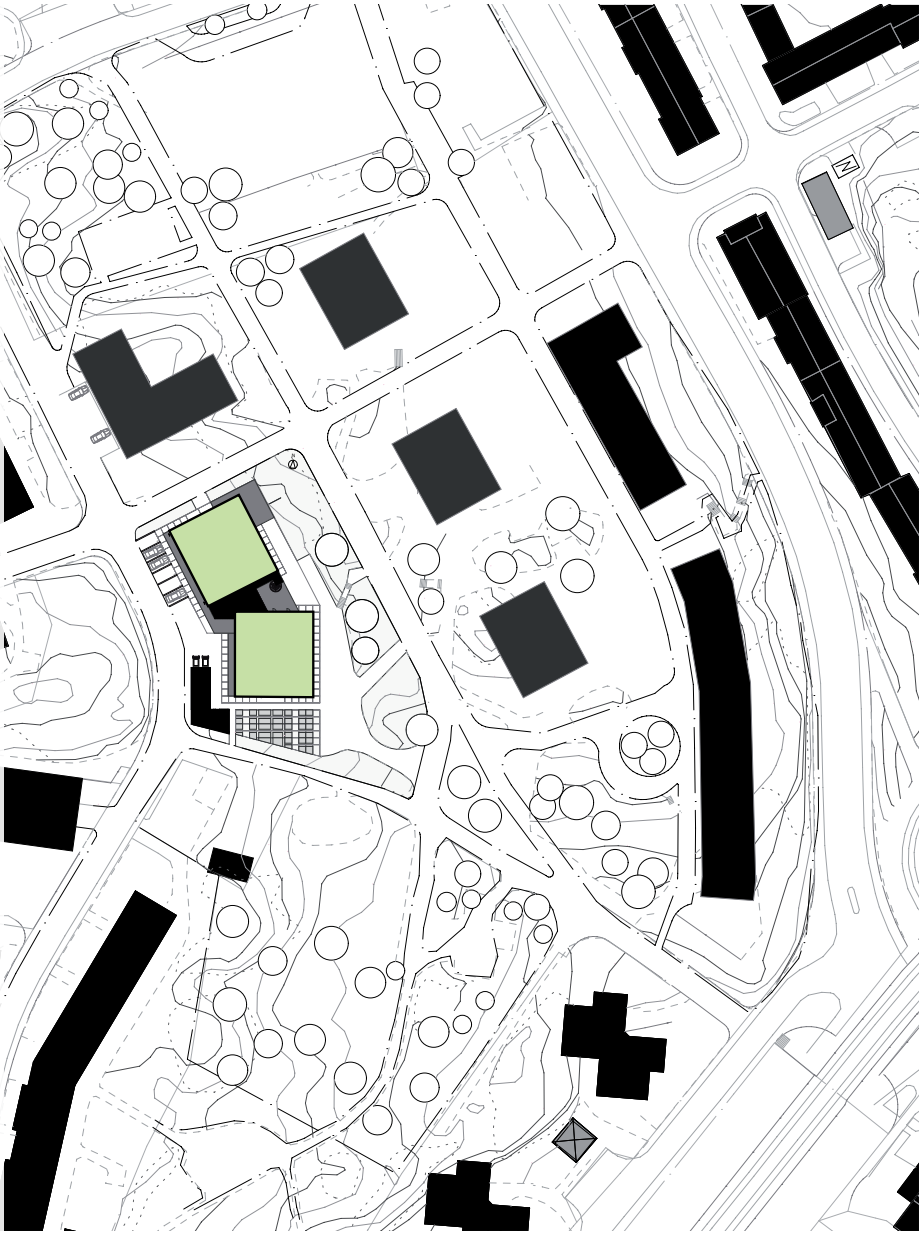
HÖGSBO SITE

The site has been chosed by the community that I worked with. They might get the chance to get in the future the same plot to create the co family housing project.

Högsbo is situated south of the city centre of Gothenburg. It is a nice residential area really closed to a lot of commodities and facilities. The outdoor environment is an asset of the site. Made of forest and a lot of nature, the plot is really well situated and get a lot of living qualities (sun, nature etc.).

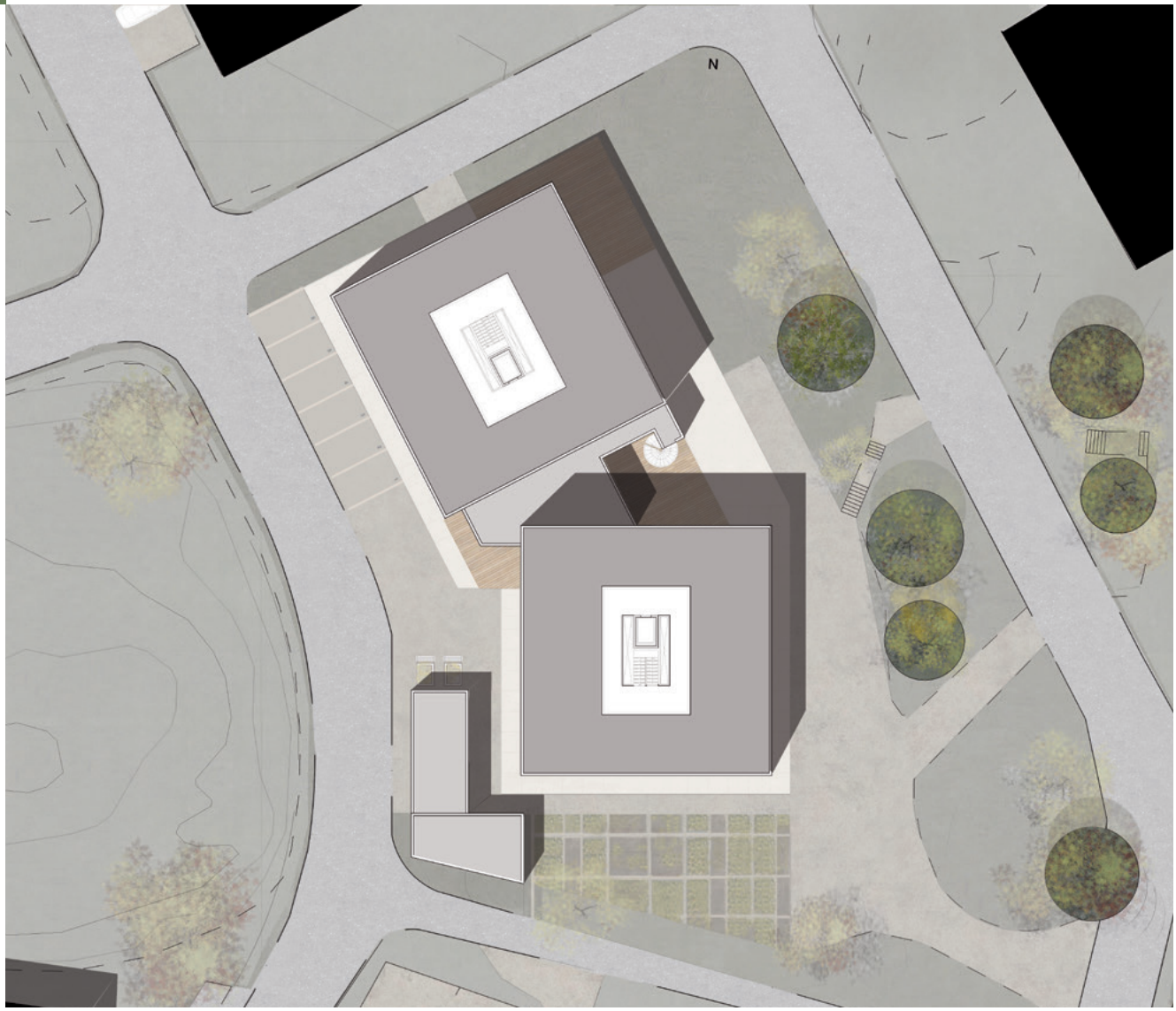
The location of the surroundings buildings make it non-dense area and open space. Some project are planned to be build along the riksdalergatan and Guldmyntsgatan road to densify this area.

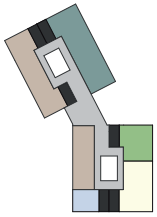
Different orientations were explored based on limitations of the site and the orientations of the living units regarding the modular concept.



4.2 Design Buildings plans

4.2.1 Master plan





Family Co-Housing project

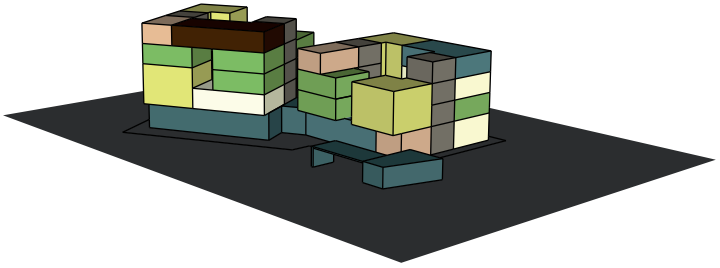
The project covers one plot with a unified modular strategy that allows variation into the plan, always taking into consideration the local regulation limits.

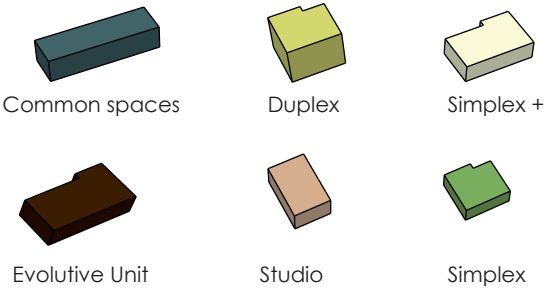
This project situated on Högsbo has been running in parallel with the Högsbo community regarding their needs and developed with their sharp ideas.

It is two buildings composed on the same plan idea integrating modules 'living units' and common spaces that makes this housing social and attractive. This project takes part of a new way of living sustainable and being resilient by sharing facilities in a common space.

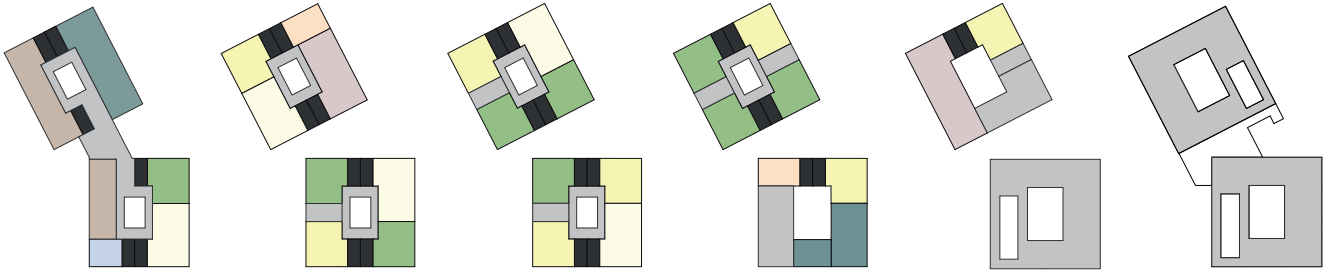
1 IMBRICATION SYSTEM

The Modularity based on an open plan allows to work with modules (apartments) and create living unit. Working with size unit enable to combine different solutions regarding specific situations of different households.
The users can adjust their living unit thanks to the imbrication system (modularity) that make adaptable unit to change it over time.
There is a large panel of possibilities to make it adaptable where the solutions are not infinit but restrict the modularity. Regarding to rules (cf composition rules), the composition permits a high social flexibility to satisfy users and fullfill requirements of 'extended' family housing.





Configurations plans system



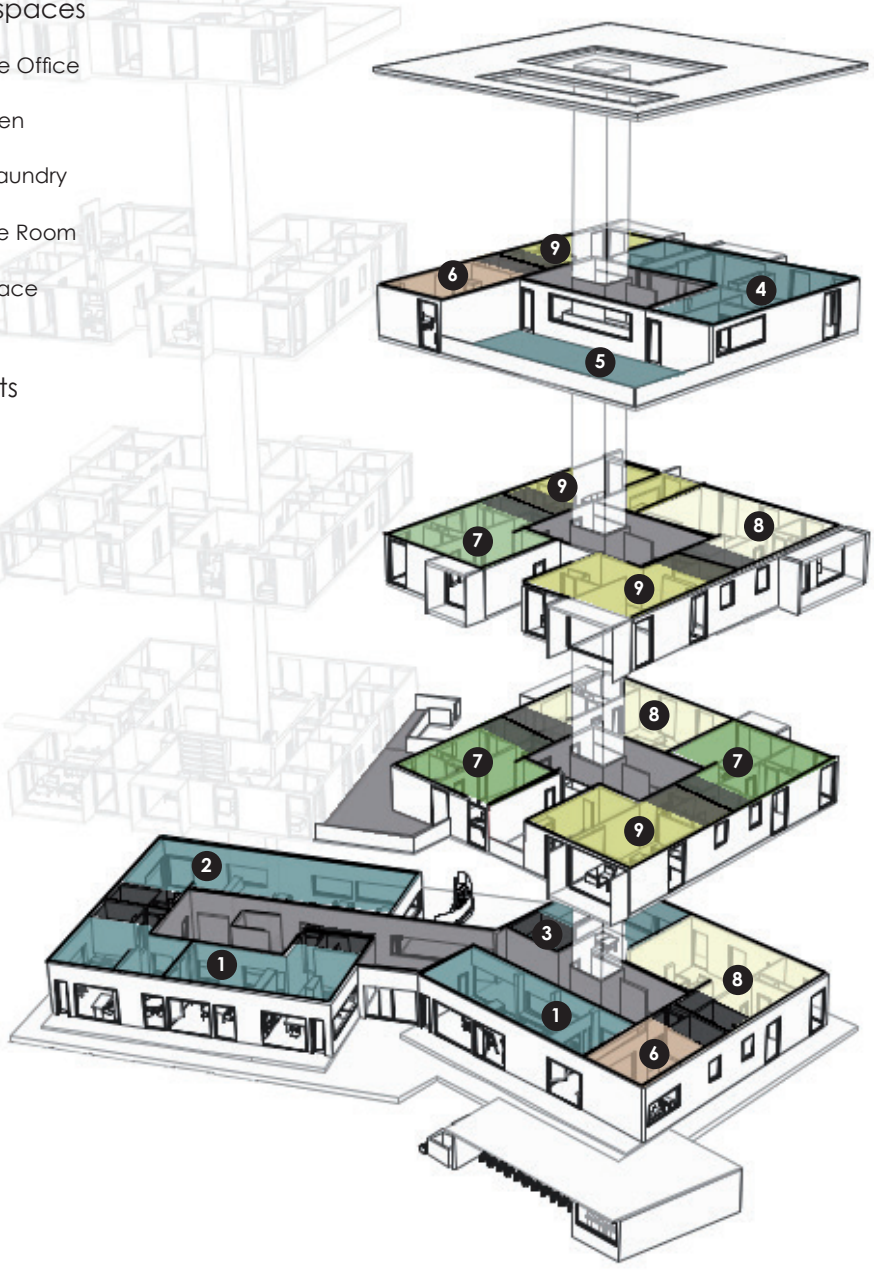
Exploded axonometry :Concept Modularity system

Common spaces

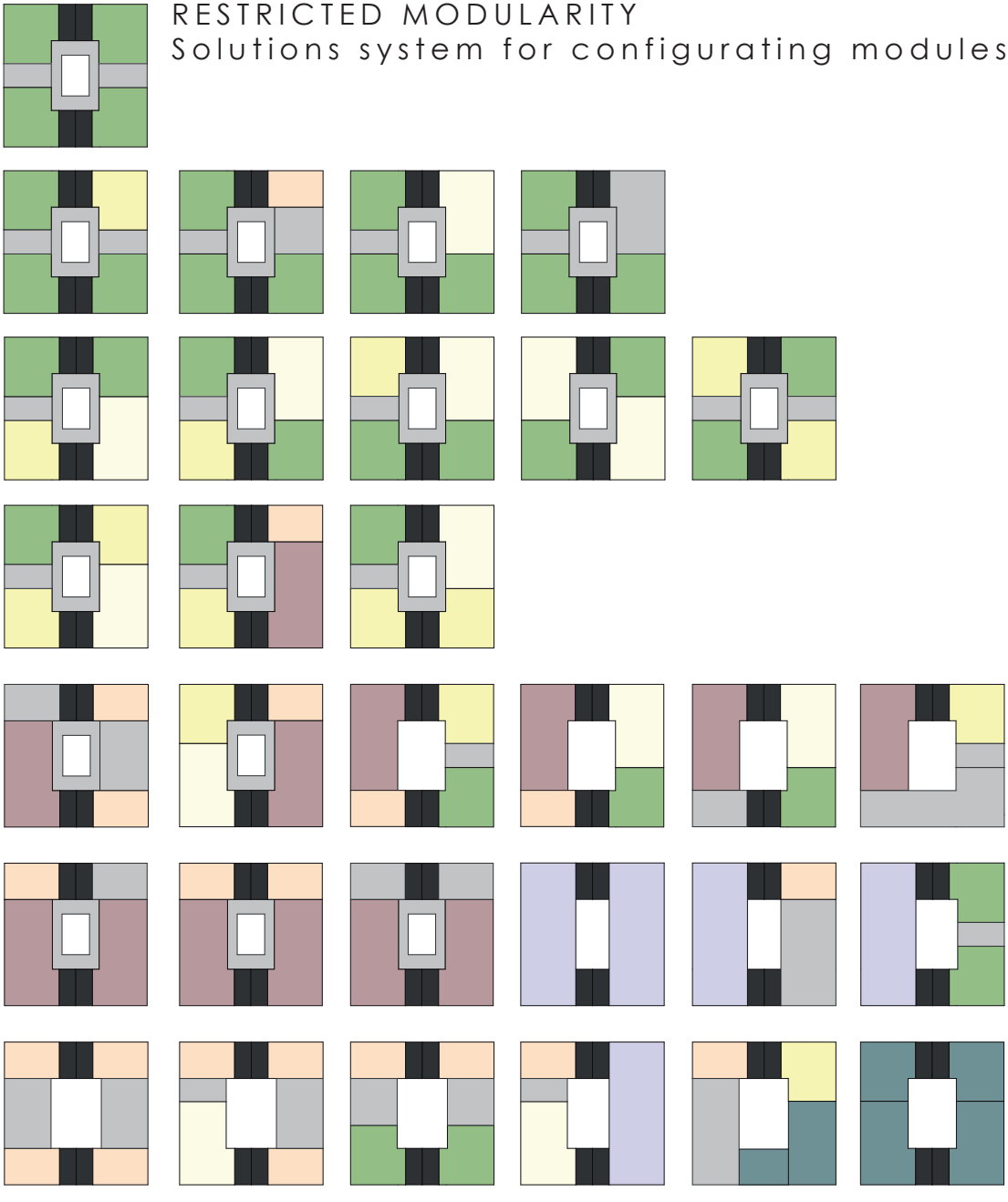
1. Rental Space Office
2. Shared Kitchen
3. Interactive Laundry
4. Indoor Leisure Room
5. Outdoor Terrace

Private Units

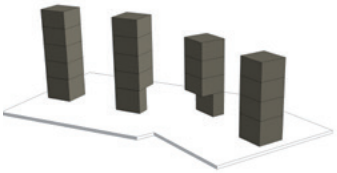
6. Studio
7. Simplex
8. Simplex Plus
9. Duplex



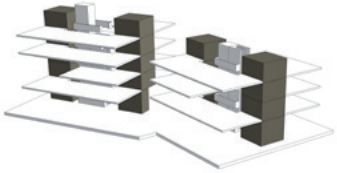
RESTRICTED MODULARITY
Solutions system for configurating modules



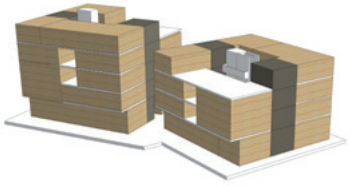
2 PREFABRICATED WOOD TIMBER STRUCTURE



CORE:
Technical Core
'Wet core' (bath)



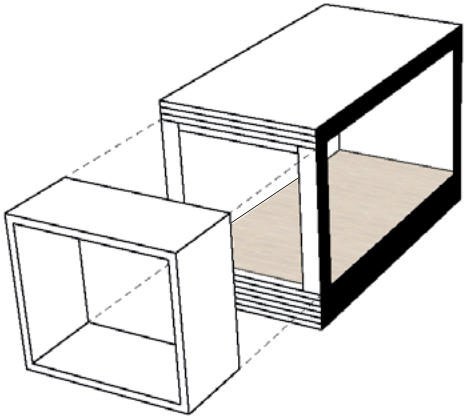
SKIN:
Open plan Slabs



SKIN/SHELL:
Load bearing timber structure

3 EXTENDABLE UNIT FRAME
Extras-Facade Components

These components are attached to the facade on the enveloppe in order to make the building more playful and organic.
The pattern created on the facade bring also interior qualities for the users. These boxes made of steel are framing the landscape on specific views and create extension to the inner part of the unit. Used as a balcony, those boxes reflect another dimension of materiality into the project. Contrasting with the wood structure and panels shell, these frames creates volumes.
Option: Can be colored frames



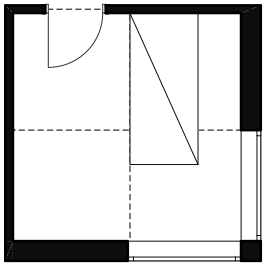
The units are based on a system grid which enable many configurations and layouts. The adaptable features allows for spaces to be fitted into the unit module and could be reconfigured based on needs of occupants. The living unit and technical core have been created as prefabricated elements to make it easier for the customer to choose what he wishes. Based on a kit system, the future inhabitants have to decide the features needed to compose their own living unit.

Single room: 4 Units (standard)
The single sleeping room is composed of 4 square units from the constructive grid matrix. This room is a regulated, standardized solution which is optimized to fit as much as possible sleeping room into the module.

Double room: 5 to 6 units (Adjustable)
The double room is based on either 5 to 6 units and can be either extended to one complete section if whishes. The technical core comes at some points as a combination of the double room in some cases.

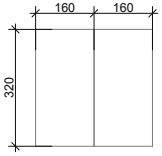
The wet core / Shaft
The wet core composed of a toilet, shower or bath, and a sink; is a fixed feature. In order to have the same shaft for all the apartments in the housing, the technical core has been designed separately to fullfill the requirements of accessibility. Then, The economical reason and construction aspect; makes me decided for this solution as an answer for being cheap and affordable.
It was also a way to facilitate the building system even though it locked at some points, the plan. The sleeping rooms are mainly attached to this core to be able to form a night slide connected to wet functions.

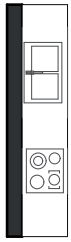
Optionnal Extras features: Kitchenette and storage boxes.
These are extras options because it was planned to optimized the cost and shared those facilities in the basement (storage) and on the ground floor for the common kitchen.
However, there is still a possibility to implement the living unit with those extras features. It is optionnal but many households requires it in their living unit.



Single room: 4 Units
10,24 sqm
Optimized sleeping element

1/2 section





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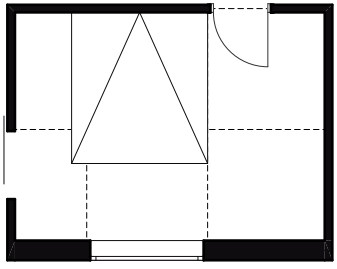
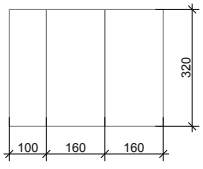
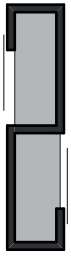


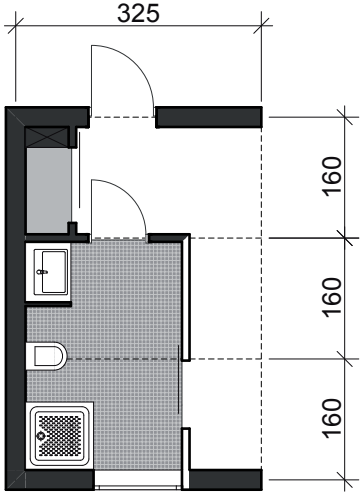
Double room:
5/6 Units (Adjustable)
13,5 sqm/ 20 sqm
Optimized/Extended sleeping elements

1/3 section





1



Wet Core/ Fix Shaft:
'Do not based on the grid system'
Regulated element for accessibility.
Capacity to combining two of these components when the apartment becomes larger.
Options bath or shower.

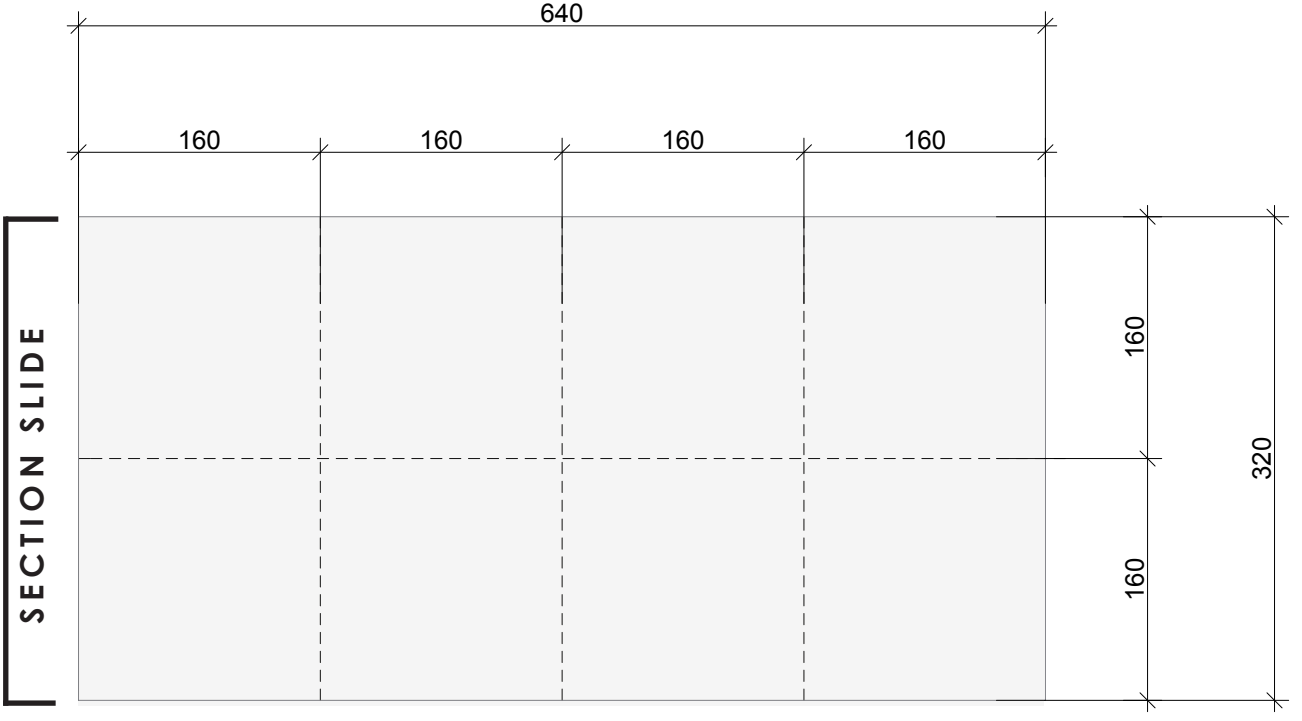
Extra features.
'Implement your living unit by adding extras'
1. Double side Storage
2. Kitchenette
(option plus : bar)

Living room (with kitchenette):
1 section Open space
The resultante of different configuration of these elements will let a flexible open space devoted to the living room and dining.

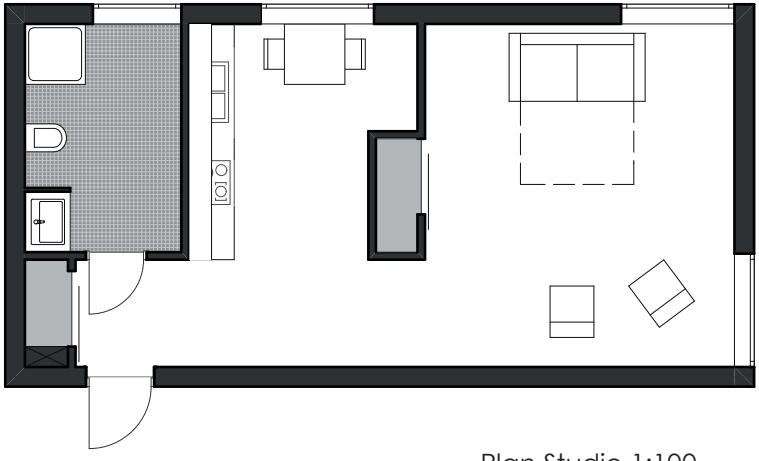
Composition Rules/ Section for apartment modules

The project works by modules (apartment) which is composed of several sections.
Each sections composed itself 8 units: 1,6 by 1,6 m = 1 square x 8.
To reach a level of configuration which allows pleasant living condition, it is recommended that each living units (=living room) obtain from 8 to 12 units regarding the size of the apartment.
One section, regarding to the composition rules, corresponded to one big sleeping room plus one small sleeping area. The two of those create a 'night slide' that can be attached directly to the technical core (same wide= 320mm). The composition of the project is depending on needs/ functions and can be easily adjusted by the users on site. Moreover each sections can be placed together in different ways which permits a high level of modularity on this open plan.

One section= 8 units



Studio
35 sqm

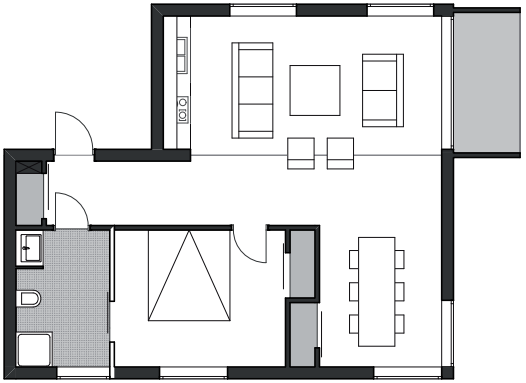


Plan Studio 1:100

The studio is based on one section. It includes a seperated technical core (batroom/entrance hall/ kitchen: 327/480 mm) that is attached to the main area: living open space unit. Moreover, the module can be partionned differently thanks to the timber structure where we can easily decide the organisation of the living unit plan.

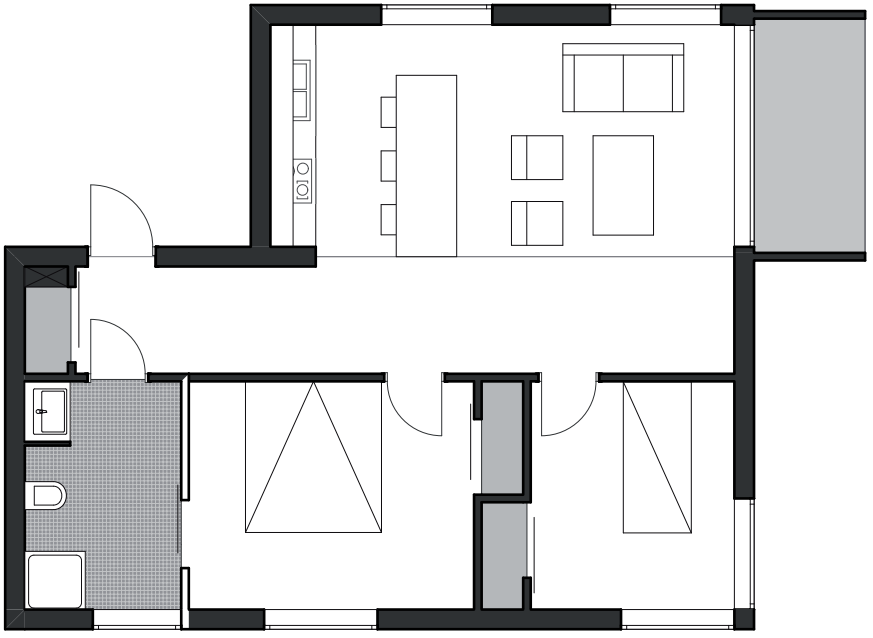
Evolution Plan Studio 1:100

Simplex T2/3
70 sqm



Evolution Plan Simplex 1:200

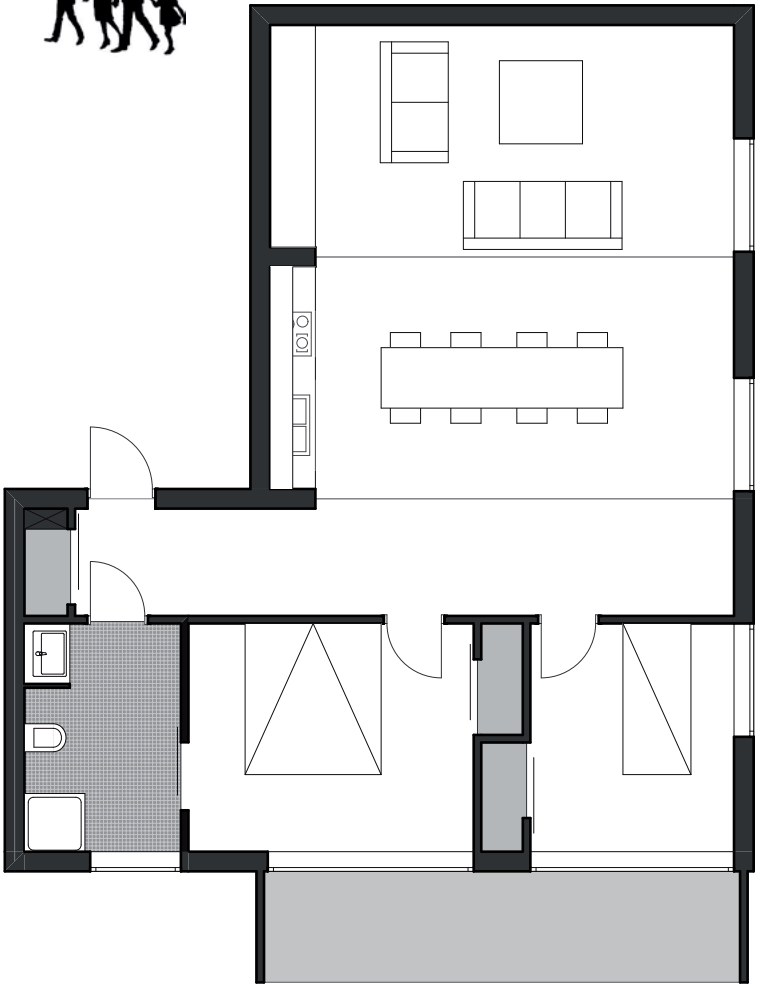
Based on the same principle, the simplex is composed of 2 sections; obtain more facilities.
A bigger kitchen (with bar in option) and a living area which is more spacious. The technical core is always based one the same measurement attached to the main living unit.



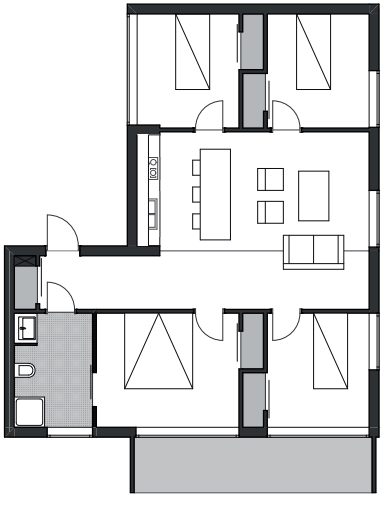
Plan Simplex 1:100

Simplex Plus
T3/4 88sqm

The simplex Plus, is an extended basic apartment which includes 3 sections. It allows in this case to have more sleeping rooms or a bigger living room. The evolution of this plan allows different partitions of the section. It is a playful system where users can configurate, at the early stage of the process, how they want their living unit looking like. The inhabitants can adapt their rooms to their needs and change their apartment over time.



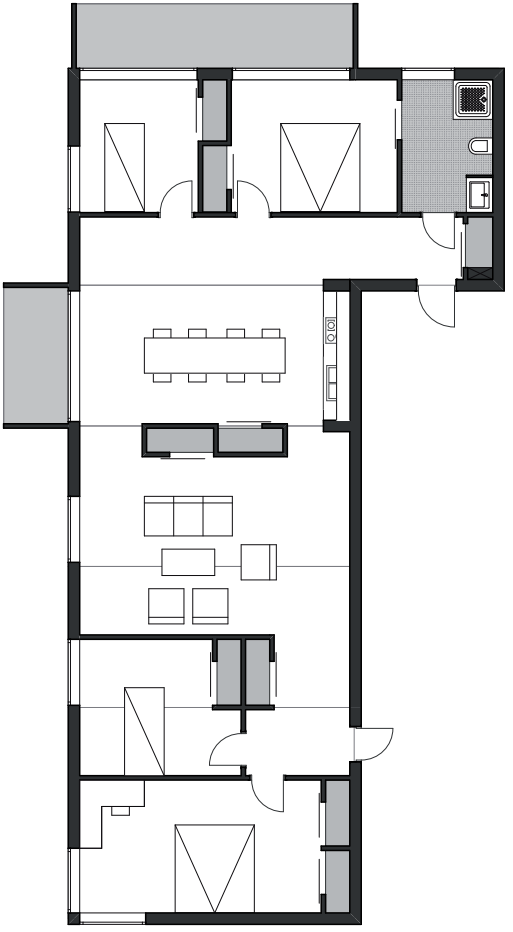
Plan Simplex Plus 1:100



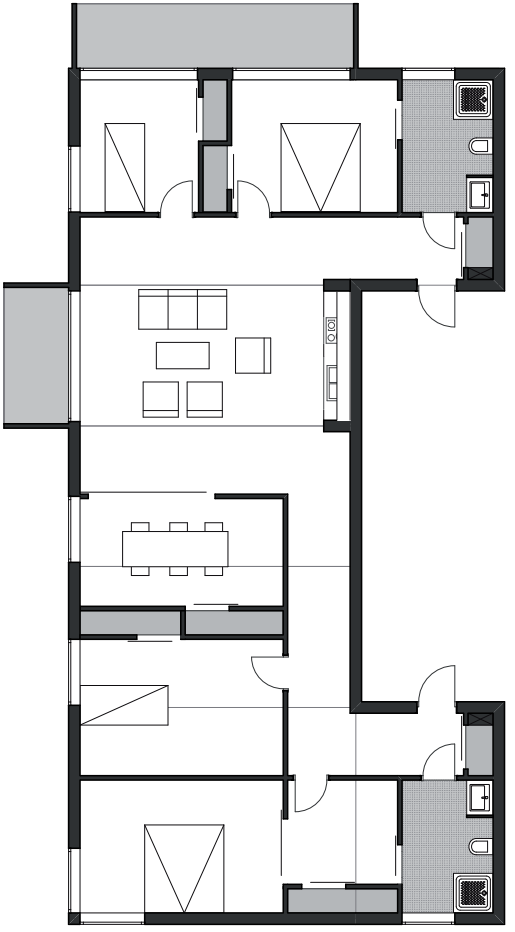
Evolution Plan Simplex Plus 1:200

Evolutive Unit: Simplex
T 5/6 120 sqm

The Evolutive Unit offers many combinations. This module is composed of 5 sections. All the sections can be worked in different ways. This dwelling can obtain one or two technical cores. It offers more spacious areas and more possibilities of configurations in an extensive space.



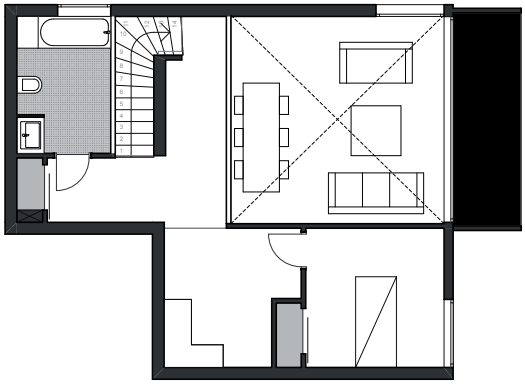
Plan Evolutive Unit 1:200



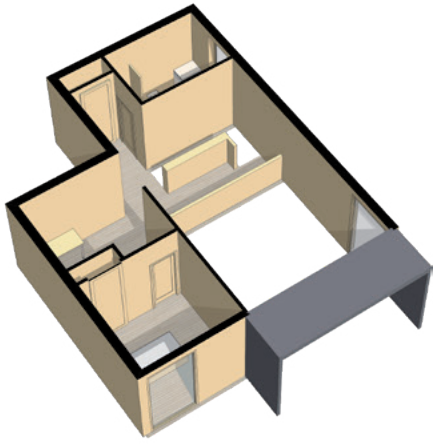
Evolution Plan Evolutive Unit 1:200

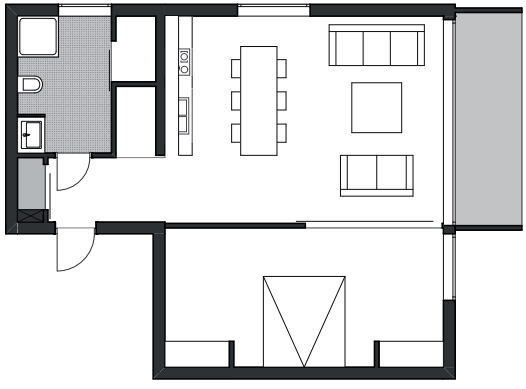
Duplex T 4
120 sqm

The Duplex is a really spacious unit with double height under ceiling in the living area.
This module is composed of 2 sections. All the sections can be configurated in certain ways. This dwelling can offer a upper floor «mezzanine» or sleeping areas. This living unit also has two technical cores with two bathrooms.

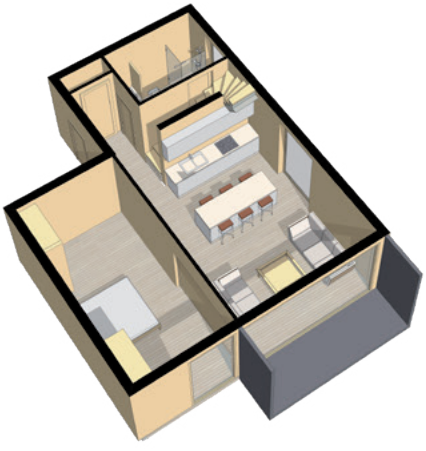


2nd Floor Duplex Plan 1:200

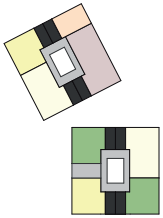




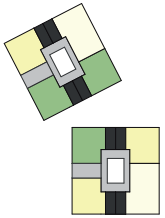
1st Floor Duplex Plan 1:200



4.2.5 General Configuration Plan/ 1st and 2nd Floor

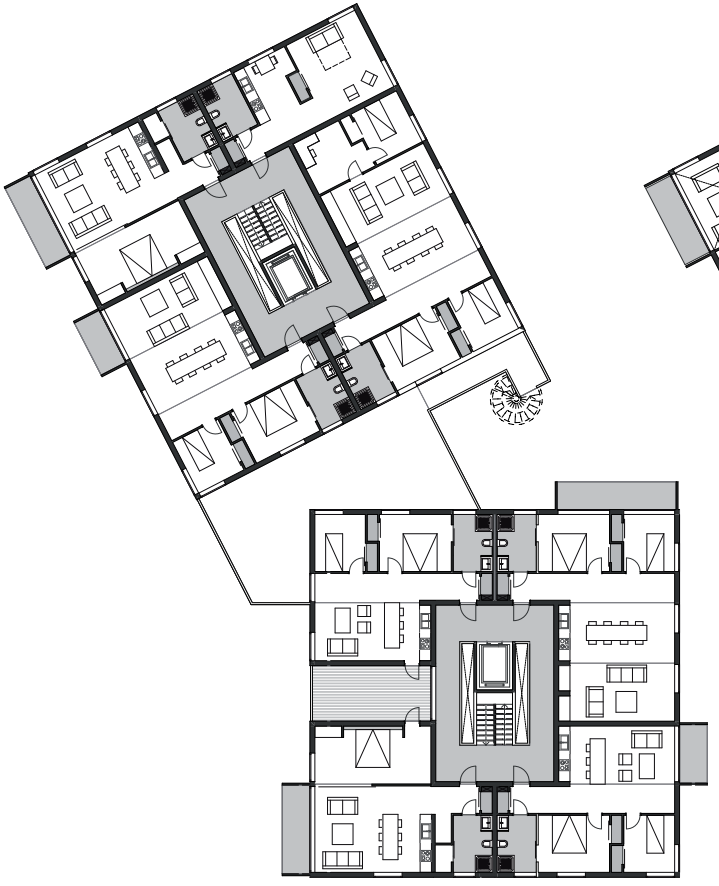


1.First floor

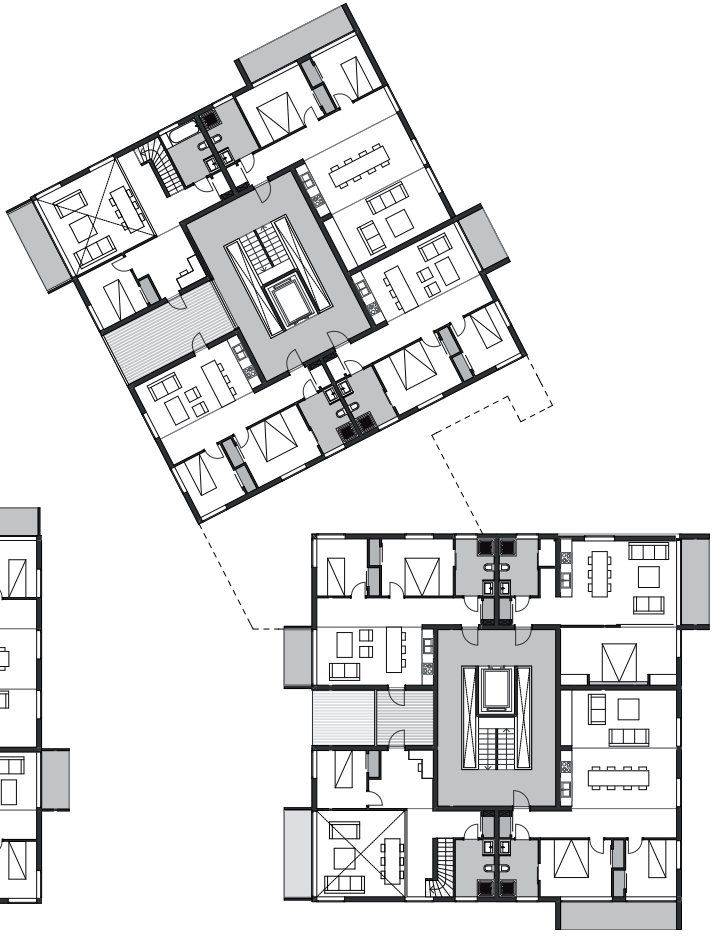


2. Second floor

These general configurations of units plan, has been decided thanks to discussions during several workshops responding the clients needs program. It is an answer that can be adjusted since it is a modular plan system.

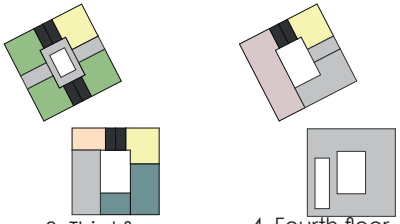


Plan first floor 1:400



Plan Second floor 1:400

Plans: 3rd and 4th Floor



3. Third floor

4. Fourth floor

In order to answers the specific needs of the Högsbo community , I proposed on the last floors of the two buildings, terraces that can be used by all the inhabitants. These terraces space make gaps in the building that can be also avoid to have a more energy efficient building. A common space and a sauna also enable the social interaction in the housing.

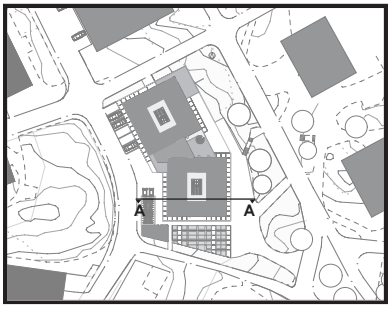
Plan Third floor 1:400

Plan Fourth floor 1:400

4.3 Building Sections

4.3.1 Section AA

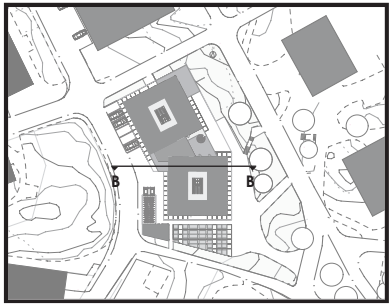
Transverse Section on the first building, watching on the south side direction. This section part shows the circulation core, in the middle of the building which is serving all the apartments.



SCALE 1:200

4.3.2 Section BB

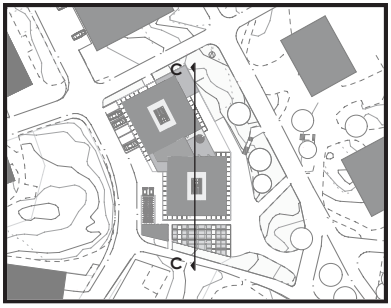
Transverse Section on the first building, watching on the south side direction. This section part shows the inner part of the dwellings living units and all variations concerning the unit typologies.



SCALE 1:200

4.3.3 Section CC

Longitudinal Section on the first building, watching on the west side direction. This section part shows the circulation core, in the middle of the building which is serving all the apartments as well as the basement which is integrating all the technical facilities and storage for the inhabitants.

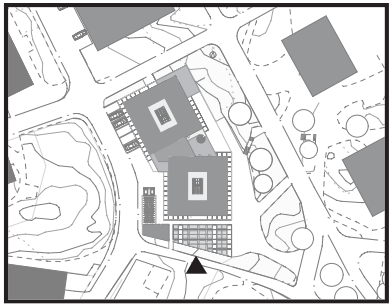


SCALE 1:400

4.4 Building Elevations

4.4.1 South Elevation

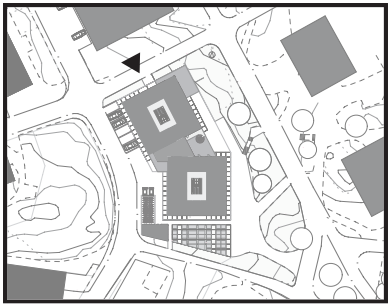
The south elevation shows the playfulness of this project. The contrast between mass and lightness is the quality of this project. The materiality of this housing demonstrates a playful pattern which is implementing by the steel boxes elements attached on the wood facade.



SCALE 1:200

4.4.2 North Elevation

The North elevation also demonstrates an important aspect: compactness of the building. We can see that the envelope of this project, protected by wood panels is making the building isolated from the weather.
It is an essential aspect in the energy saving in order to reduce as much as possible the total cost of the building's consumption.



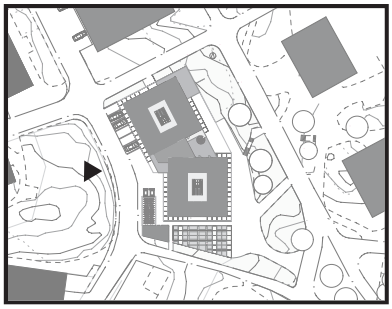
SCALE 1:200

4.4.3 West Elevation

This West elevation is made on the plan of the first building. The second building is deformed by the perspective view.

The west Elevation is facing the street Riksdalergatan, where the entrance of the building is situated. The building entrance, is an articulation made on the ground floor common for the two buildings.

A small house outside is placed as a garbage room and tool container for the allotments on the south side of the terrain. It is also a shelter for bikes as an outdoor local in order to have an easy access.



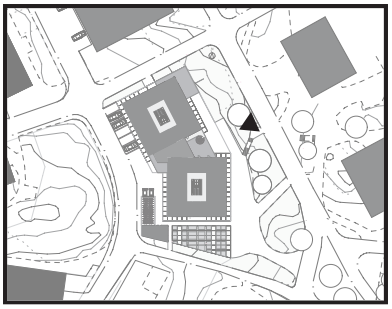
SCALE 1:400

4.4.4 East Elevation

This East elevation is made on the plan of the second building. The first building is deformed by the perspective view.

This elevation shows the articulation on the ground floor that connect the two buildings and the outdoor access to the common terrace by the spiral stairs.

We can clearly define the boxes which extend the inner part of the living units; the components on the facade are made of steel. The pattern created on the facade make the facade more organic and playful.

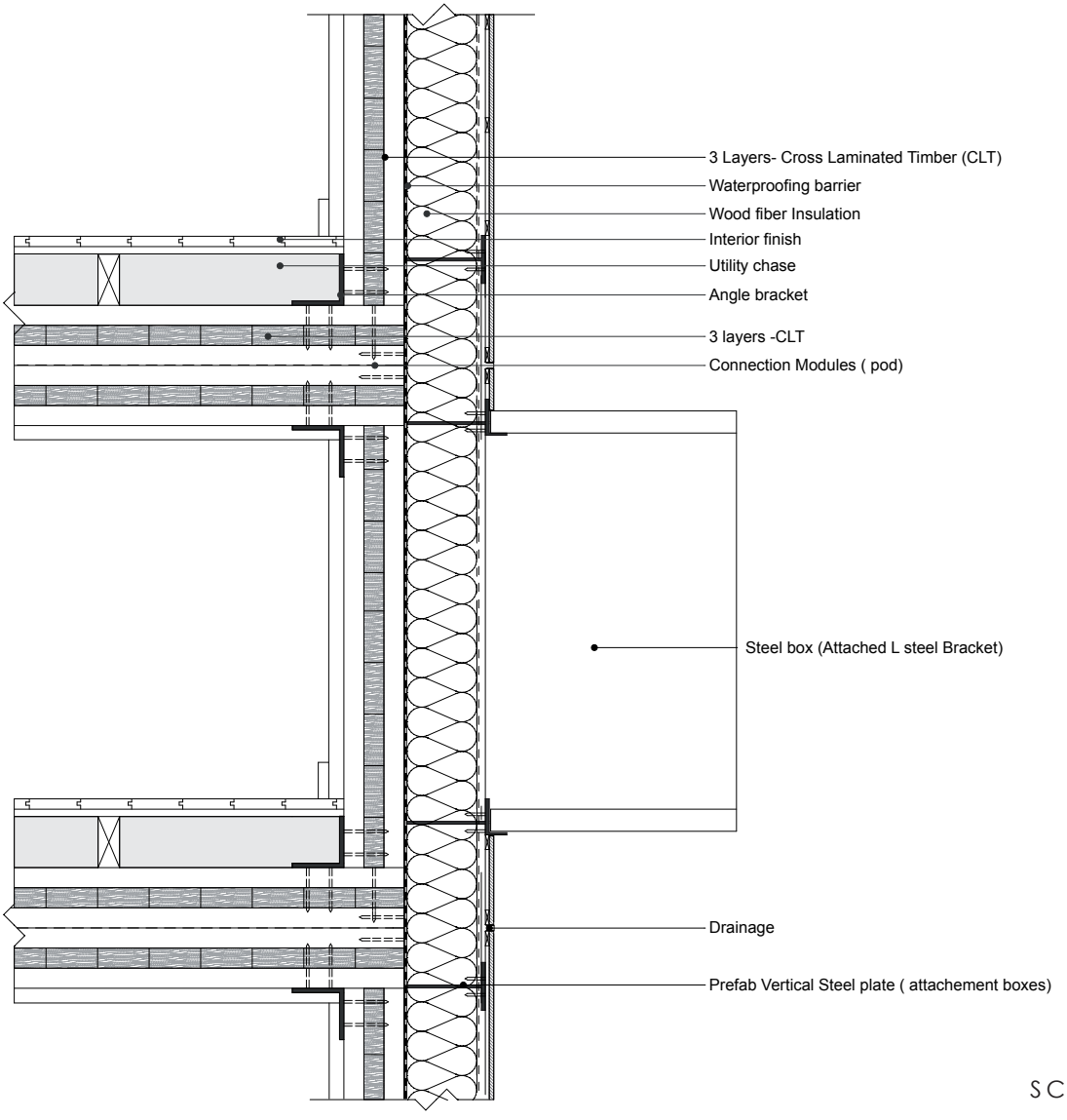


SCALE 1:400

4.5 Building Structure / Details

4.5.1 Detail connection Floor-Wall

Attachement box on exterior facade

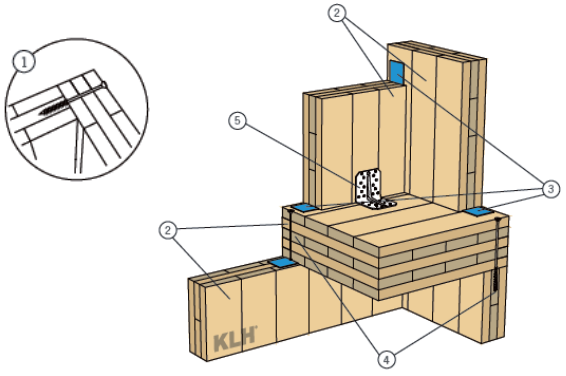


SCALE 1:50

KLH CROSS LAMINATED TIMBER: made of additionnal layers.

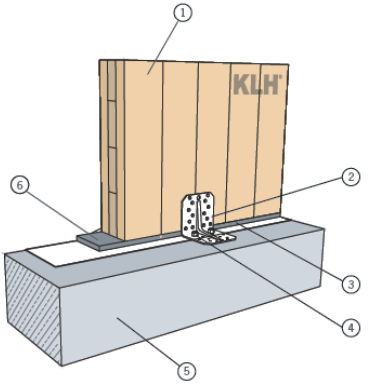
Timber is undergoing a timely evolution, as one of the world's oldest building materials. Many of the concerns surrounding timber construction have been dispelled by developments in modern technologies, and cross-laminated timber panels look set to have serious and far reaching implications for sustainable construction. KLH cross-laminated timber is a truly sustainable modern method of construction.[1]

1 source from KLH company :http://www.klhuk.com/



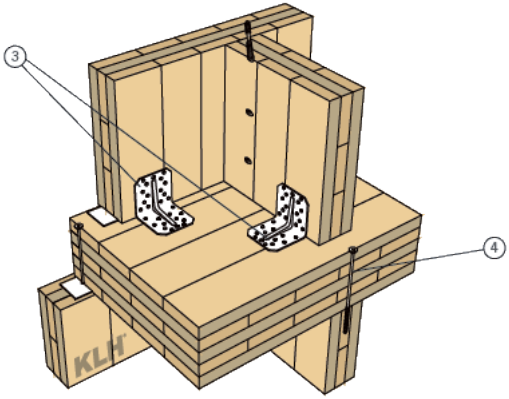
Exterior Wall- Exterior Wall- Ceiling

1-Corner joint- screw connection of wall corners according to static requirements or for the compression of joint tapes.
2- KLH panel
3- Install Joint tape for all panel joints, unless a vapour barrier or windproof layer is installed on the outside
4- Ceiling/Walls Screw Connection with self-drilling wood screws- typr, diameter and distance according to static requirements.
5- Angle bracket for all the statically effective connection between wall and ceiling. Shear force in the direction of the wall, tension and pressure normal to the wall (wind forces).



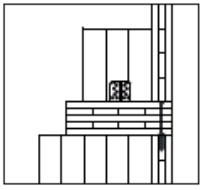
Wall-Concrete Connection (Housing base)

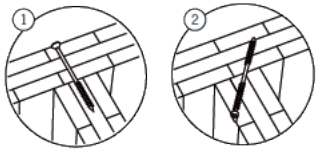
1- KLH wall panel
2- Angle bracket. Shear transmission and tension anchorage for the walls.
3- The walls must rest on the base over their entire lenght- If the walls only rest on the base in some places, static verification is required.
4-Caution: At least 2 dowels must be installed for each angle bracket; otherwise the effect of the BMF is highly reduced
5- Concrete component (Wall, ceiling, concrete slab)
6- Low-shrink mortar bed

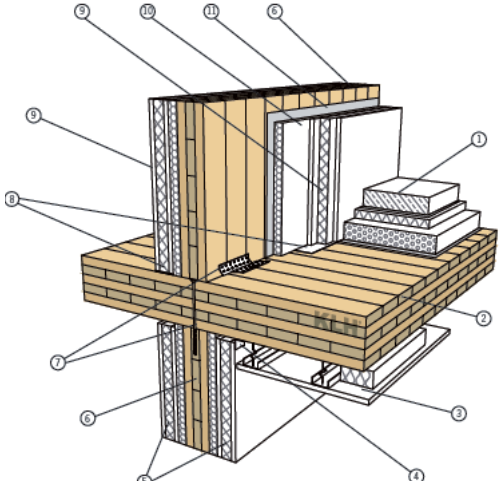


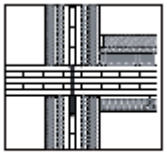
Wall-Wall connection, Ceiling -Wall connection Exterior Wall-Interior Wall- Ceiling

1- Cross Wall connection- screw connection from the outside.
2- Cross wall connection-screw connection from the inside
3- Shear force transmission along the joint and tension anchorage of walls- Angle bracket- type, distance according to static requirements.
4- Screw connection of ceiling with walls according to static requirements



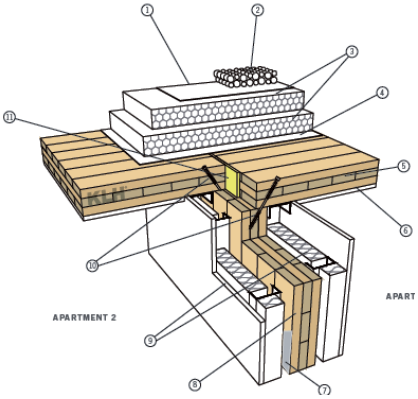






Nodal point partition ceiling between apartments

1- Floor structure
2- 5 to 6 KLH ceiling panel
3- Suspended ceill
4- Metal angle bracket for fastening of facing formwork on individual points
5- Stand-alone facing formwork in front of the KLH panel
6-KLH wall panel
7- Connection according to statics
8- Elastic base tape
9- Facing formwork, self-supporting
10- TPS 25/22
11- Flow-tight layer



Connection Wall-roof

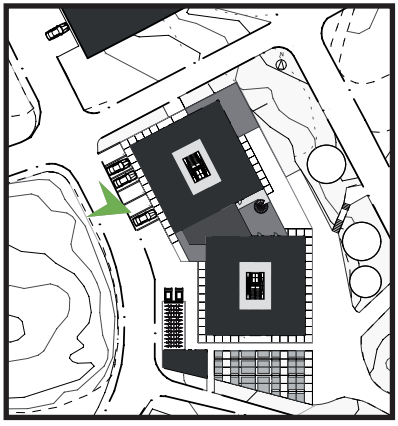
1- Moisture sealling
2- Gravel Filling
3- Heat insulation(rock wool)
4- Vapour Barrier
5- KLH roof panel
6- Plasterboard
7- Place flow-tight layer if necessary
8- KLH wall panel
9- Self-supporting metal stud partition with 15mm distance to KLH wall
10- screw connection: secure positioning and shear transmission roof to wall
11- Fill joint between panels with noise protection foam

4.6 Building Perspective

Energy efficiency is the first step toward achieving sustainability in buildings. Energy efficiency helps control rising energy costs, reduce environmental footprint and increase the value of buildings. Sustainability is all about using the resources of today efficiently, in a manner that meets our own needs, but doesn't compromise the ability of others to meet their own needs in the future.

This adaptable and modular housing project is an answer to energy cost saving thanks a compact shape building made of wood. It responses to specific needs and can be change over time. Other factors should be taken into consideration but has to be treated in the future in order to acheive a complete energy efficiency building. (Explore Efficient Water Saving Solutions / Explore Renewable Energy Services etc.)

Front Perspective view / > Outdoor Playground and terrace



Entrance perspective view along Riksdalergatan road.

5. Conclusion: General reflections

From collaboration to co-design...

To conclude, designing and co-creating community housing is an inclusive and evolutionary way to work with our built environment. Co-housing communities are here assumed as innovative answers for today's environmental and social problems. Within this process, it will eventually enable the changing of lifestyles and the adaptation to different challenges we face today.

In our current urban environment, social isolation, individuality and exclusiveness are eminent. It is sometimes really difficult to find the sense of belonging to something and trust each other. Co-housing, as an unconventional way of living by sharing facilities and daily activities, is an alternative we have today towards a new affordable and sustainable way of living.

It enables to give co-housing members the opportunities to continue to create resilient conditions of life by co-living and collaborating with each other.

Co-designed can therefore be stated as one of the most relevant forms of building design processes today, by directly and intentionally approaching a design that responds to very specific demands and needs. Since many years back, developing co-housing has been a complex way to operate with all stakeholders within a housing project. However, it is seen today, as an extremely efficient answer to directly satisfy all customers' needs and wills.

Moreover, the answer that I found with this master thesis in the response to specifics needs of the community in case included the notions of adaptability and modularity. This helped me to find a way to adjust the community's lifestyles to the different changes introduced during the overall process.

The collaboration with Högsbo community group and Helhetshus was also very interesting with workshops and discussions that showed the complexity of participation and agreement on different design criteria. The discussions with the Högsbo group and several field studies brought a deeper understanding of the project and how to cooperate in

order to reach a common goal: Co-design.
Efforts have been made to create all the workshops in order to engage them in this process, which required a lot of coordination work between all stakeholders.

Adaptable design strategies were ultimately found to have the potential to facilitate co-creation and interaction between the users, while involving the modularity of the building structure system and the respective created space.

The design proposal is certainly one interpretation of all the collected information. The design was focused on modularity as a key element to answer questions of adaptability and affordability. The implementation of the overall process has succeeded thanks to an active social participation towards the co-creation of the housing units.

Future recommendations :

The final design must encourage co-working, co-creation and co-design, all together. Therefore, the Högsbo community should keep working on this project with those specific criteria and repeatedly discuss them in order to refine the importance of their future lifestyles. Agreeing on same criteria and make the project clear for all stakeholders seems to be the best way to both collaborate and compromise towards a common design process. Co-designing flexible housing is a virtue of the co-housing model; it gains from being based on the needs and capabilities of those the building intends to house.

Finally co-housing has the potential to influence housing, neighbourhood and urban design in general. It is an opportunity for people to fulfil their needs and design the environment where they would like to live in.

About energy efficiency...

Moreover, another dimension should be more develop in the future: energy efficiency. While, this collaboration work focuses more on a co-design process, an important step has to be done in the design process. Working more in depth the construction system and its efficiency, is relevant for the future living of this community.

Indeed, Energy efficiency is the first step toward achieving sustainability in buildings. Energy efficiency helps control

rising energy costs, reduce environmental footprint and increase the value and competitiveness of buildings.

Sustainability is all about using the resources of today efficiently, in a manner that meets our own needs, but doesn't compromise the ability of others to meet their own needs in the future.

By finding the perfect balance between the energy costs saving and wishes/ expectations of the community; the future building will respond to a complete program project, that enable changes over time in all dimensions: social flexibility, structural flexibility and economic purposes.

It is a really challenging project in all the aspects that it holds; but it is the most interesting and relevant answer that have been done in a short time project which raise the issues of working collaboratively efficiently.

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7 Annexes

DEFINITIONS

Housing Glossary

Cooperative living «Co-op»

Co op is a unique type of living within a community.
A cooperative is any type of organization that is owned and controlled by its member-users for a common purpose and that follows the cooperative principles. A cooperative operates for the benefit of its members on a not-for-profit basis in order to provide the goods and services members need at the lowest practical cost. Members/shareholders own the cooperative and participate equally in the governance of the cooperative. (National Cooperative Law Center)

Cohousing

A cohousing community is a type of intentional community composed of private homes supplemented by shared facilities. The community is planned, owned and managed by the residents – who also share activities, which may include cooking, dining, childcare, gardening, and governance of the community.

Common facilities may include a kitchen, dining room, laundry, childcare facilities, offices, Internet access, guest rooms, and recreational features.
Cohousing facilitates interaction among neighbours for social and practical benefits, economic and environmental benefits.

Developer (Byggherre)

Refers to who owns the development project during the construction period. Could be an individual, a company or a joint building venture (Baugemeinschaft).

Joint building venture (Byggemenskap)

(Baugemeinschaft in german) When a group of individuals form a co-operative to build the dwellings for themself. After construction is finished the joint venture can transform in to any tenure status and consist of any housing typology.

Tenure status (Upplåtelseform)

Tenure status of households refers to the arrangements under which a private household occupies all or part of a housing unit.

«Condo» condominium (Bostadsrätt)

A form of housing where the residents are co-owners of a housing complex, usually an apartment block or a group of multi-familiy homes, where the co-ownership grants the right to inhabit one housing unit and the obligation to maintain that unit. Common facilities and outer maintenance is funded by a set monthly fee that is paid by all co-owners.

Condo means that you are a member of a condo association who owns a building with apartments and where each member each have an apartment. Property law includes both a right to the apartment, and a stake right in the club. A condo can normally be sold on the open housing market but the buyer must be approved by the association.

Property / Property condo (Äganderätt- Ägarlägenhet)

Ownership - of private house or condominium - means that the dwellers themselves own their homes. Since May 1, 2009, it is possible to build new apartment buildings with condominiums or rebuild buildings which are residential buildings to condominiums. This type of housing means that one owns his own apartment, not just the right to use the property, as in the condominium. That means, for example, sell, pledge or without permission to rent it, just like a house mortgage. Unlike a house an owner-occupied condominium has a share in an association, covering roofs, facades, stairwells, storage rooms and other common devices. The owners of the apartments are members of a community association, who will manage the common parts.

Co-tenancy (Kooperativ hyresrätt)

Cooperative tenancy can be said to be a cross between tenancy and the condo. An association owns - or hire - a property and individual union members rent their apartments by the

association. When moving paid a form of security deposit to the Association, which restored when you move from there. Thus, one can not sell their apartment without the be returned to the compound when moving.

Tenancy (Hyresrätt)

Tenancy means typically that you rent an apartment from a landlord who owns one or more properties with rental apartments. One can also hire someone else's private residence in whole or in part, whether it is an apartment, a condominium or a property right. But then we have not the same tenure.

Housing typology-Housing mode (Boendeform)

This is a less precise term, but it usually describes what type of dwelling you live in - house or apartment buildings. For detached houses belong detached villas, townhouses, terraced houses and semi-detached.

Apartment buildings are residential buildings with at least two floors and at least three dwelling units, where the apartments are located on top of each other. The housing typology can contain more or less of common space. The level of interaction between the dwellers can range from private villas to collective housing (co-housing).

Participatory process

is an approach to design attempting to actively involve all stakeholders (Employees, partners, customers, citizens, end users) in the design process in order to help ensure the product designed meets their needs and is usable.

Sustainability

is a multi-faceted concept taking into consideration the social, economical and environmental aspects. Conserving an ecological balance by avoiding depletion of natural resources.

Source: Boverket- The Swedish National Board of Housing, Building and Planning

DEFINITION

Flexibility Glossary

Flexibility

is the ability to be easily modified' (oxford Dictionary).

In my thesis context, flexibility is the ability to response to changes, being adaptable. It is the capacity of a built space to comply with an evolving or different function uses.

Restricted Flexibility

is the ability to offer a limited panel of change and being adaptable within a specific frame.

Modular

Employing or involving a module or modules as the basis of design or construction: 'modular-housing units' (Oxford dictionary).

In architecture, modularity can refer to the construction of an object by joining together standardized units to form larger compositions, use of a module as a standardized unit of measurement and proportion.

Modular Construction system

relate to building construction in part. It means that all the components are based on modules and are define as a proportional unit.

Adaptable

Able to be modified for a new use or purpose. (Oxford dictionary).

Adaptability

is the ability in architecture to accommodate changes in the built environment.

Preparation Workshop 1: Examples, Listing of indoors and outdoors rooms
Defining their criteria and the future program. This list is helping them to get an ideas during the conversation process and provide them more criteria in order to justify their program.

Vital functional rooms:
Core:
Kitchen
Bathroom
WC
Attach to the core:
Bedroom
Living room
Circulation:
Staircase
Elevator
Corridors

Extra rooms:
Indoors spaces:
Attic
Alcove
Basement
Cellar
Dinning room
Fireplace
Vestibule
Entrance hall
Storage room
Atrium-patio
Larder room (storage for food)
Library room
Sport room
Indoor Playground room
Workshop-studio /atelje space
Workspace/ study room
Sauna space
Cinema- films room
Laundry space
Guest room studio
Commercial local
Offices
Pre-school spaces
Kinder garden

Outdoors spaces:
Garage
Bikes local
Porch
Veranda
Winter Garden
Green house
Garden
Terrace
Balcony
Patio
Music room
Pool
Playground
Tool container space

Example Sheet for the Högsbo clients
Workshop 2

To understand better what are their expectations, they fulfill these two following sheets, in order to return us some informations regarding their situations and their wishes. Though this scenario testing, I could be more aware of the future changes and their expections which impacts the design configuration of the living units.

Which sort of household are you?

P: Private space
C: Common space

PRIVATE UNIT

○ HOUSE

○ APPARTMENT

Actual surface in household:

Expecting surface for the future household:

Comments:

Total Rooms desire=

Listing what you have in your dweling

we have:

Listing what you expect

we would like:

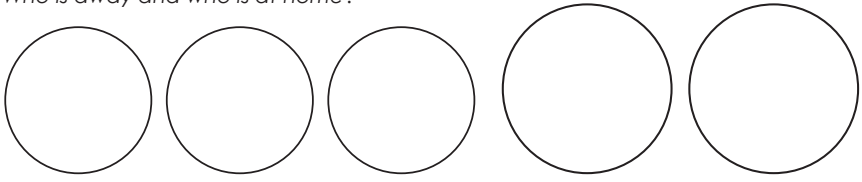
HOUSEHOLD

5 persons in my household:
Name and age

Parents:

Children:

What's happening in my family?
Who is away and who is at home?



ACTIVITIES

We do:

Parents:

Children:

Describe briefly a typical Day, a basic usual week end ?
Precise if you are alone or accompanied by people
DAY in the Week:

WEEK END:

Quizz Evaluation- Workshop 2 Social Interaction

This quizz aims to question themselves about different criteria.
Trying to take into consideration what they told me at the first workshop, I wanted to test the Högsbo group at that time in order to understand more what kind of responses they will give me regarding different themes questions.

Relating to these questions, I made an interpretation of what sort of arena they will be ready to share and start a design proposal with all these criteria.
I translate the answers in the workshop 2 called Quizz Evaluation, thanks a table showing their interest in diffferent topic.

<u>QUESTIONS about yourself</u>

What is your gender?
F M
How many members are you in your household today?
1 2 3 4 5 6 7
How many members do you expect to be in total for the future?
1 2 3 4 5 6 7
I feel I am probably the most indecisive person
Yes Maybe No
I tend to delay my decisions
Always Sometimes Never
Once I have made up my mind, I never look back
Always Sometimes Never
I consider myself a «people person»
Yes I do No I don't
I am good at making major decisions quickly
Yes completely Not at all
I often introduce my friends to new people
Always Sometimes Never
I make new friends and acquaintances easily

Never Rarely Sometimes Usually Always
Am I an extravert person?
Yes completely Not at all
Questions concerning social, economical and environmental themes

Social theme

What is your level of ambition concerning social interaction?
Never Rarely Sometimes Usually Always
How would you rate your overall experience in the public spaces?
Very dissatisfied Dissatisfied Neutral Satisfied Very satisfied
Do you like sharing hobbies/activities with your neighbours?
Never Rarely Sometimes Usually Always
Do you eat together with your family during dinner?
Never Rarely Sometimes Usually Always
Do you like to be alone during your spare time?
Never Rarely Sometimes Usually Always
What is the meaning of sharing things for you?
Friendly Annoying Pleasant by Interest
In general, do you prefer outdoor spaces or indoor spaces?
Outdoor because...
Indoor because...
Would you prefer mainly to share «extra unnecessary» (ex:hobbies room) or more «vital spaces» (ex: kitchen)?
Unnecessary Vital/necessary
Environmental theme
Do you care about footprint?
Yes completely Not at all I don't mind
Are you interested in sustainability? Recycling?
Yes completely Not at all I don't mind
Do you stop in the public space to enjoy the environment?
Never Rarely Sometimes Usually Always
Do you stop in purpose in the public spaces? To meet friends and so one.
Never Rarely Sometimes Usually Always

Do you absolutely want an energy efficient building?
Yes completely Not at all I don't mind

Economical theme

How much are you ready to pay every month for your own apartment?
Are you ready to pay more to get a eco-label (energy efficiency) for your building?
Yes completely Not at all I don't mind
Do you mind if it is a prefabricated building (standardize material construction) to reduce the total cost of the building?
Yes completely Not at all I don't mind
How much square meter do you expect for your new dwelling?
Less than 100 between 50-80 More than 100sqm
What sort of building ownership do you expect?
1 2 3
Look at the figure below
1 Co-op Renting (own shares)
2 Condominium (simple ownership - own unit)
3 Private owned (simple private ownership)
Expression theme
How much experimental am I ready to go for?
Nothing A little bit Almost everything Everything
Do you want a house that looks like everyone else?
Yes completely Not at all I don't mind
Do you want an innovative house?
Yes completely Not at all I don't mind
Do you want a house that could be experimental by taking the risk that it is a test (new technologies that haven't been tested yet)?
Yes completely Not at all I don't mind
Do you want a standard prefabricated building?
Yes completely Not at all I don't mind
Others questions that could be interesting or help me out for the design - Comments-

Quizz Evaluation- Workshop 2 Social Interaction

This quizz aims to question themselves about different criteria.
Here is the answer of some people from the community group as example.

QUIZZ EVALUATION - WORKSHOP 2
Social Interaction

Name: FREDRIK
Surname: METSO

QUESTIONS about yourself

What is your gender?
F (M)

How many members are you in your household today?
1 2 (3) 4 5 6 7

How many members do you expect to be in total for the future?
1 2 (3) (4) 5 6 7

I feel I am probably the most indecisive person
Yes Maybe (No)

I tend to delay my decisions
(Always) Sometimes Never

Once I have made up my mind, I never look back
Always (Sometimes) Never

I consider myself a «people person»
(Yes I do) No I don't

I am good at making major decisions quickly
(Yes completely) (Not at all)

I often introduce my friends to new people
Always (Sometimes) Never

I make new friends and acquaintances easily
Never Rarely (Sometimes) Usually Always

Am I an extravert person?
(Yes completely) (Not at all)

Questions concerning social, economical and environmental themes

Social theme

What is your level of ambition concerning social interaction?
Never Rarely Sometimes (Usually) Always

How would you rate your overall experience in the public spaces?
Very dissatisfied Dissatisfied Neutral (Satisfied) Very satisfied

Do you like sharing hobbies/activities with your neighbours?
Never Rarely (Sometimes) Usually Always

Do you eat together with your family during dinner?
Never Rarely Sometimes (Usually) Always

Do you like to be alone during your spare time?
Never Rarely (Sometimes) Usually Always

What is the meaning of sharing things for you?
Friendly Annoying Pleasant (by Interest)

In general, do you prefer outdoor spaces or indoor spaces?

Outdoor because...
FEELING OF FREEDOM, EXPLORAT

Indoor because...
COMFORT, SAFETY

Would you prefer mainly to share "extra unnecessary" (ex:hobbies room) or more "vital spaces" (ex: kitchen)?
(Unnecessary) Vital/necessary

Environmental theme

Do you care about footprint?
Yes completely Not at all I don't mind

Are you interested in sustainability? Recycling?
Yes completely Not at all I don't mind

Do you stop in the public space to enjoy the environment?
Never Rarely Sometimes Usually Always

Do you stop in purpose in the public spaces? To meet friends and so one.
Never Rarely Sometimes Usually Always

Do you absolutely want an energy efficient building?
Yes completely Not at all I don't mind

Economical theme

How much are you ready to pay every month for your own apartment?
~~2000-4000 kr~~. 6000 KR

Are you ready to pay more to get a eco-label (energy efficiency) for your building?
Yes completely Not at all I don't mind I THINK ENERGY EFFICIECY WILL MAKE RENT LOWER.

Do you mind if it is a prefabricated building (standardize material construction) to reduce the total cost of the building?
Yes completely Not at all I don't mind

How much square meter do you expect for your new dwelling?
Less than 100 Between 50-80 More than 100sqm

What sort of building ownership do you expect?
1 2 3
Look at the figure below

1 *Co-op Renting (own shares)*
2 *Condominium (simple ownership - own unit)*
3 *Private owned (simple private ownership)*

Expression theme

How much experimental ~~am I ready to go for?~~
Nothing A little bit Almost everything Everything

Do you want a house that looks like everyone else?
Yes completely Not at all I don't mind

Do you want an innovative house?
Yes completely Not at all I don't mind

Do you want a house that could be experimental by taking the risk that it is a test (new technologies that haven't been tested yet)?
Yes completely Not at all I don't mind

Do you want a standard prefabricated building?
Yes completely Not at all I don't mind

Others questions that could be interesting or help me out for the design - Comments:

ECOLOGY THAT SAVES MONEY RATHER THAN COST MONEY- AT LEAST IN AN LCC-PERSPECTI

NICE COMMON OUTDOOR SPACES.

NATURAL PLACES TO MEET + OPPERTUNITY FOR PRIVACY.

ROOM TYPE	CATEGORY	ROOMS	DIMENSIONS (mm)	SQM (m2)	COMMENTS
COMMONS					**Based on a common sharing for all households living in this community**
	socializing				
		Workshop		70	Should include a relaxing part and a more handcraft part
		Meeting room		40	Dettached from the main common spaces (less noisy space)
		kitchen room		60	space for cooking and eating
		open space		50	Attach to the kitchen, to have the possibility to extend the space/ can be closed thanks to partion sliding walls
				220	
	Needed				
		Garbage room	780/320	25	size for 26 households so the 2 buildings
		2 bathroom toilets		11	Common toilet from the fix shaft (2x5,5)
		Bike local		25	Ground floor to facilitate the access
		storage		64	8 sqm perhousehold
		Laundry			
				125	
	Gardening				
		Tool container		15	not necessarily attach to the main building
		Allotments		40	5 sqm per household (5x8) outdoors
				55	
	Relaxing				
		sauna		35	roof top ?
		playground outdoor		?	on the plot outside
				35	
EXTRA					**Extra- adding rooms that allows flexibility and adaptability for users in the plan**
	Hosting				
		Guest room1		35	Ground floor type Bed and breakfast / rbnb small individual unit studio > independancy
		Guest room 2		35	Ground floor type Bed and breakfast / rbnb small individual unit studio > independancy
				70	
PUBLIC					**Mainly based on rental spaces to favorise and dynamize the place**
	Entrance Hall			30	Should allow public to come in so separate from commons
	Renting				
		Rental spaces		90	
				120	

PRIVATE					**Based on individual needs and privacy. Possibility to integrate some flexible extra spaces that join dwellings together.**
	Independant Units				The concept is to choose component option to make your apartment as big as you wish and as much as adaptable
	Household 1			75	
		wet core (kitch-bath)		13	Standart wet core unit: including entrance hall
		living space			Flex
		1 simple sleeping	290/320	9,3	including storage and desk space
		1 Double sleeping	320/ 435	13,9	including storage and desk space
	Household 2			75	
		wet core (kitch-bath)		13	Standart core unit: including entrance hall
		living space			flex
		2 sleeping rooms			
	Household 3			140	
		wet core (kitch-bath)		26	2 interconnected Standart core unit: including entrance hall (13 X2)
		living space			flex
		1 double sleeping	320/ 435	13,9	
		2 single sleeping	290/320	18,6	9,3X2
		1 study/ extra area		11	
	Household 4			140	
		wet core (kitch-bath)		13	Standart core unit: including entrance hall
		living space			flex
		3 sleeping rooms			
		1 study/ extra area			
	Household 5			75	
	Household 6			70	
	Household 7			120	
	Household 8			140	
			Total surface households	770	

FLEXIBLE SPACES						
	terraces				Component/ Element Attached on the exterior facade of the building	
	balconies					
	extra rooms				Allows change over time in plan so adaptability for users	

CHALMERS

MPDSD DESIGN FOR A SUSTAINABLE DEVELOPMENT
Master thesis spring 2014
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