
SLAB SYSTEM

SCALABLE MODULAR APARTMENT BUILDING

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INDEX

1.0 INTRODUCTION

ABSTRACT

MODULAR HOUSING

2.0 SLAB SYSTEM

INTENTIONS

MOTHER STRUCTURE

Structure

Core

Skin

Plants

Configurations

LIVING UNITS

Evolution

Skeleton

Exterior

Interior

Envelope

P-P-P-P

AGGREGATION

3.0 SLAB TOWERS

CONTEXT

Around Us

Via Mario Pagano 22

SYSTEMS

APARTMENT'S LAYOUT

Addition

Division

Enlargment

ACTIVITIES & FUNCTIONS



Nicola



Aldo

Angelina



Camilla



Filippo



Stefano

INTRODUCTION

Nicola studied history and criticism of art and he's a professor in university. His boyfriend is often staying over and they would like to live in a bigger space. The relationship is still too fresh thou to invest in a house. You never know what happens then. **Aldo** is a finance broker, he's a womanizer. He only goes back home in the evenings sometimes in good companion. He lived in many apartments but he's a maniac about big spaces and the more he erans the more he wants his living room to increase. **Angelina** is not very stable. The first time she escaped from home she was 15 and since then, she relied on her brother for living. She constantly travels between Asia and Europe but she likes to know that there's a place that she can always call home. **Camilla** soon will become a mother. She's planning to give her baby the privacy and space that she never had in the house where she grew, this would involve moving in a new house. She's a very nostalgic person thou and she has too many memories in the flat were she's now with her husband. **Filippo** is a young promising architect, he recently signed his first contract and would like to move with his beloved in a flat of their own. Sharing a flat is annoying, people don't clean their mess and are always using his coconut oil shampoo. **Stefano** is 30 years old he has an office job in a chemical industry and he's a happy man. He likes his mother house but has always been skeptic about living in the countryside. The house is heated by a stove and coolen down with a fan. He always wated to live in a house as technological as the tools he uses at work.

Is there a house that is able to give an answer to these people's needs? Is it possible to expand your apartment in little time and with little troubles? Is the house of tomorrow adapting to the new technology that we use everyday? Is it possible to re-configure a flat according to the owner's desire?

MODULAR HOUSING

In the past century the housing industry has developed adapting its method of construction to the new available material and techniques. The questions that opened up in the introduction are not new to the architectural environment. Architects and developers that have focused their research on this base have often come to the conclusion that modular housing, together with prefab industry can create models of home that adapts to the need of it's user.

The main problem of classic housing is that there is no flexibility due to the fact that structure and rooms are tight together in one element and placed under a roof.

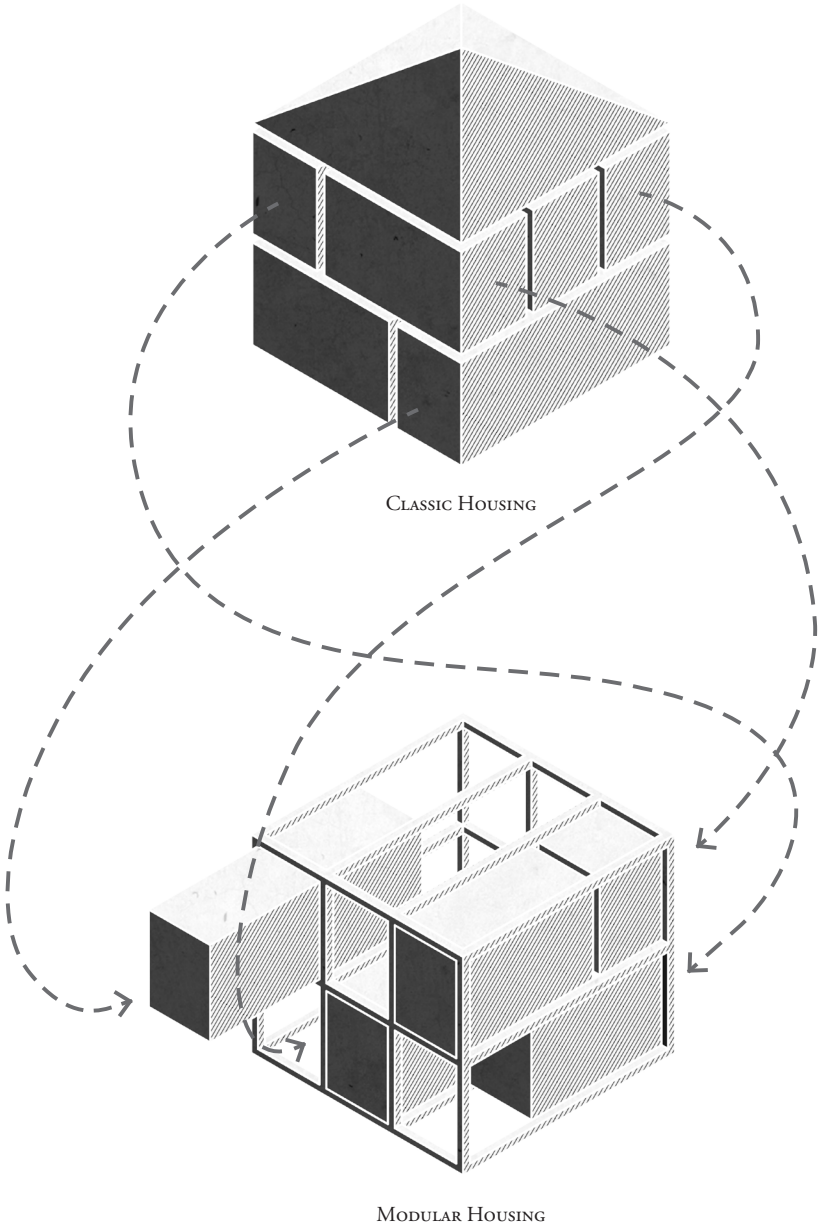
Starting point of the reasearch is to create a mother structure that is predisposed to hosts the living modules that will then make the whole house.

This allows a better organization of the construction site and a better control of the quality in the living units but it does not result to change the lifestyle of its inhabitants.

The few examples that have been realized in the past are often associated to social and dozen housing reducing the market attraction and enfasizing the idea of modular housing as “cheap” architecture.



Khrushchyovka Construction System, Russia.



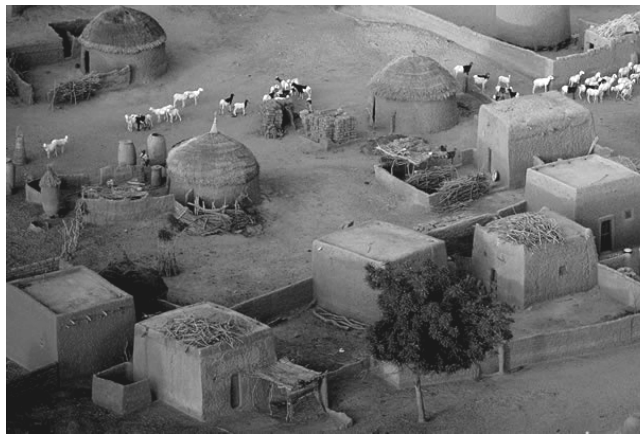
SLAB SYSTEM

INTENTIONS

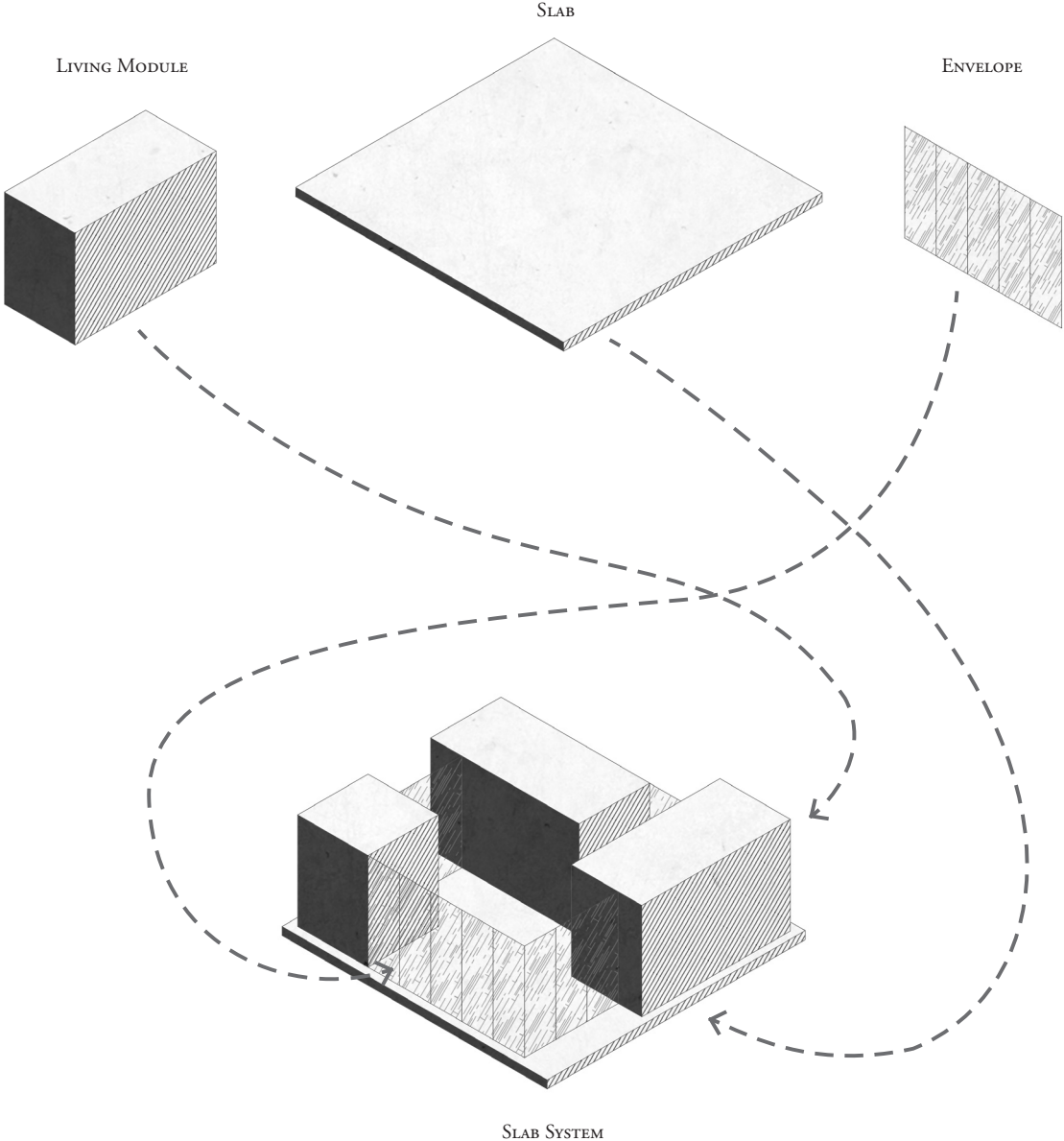
Starting from the concept of mother structure and living unit we have interpreted the house as the composition of rooms that creates a space between them. This space is enclosed by the envelope, the element we have added to integrate our model of housing. The new aggregation system is related to the ancient settlements that becomes our reference as a spatial organization and as a natural growth. In rural countries people lives the house as a space to protect from the weather and all the other functions happens in the shared space in-between.

The Mother structure will then become a piece of “brown land” in the city and is offered to the inhabitant as a space to fill with their living module. The SLAB, is set to host these modules and connect them to all the services.

The whole composition, that can change in time, is then clad with an envelope. This is the key point of the project. The resulting space in-between the units will become the living room. With the expansion of the house through the addition of new rooms the living space will expand with it. Doing so, the internal space is clearly interpreting the new system. It's coherent with the intentions of creating an aggregation and is not denying it's modularity.



African Settlement in Tahoua, Niger.



MOTHER STRUCTURE

STRUCTURE

The structure is concrete made thanks to its tectonic feature that allows to avoid any kind of cladding that would make the construction more expensive and long consuming.

The vertical loads are driven on poured on-site pillars with a tapered cross section shape. The pillar starts on a 400x400mm area and ends after 3500 mm on a 600x600mm.

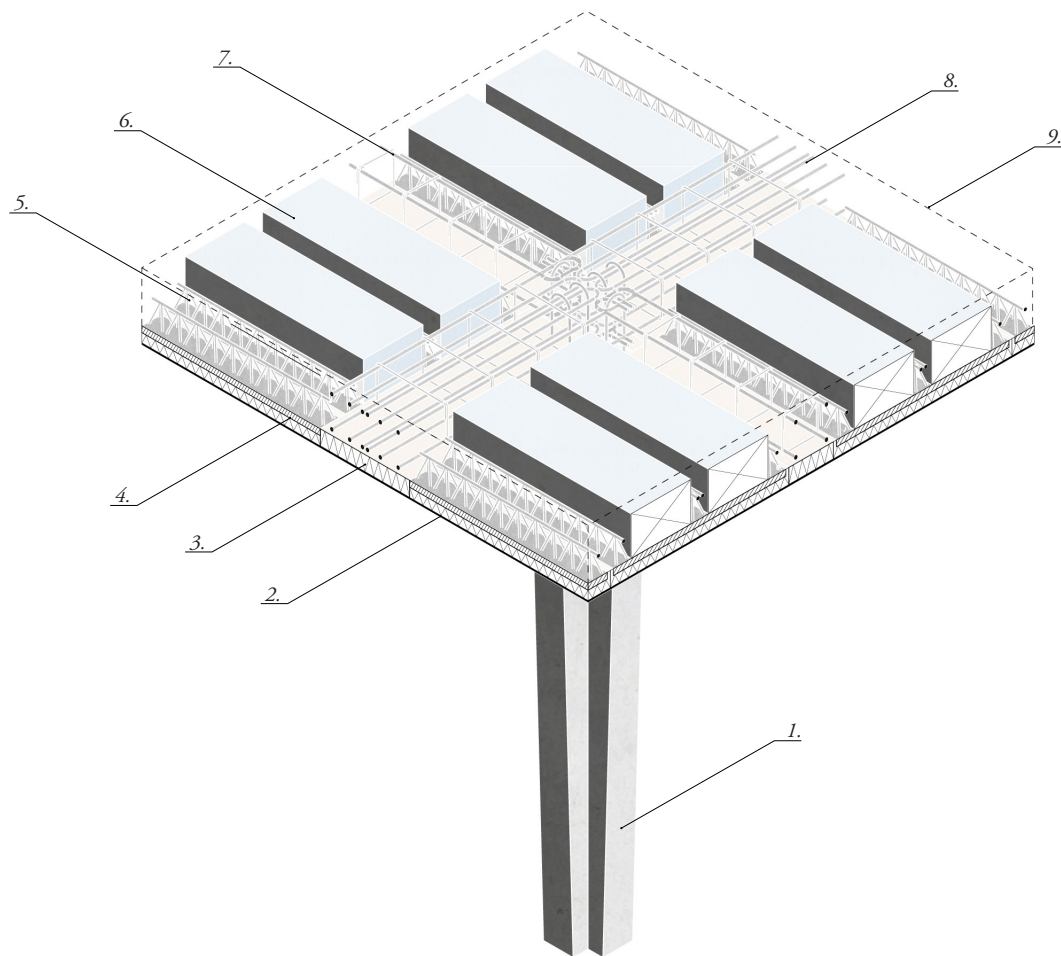
The horizontal slab consists of predalles elements insulated on their bottom face with 60mm insulation boards. The whole system of pillars and predall is implemented with beams rods, whose sectional area and diameter can vary according to the span of the structural grid.

To give final strenght and resistance to the horizontal load the whole thing is retained in concrete cast that also works a final finish floor of the slab. The bottom of the predall is then cladded with cement wooden panel that protects from fires and insulate further more the structure.

All the loads calculation are made to size a maximum span of 7200 mm between the pillars and to support up to 3 Kn/m².

LEGEND

1. *Tapered pillar with cross section (400mm to 600mm)*
2. *Cement wood fire resistant panel (th. 15 mm)*
3. *PSE Insulation board (th. 60mm)*
4. *Predall pre-fab floor (th. 360mm)*
5. *Lattice gilders (150mm x 80mm)*
6. *Expanded polystyrene (400mm x 360mm)*
7. *Reinforcement rods (d. 20 mm)*
8. *Primary beam section area (600mm x 350mm)*
9. *Retaining concrete*



STRUCTURE AXONOMETRIC DETAIL

SKIN

The mother structure will assume different configuration but in any case a skin layer is needed to protect the inhabitants from falling and as filter from light and weather conditions. This layer will run along the edge of the slab. It will be a metallic mesh made of steel wire of 3 mm diameters that intersect on a 120 x 40 mm grid. This will allow a 60% opacity that will vary with the incidence of light on it.

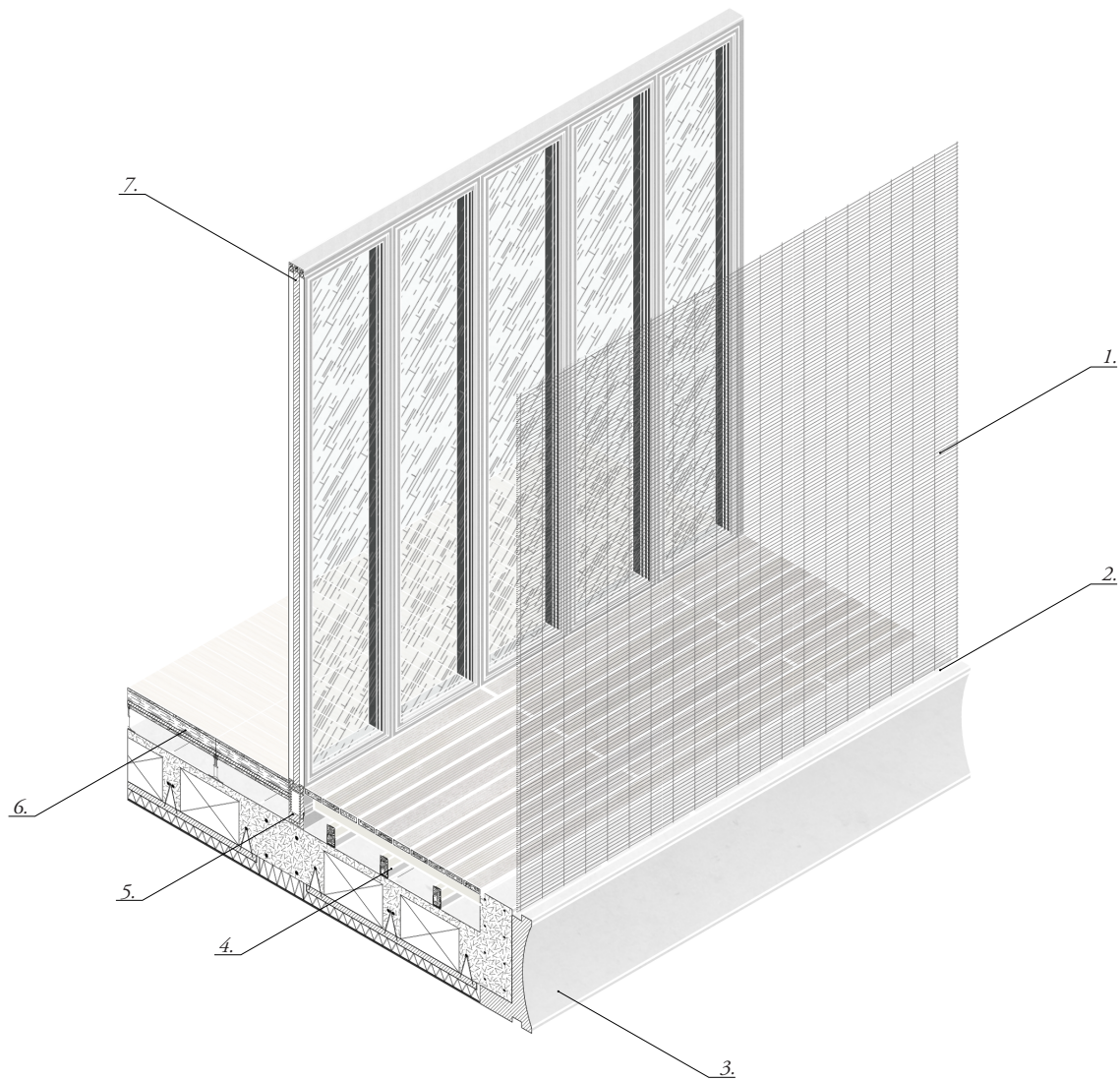
When looking from a shaded area to a lighted one, the metallic mesh will tend to disappear. On the other way around it will become less permeable giving more privacy to the apartments inside.

The metallic mesh will be strong enough to support a horizontal load of up to 400 kg becoming then anti breakthrough barrier. To have this strength the mesh will be connected to the edge beam every 500 mm with steel bolt and hooks.

The edge beam is a prefabricated element that works as a protection as well as a containment for the poured concrete and for the suspended floor of the apartments. It's curved on the side to allow a light gradient of shade on it that will reduce the impact of its 640 mm thickness.

LEGEND

1. *Steel metallic mesh 120mm x 40mm (d. 3mm)*
2. *Connecting hooks of metallic mesh*
3. *Pre-fab edge beam (350mm x 640mm)*
4. *Suspended terrace floor (th. 240mm)*
5. *Window floor detail (see pg.)*
6. *Suspended internal floor(see pg.)*
7. *Window ceiling detail (see pg.)*



SKIN AXONOMETRIC DETAIL

CORE

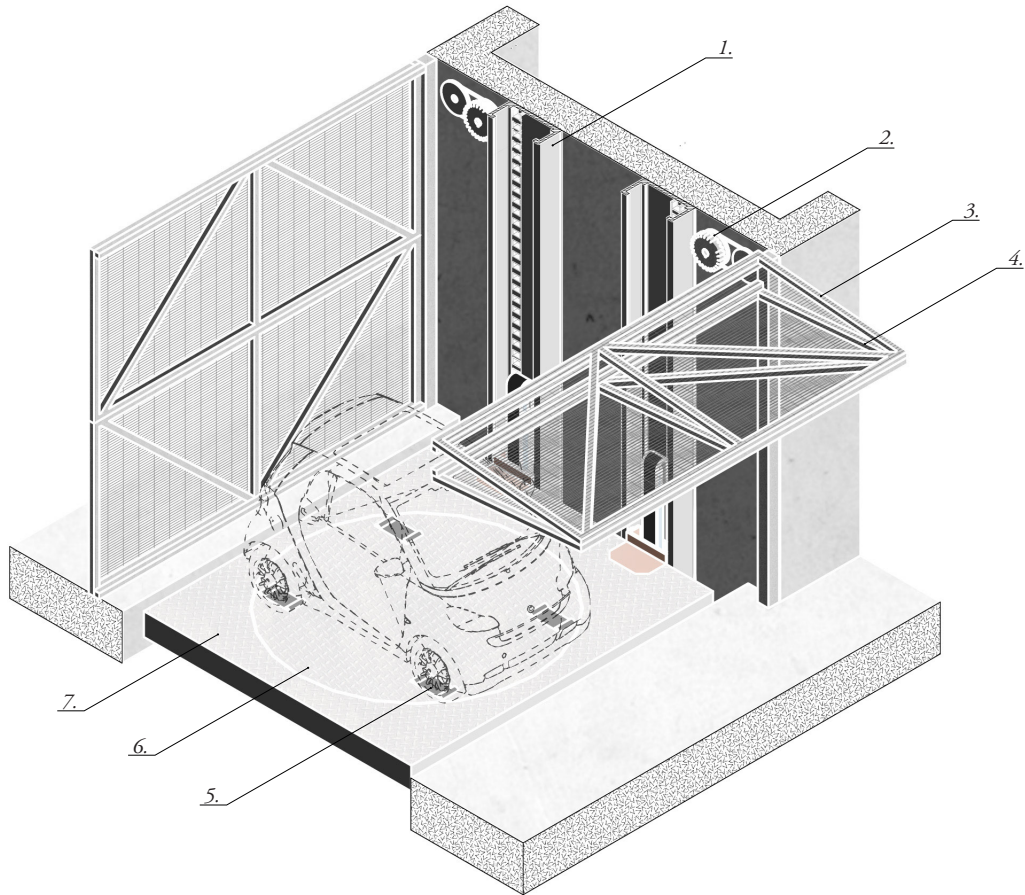
The mother structure will host living module that needs to be taken on the right level. To avoid external appendix the system for transport of the units will be found in the central part of the building. 2 Forklifting hoist will be installed one in front of the other to cover the area of the biggest living unit. Each of them can carry up to 1 tonnes and is structurally connected to the fire escape core that will always be needed.

The cost of the system would be unjustified if used only in those moments when someone is enlarging his home. For this reason it can be used also to take cars up to the needed level. The voiture can only be a micro-car (max 2,5m length). The hoist has been implemented with a rotating platform that will help in the maneuvering of directing and parking the car.

The void of the central core is protected with gates that are using the same metallic mesh of the skin. These open up by folding towards the ceiling thanks to a motor winch that will be found on each floor.

LEGEND

1. *Liftfork Hoist guide*
2. *Motor winch*
3. *Gate's steel structure*
4. *Gate's metallic mesh*
5. *Pak assisting step*
6. *Rotating platform*
7. *Forklifting platform*



CORE AXONOMETRIC VIEW

BUILDING PHYSICS

The apartments will be heated and cooled with a water-air system that will use fan coils. These requires a water temperature of 50 °C in order to heat. That's why a heat pump would reduce the use of energy. If possible it would even better if the heat pump is connected to a ground source. Everything of course is related to the kind of ground and the size of the final configuration.

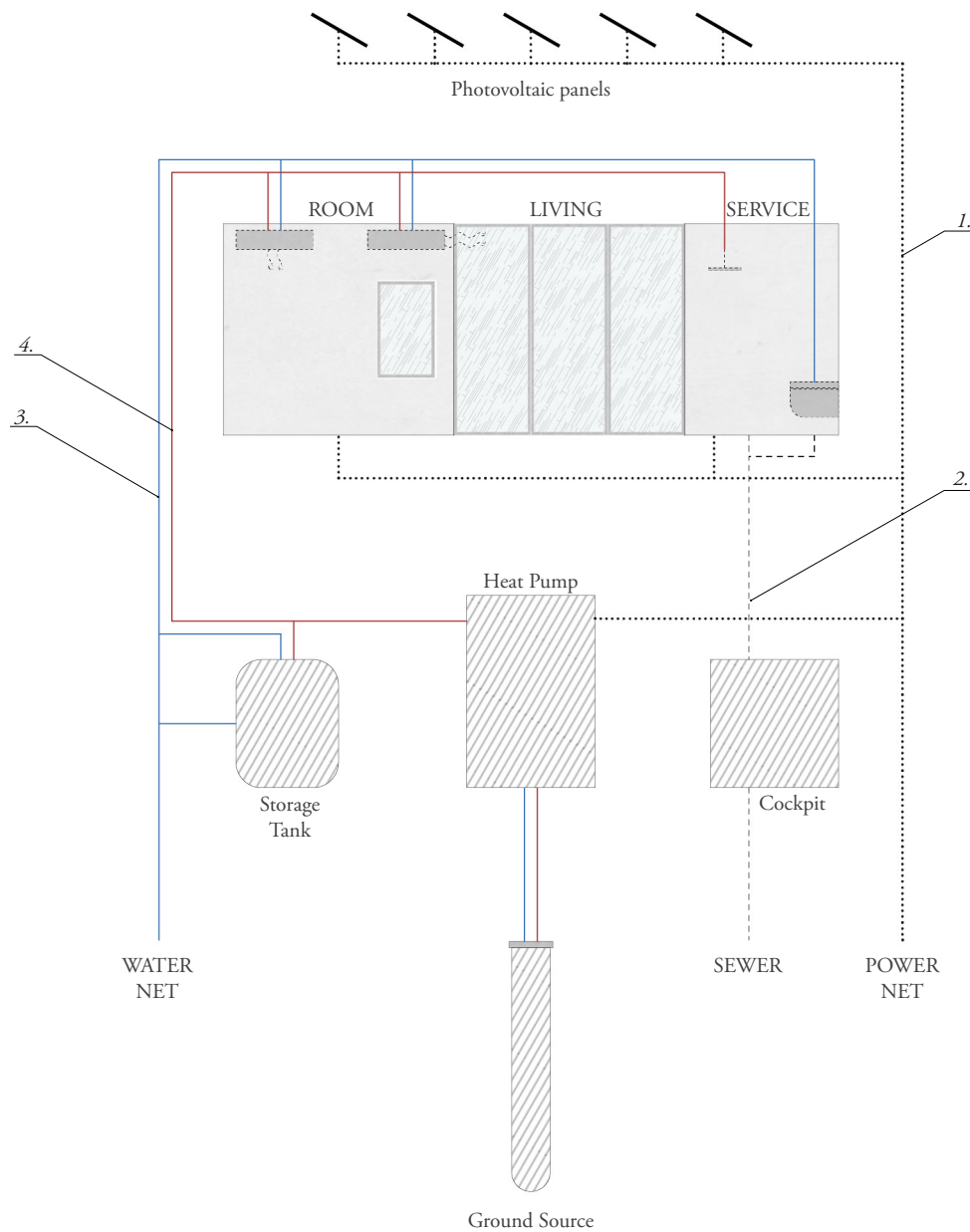
In any case a storage tank is connected to the heat pump and here will pass the water that goes to the unit system.

All the black and brown waters will be collected with pipes that will run under the suspended floor and will be taken to shafts that connects to the cockpit and then directly into the sewer.

On top of the building if the size of the area allows it photovoltaic panels will be installed. The produced energy should first serve the heat pump. If any is left in excess this will be sold to the net or used for the apartments.

LEGEND

- 1. Energy*
- 2. Soil waste*
- 3. Cold water*
- 4. Hot water*



BUILDING PHYSICS DIAGRAM

CONFIGURATIONS

As mentioned, the mother structure has been designed and thought to be flexible. Flexibility not in its shape but in its configuration. Since the Slab System ideally can be realized all over the world and in any kind of context the mother structure need to be able to adapt to the different urbanity without changing its functionality. The variable dimension of the pillars grid allows to stretch in one direction or the other the building. This will then be able to assume at least 3 different configuration: one for the urban, one for the sub-urban and one for the super-urban context.

The urban configuration will be narrow and long to adapt to the shape of typical lot in the european cities. the height can vary but shouldn't be smaller then 5-6 storey to allow to pay off the cost of the hoist that should always be needed.

The sub-urban should be used in case of big site out of the city. It would be allowed to create courtyards and enlarge the size of the footprint. This only on the condition that the building should never go over the 5 storey to avoid a massing that would result to heavy and invasive.

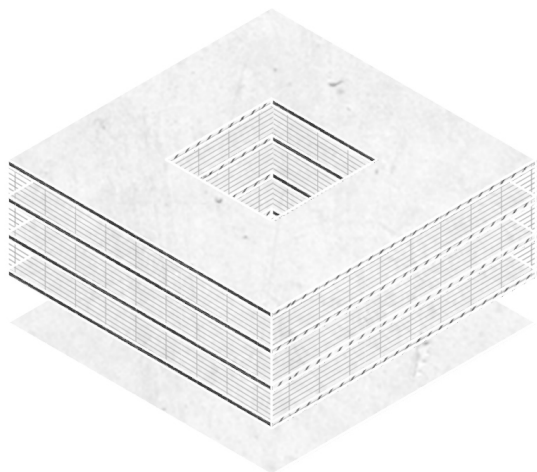
The super-urban configuration adapts to the metropolies of today, where millions of people lives nowadays.

Considering the structure as predisposed the building should not pass the 30 storey but if resized anything is possible.

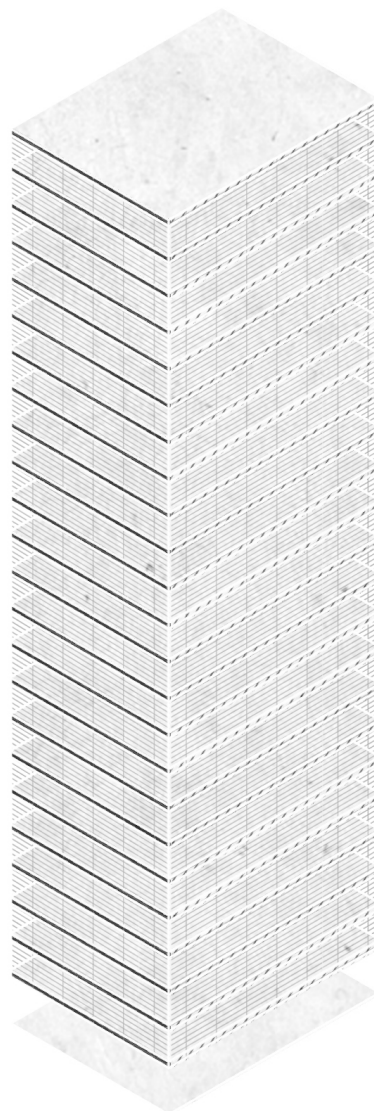
It's probably the best solution regarding the cost effect and it should adapt quite easily to the context of the big cities of today, were the tower tipology is more and more present.



Urban.



Sub-Urban.



Super-Urban.

LIVING UNITS

EVOLUTION

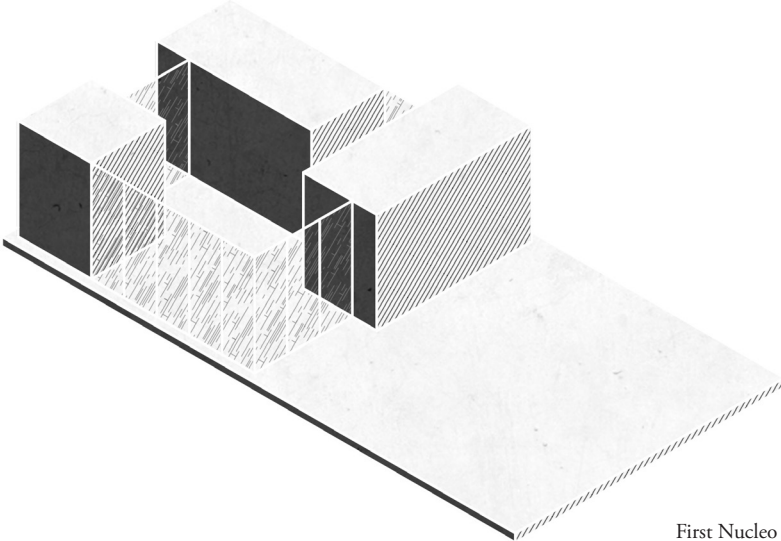
The unit that will compose the house have different sizes but same heights. They differ for the what they contain but they all hosts those functions and activities that requires an enclosed space. Together they shape the in-between living room.

The first step for a potential owner is to buy a “piece” of slab. After he has define what kind of house he would like to have, if very open, with many little spaces, or with a big terrace, the person should order the “Starting Nucleo”. This is a fixed and necessary package that will allow the inhabitant to take control of the house with all the facilities that are needed.

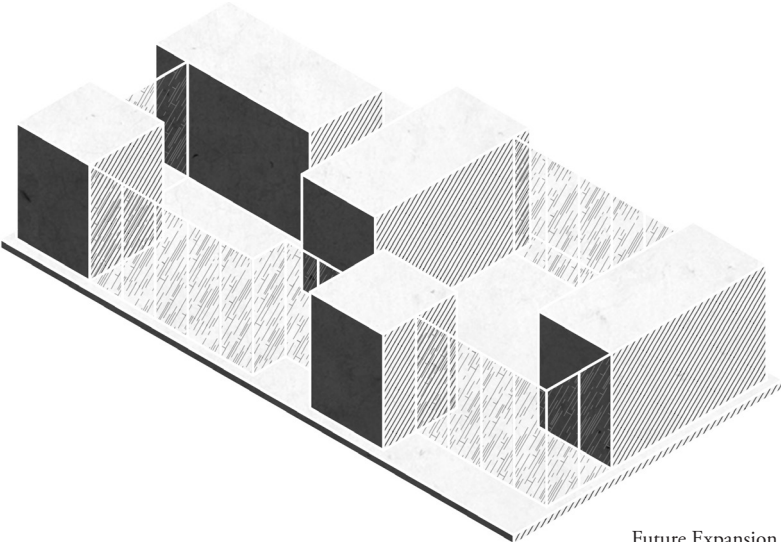
The rest of the slab that is not gonna be filled is still gonna be part of the house and can be use as the owner prefers. He can have a barbeque, he can park his car on it, or he can leave it as it is. If one day he wants or needs to enlarge the space with other units he would then buy new modules from the for “Future Expansion” or enclose another area with the envelope.

Adding new units will then encrease the living room area and here is the key point of the project.

Each element has been designed with minimum dimension in order to maximize the livability of the “in-between spaces”. No extra furnitures like tables, sofas, tv etc has been inserted in the units. The in-between spaces are obtained by placing glass walls between the units. This system provide the flexibility in the organization of the space, allowing en easy future expansion of the it.



First Nucleo



Future Expansion

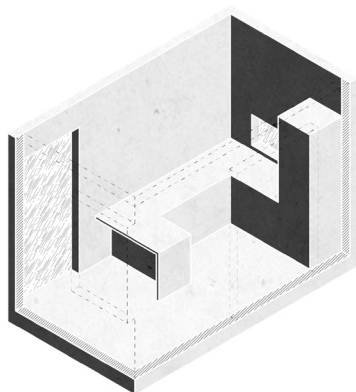
FIRST NUCLEO

The first nucleo is composed of the main unit that are needed to create a house. It's composed of a Kitchen, a Bathroom and a Double bedroom.

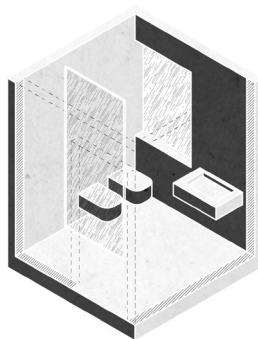
The kitchen is taking as much space as possible for the counter and leaves only little space as a sitting area. It is 2.4 m x 4.2 m in plan and it has, other then the entrance door, one small low window and a medium size one.

The bathroom is another service space. it is the most plugged to the system and never host a bathtub. It is 2.4 m x 2.4 m in plan and is lighted up by a medium window.

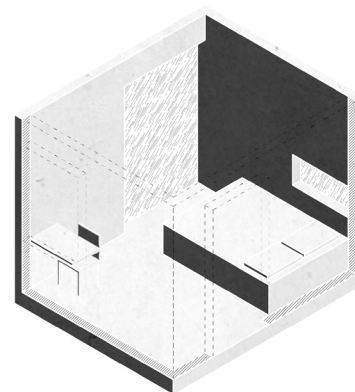
The double bedroom has predisposed a little table, a double bed and a wardrobe. It is 3.0 m x 3.6 m. It is the brightest module of all thanks to the presence of a tall and wide window that is always facing skyline.



Kitchen



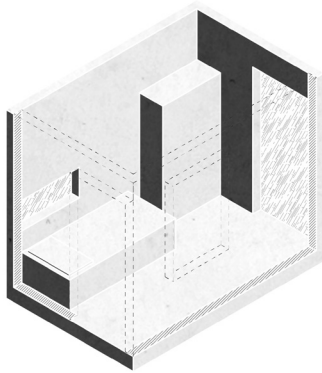
Bathroom 01



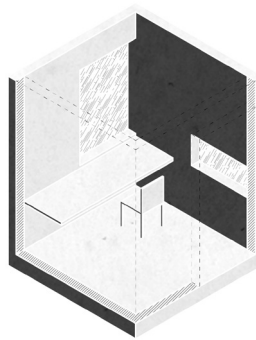
Double Bedroom

FUTURE EXPANSION

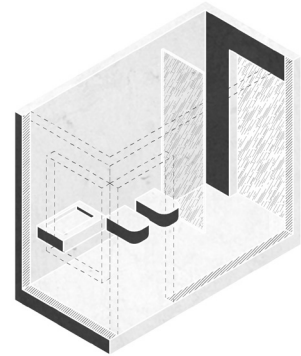
The future expansion include a Single bedroom, a Multi-Use room and a small bathroom. The single bedroom is furnished with a bed and a wardrobe. It is a very tiny space but thanks to the size and number of windows it feels bigger. The multi-use room is a predisposed to be customized regarding the function that owner want to have inside. From the recording studio to the game area it's the most flexible module and is possible to order it and configurate it as preferred. The bathroom is organized on a liner spatiality and ends up with a big window that light it up from the shower.



Single Bed



Multi-Use



Bathroom 02

SPECIFICATIONS

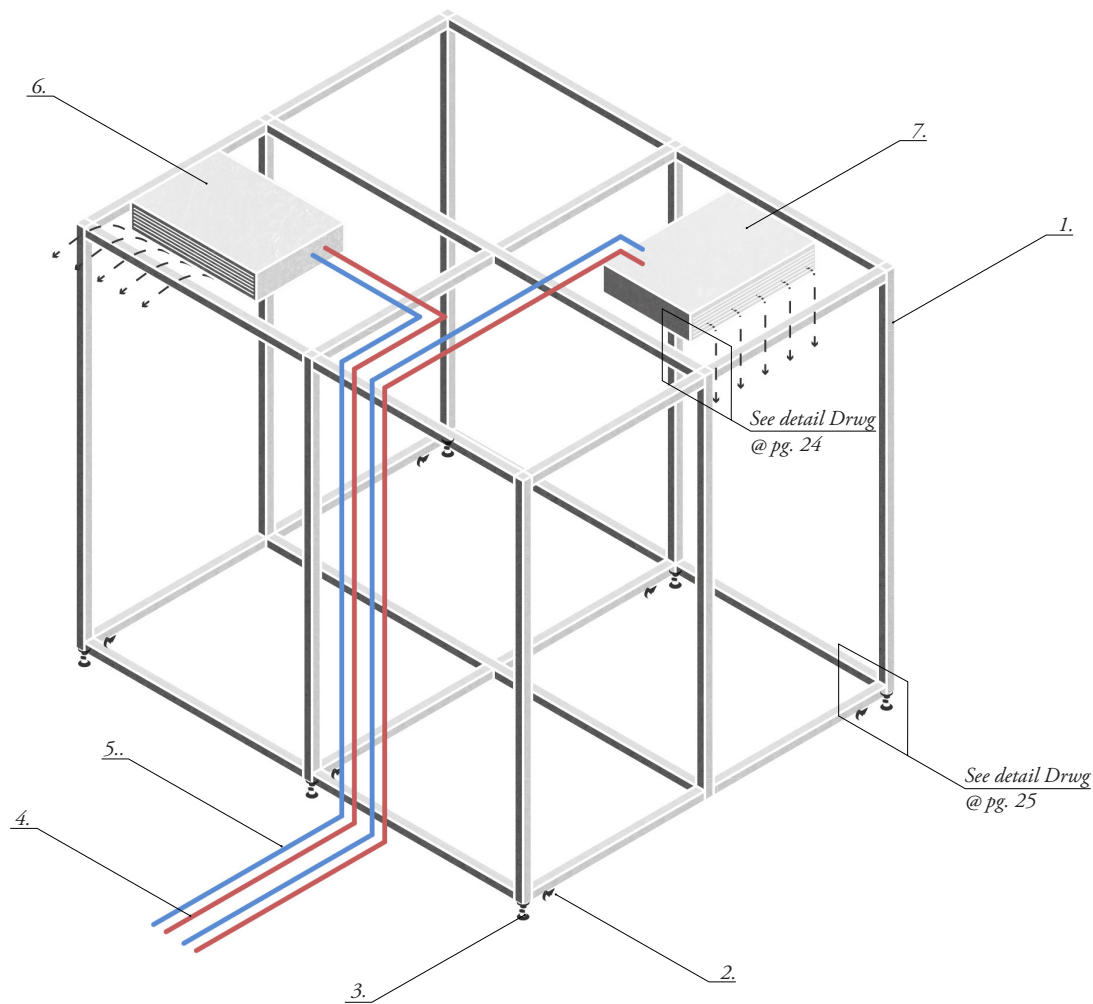
SKELETON

The main structure of the unit is made of a steel profile with squared section [70x70 sp.8] welded in the workshop. The maximum span is 2200 mm and the height of the frame is always 3300 mm. The main frame works as support for the window together with horizontal aluminium joist where needed. The structure is not touching the slab directly but it moves on wheels that are then locked only once the unit is placed in its final location. The locking happens thanks to extendable footing that lifts up the structure with a bolt and screw mechanism- The top of the unit is profiled with a soft neoprene sheath that get squashed with pressure and create a isolate room on top of the unit.

In the resulting space between the unit ceiling and the slab there is space to fit 2 fan coils that heats and cool the apartment. One Fan coil is directed towards the inside of the unit and the other one pushes air towards the “in-between” space. doing so, parallell to the increase of area of living space, it increases the quantity of heated mass of air.

LEGEND

1. *Steel profile (70mmx70mmx8mm)*
2. *Neoprene wheel (d. 50 mm)*
3. *Exstensive steel footing (d. 15 mm)*
 4. *Insulated hot water pipe*
 5. *Insulated cold water pipe*
6. *Air out (IN-BETWEEN) throught plenum*
7. *Air out (LIVING UNIT) Trought plenum*



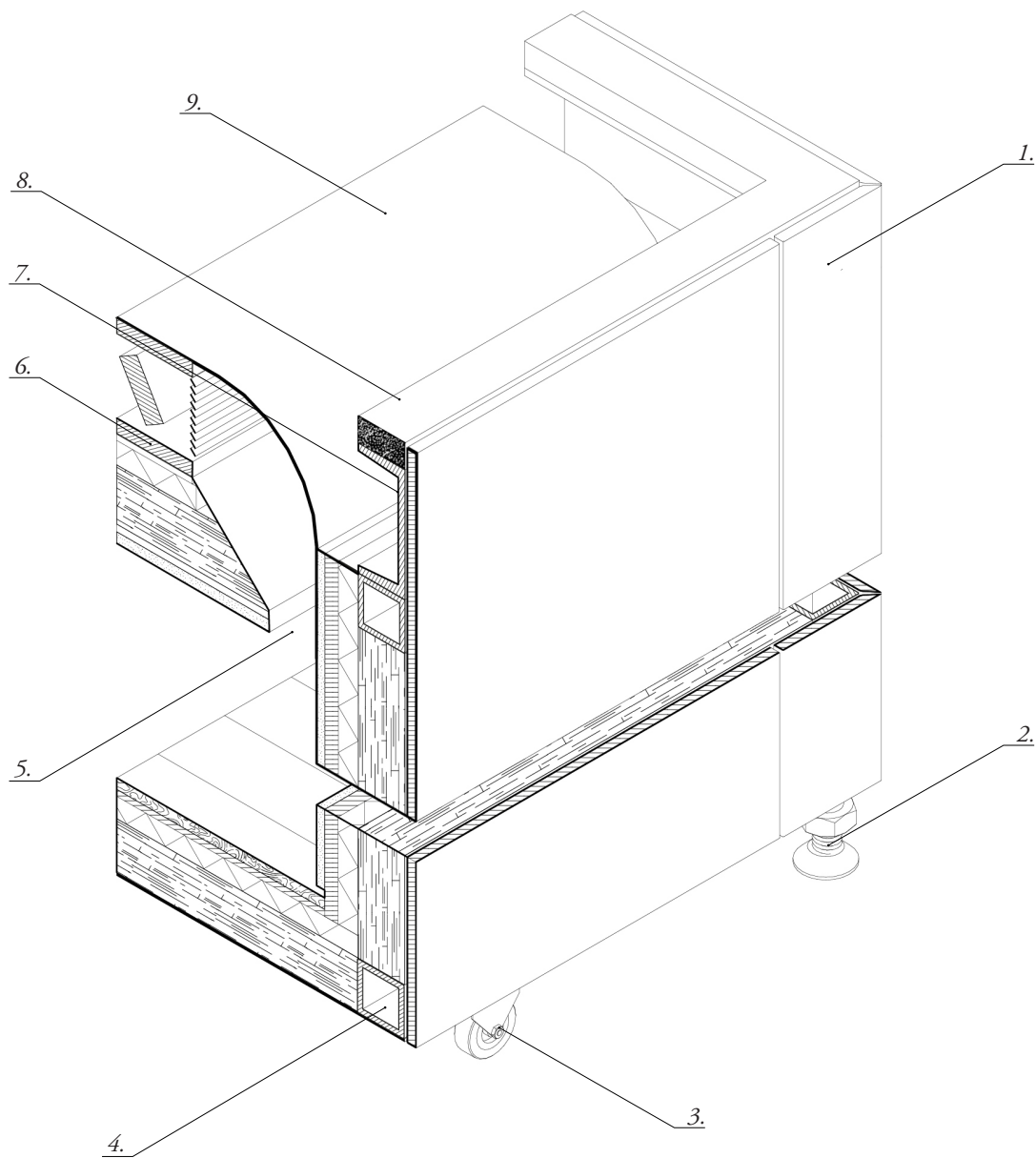
SKELETON DIAGRAM

UNIT'S CEILING / FLOOR

A fan coil system has been chosen to heat up the units due to their light weight and little time shift of thermal losses if compared to normal constructing. The water/air system, in fact, allows a much faster heating of the unit compared to a water/water sistem. To hide the machines a gap between the ceiling of the unit and the ceiling of the slab has been left. From there the fan coil is pushing air inside the unit through a cut between the wall and the ceiling.

LEGEND

1. *Honeycomb concrete panel (th. 15 mm)*
2. *Exstensive steel footing (d. 15 mm)*
3. *Hard Neoprene wheel (d. 50 mm)*
4. *Steel profile (70mmx70mmx8mm)*
5. *Plenum gap for fan coil air circulation*
6. *Fan coil I-LITE slim (H 1,12 Kw; C 0,84 Kw)*
7. *Alluminium spacer for carter attachment*
 8. *Soft Neoprene sheath*
 9. *Aluminium air conveyor.*



UNIT'S CEILING / FLOOR DETAIL

EXTERIOR

The unit has been designed to be cladded with panels. Starting from the inside layer of plaster boards coming to the outer panels of concrete. To declare this constructing technique the panels grouts have been emphasized and are actually falling exactly where the windows are placed.

There are four different kind of punctures inside the living units. On the diagrams it's possible to see two of them: The entrance door and the low window. The first one is a sliding door on purpose higher then standards would suggest to increase the circulation of light and air inside the minimal space of the unit. The second one is placed on the side of the bed and it's aim is to allow the person who is resting to have a view to the outside. The window mechanism is inspired from the one of cars where the glass disappears inside the thickness of the wall. The mullions are wooden and the glass is clear.

The client althought has the chance to pick and choose the finish he prefers between a wide range of colors and textures.

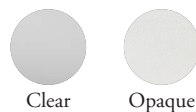
PANELS

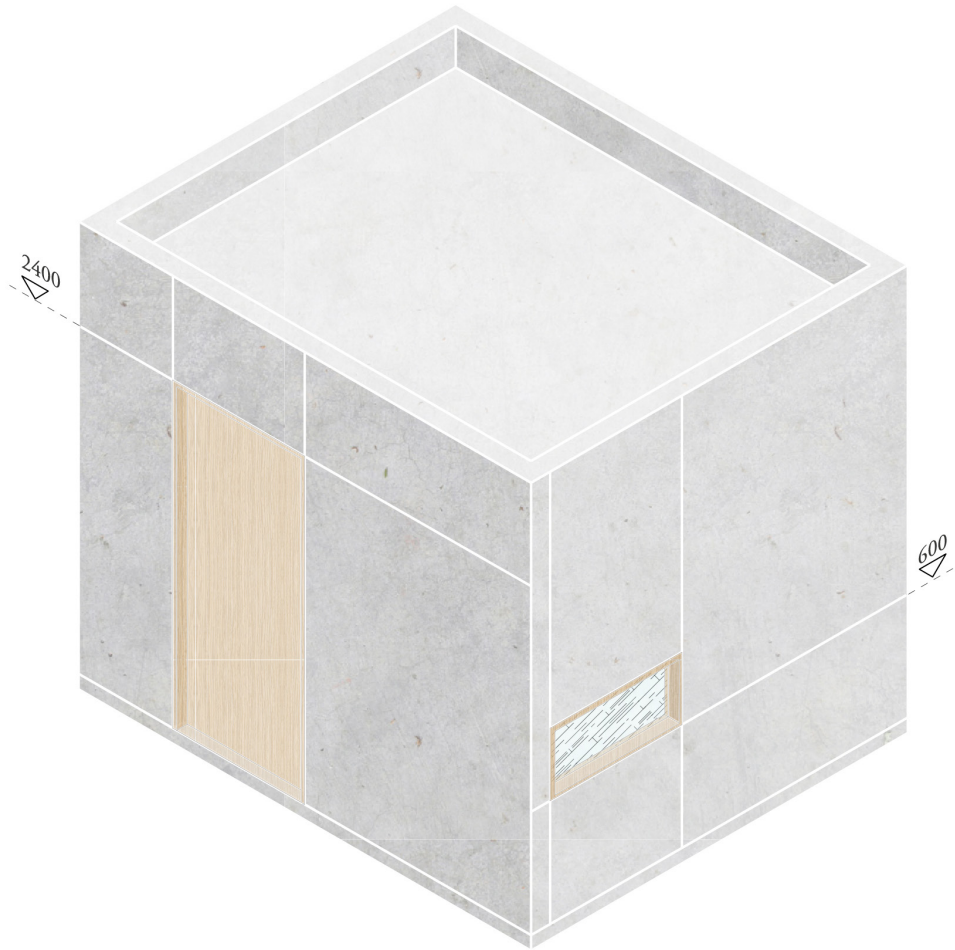


MULLIONS



GLASS





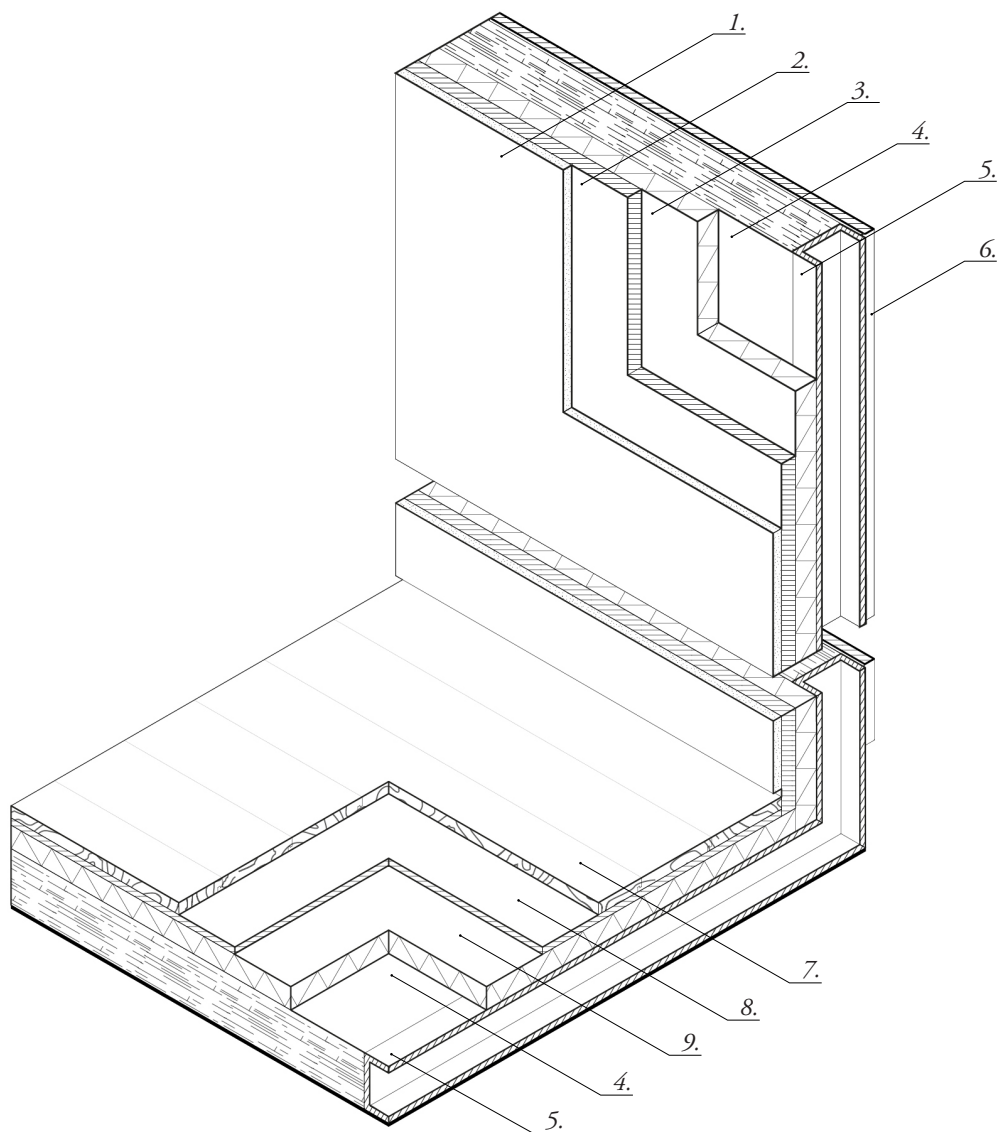
Exterior Aspect

SANDWICH WALL

Two kind of insulation have been used in the composition of the wall of the unit. The Vakum panel provides a very low conductivity and the Mineralized wood wool provides a high density. The sum of these two materials allows to have a very low U-Value together with a light structure and a great time shift.

LEGEND

1. *Plaster Board (th. 12mm)*
2. *Acoustic insulation board (th. 20mm)*
3. *Vakum insulated panel (th. 30mm)*
4. *Mineralized wood wool (th. 70mm)*
5. *Steel profile (70mm x70mm. th. 8mm)*
6. *Honeycomb concrete panel (th. 15mm)*
7. *Wood board (th. 20mm)*
8. *Acoustic insulation mat (th. 10mm)*
9. *Hard insulation board (30mm)*



WALL/FLOOR SANDWICH DETAIL

INTERIORS

The interiors of the unit is gonna be as simple as possible, both from the furniture and from the finishes.

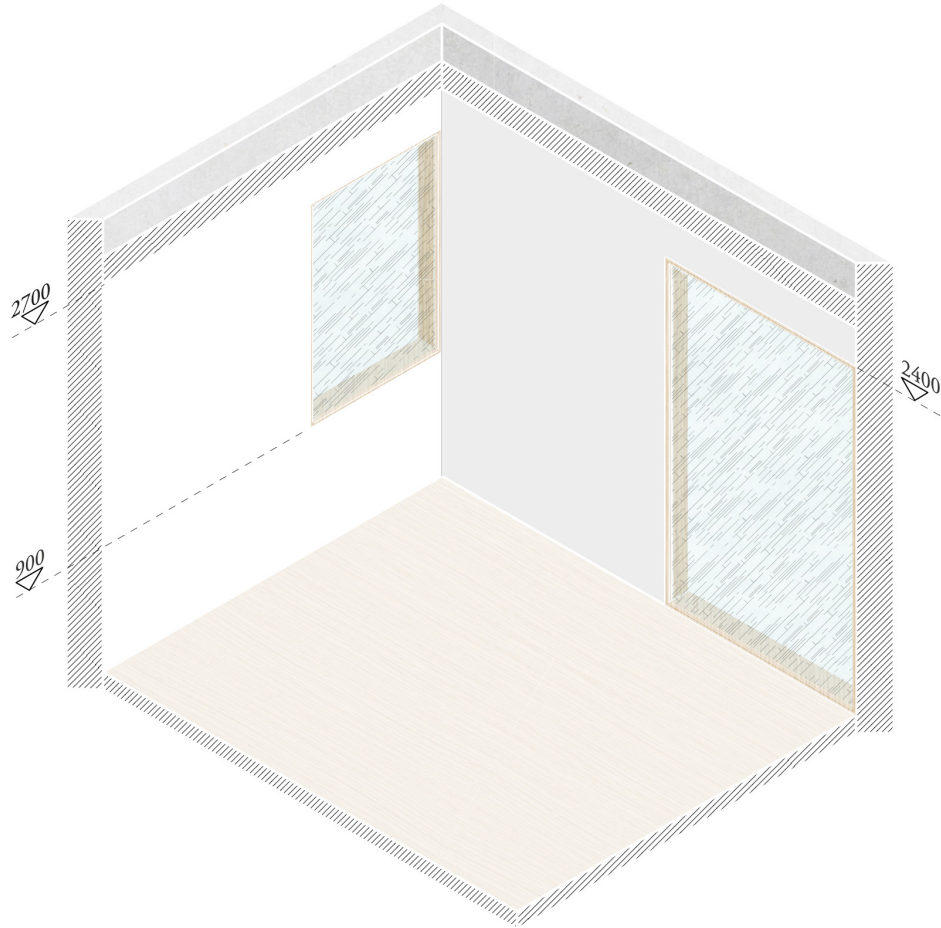
The space inside the units is not too much and that's a good reason to push the client using very light colors. Dark or strong color would fastly give a claustrophobic feeling and reduce the attractiveness of the room.

Other two openings can be seen on the diagram on the side page. The bigger one is fixed and creates a wide view to the outside. The other one is sized to be on the height of a table and to give a good view when working on a desk.

The floor is made of wood boards and its also possible to chose between different essences.

Lights should always be working with floor standing lamps to split the shades in two band that will enlarge the feeling of the room.





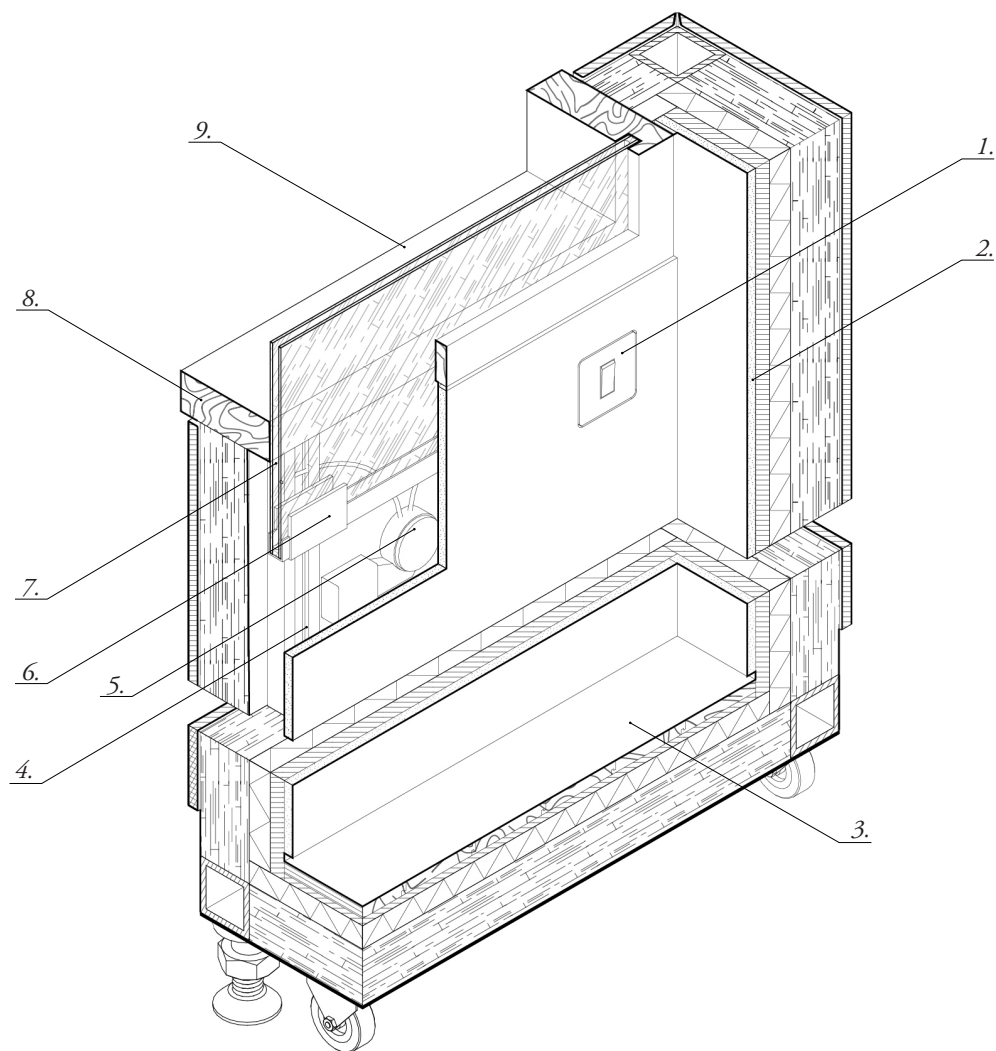
Interior Aspect

WINDOW'S MECHANISM

Inspired by the efficiency and clearance of the automobile construction system the openable windows of the unit works in the same way of the car window. The lift motor and relative guide fits in the 50 mm gap left clear by the subtraction of the Vakum panel and the Rubber of the Isolgypsum.

LEGEND

1. *Electric window switch*
2. *Plaster Board painted (th. 15 mm)*
3. *Wooden floor boards (th. 20 mm)*
4. *Vertical window runners*
5. *Electric motor*
6. *Window's horizontal supports.*
7. *Double glazing window*
4mm Low-E Glass + 8mm Kryptonite cavity
8. *Oak fixed profile*
9. *Window ceils (100mm depth)*



WINDOW'S MECHANISM DETAIL

ENVELOPE

The envelope is the last element of the system. After the units have been placed on the slab and plugged to the pipes now it's necessary to protect the house from weather conditions and give privacy to it.

First comes the window system that is adaptable to the need of the inhabitant. Organized on a rigid grid of 600 mm squared there can be a fixed module, a double door or a single pivot door large as two modules.

To give more privacy and protect from sunlight the system can be implemented with a hanging curtain.

The floor is required to cover the pipes and detach from the cold slab. It also fits on the 600 mm grid and there is the possibility, if needed to cover the height of the step with a ramp that is predisposed to fit the other modules.

It's possible to choose between different finishes and colors to allow personalization of the apartment.

MULLIONS



Grey

Bronze

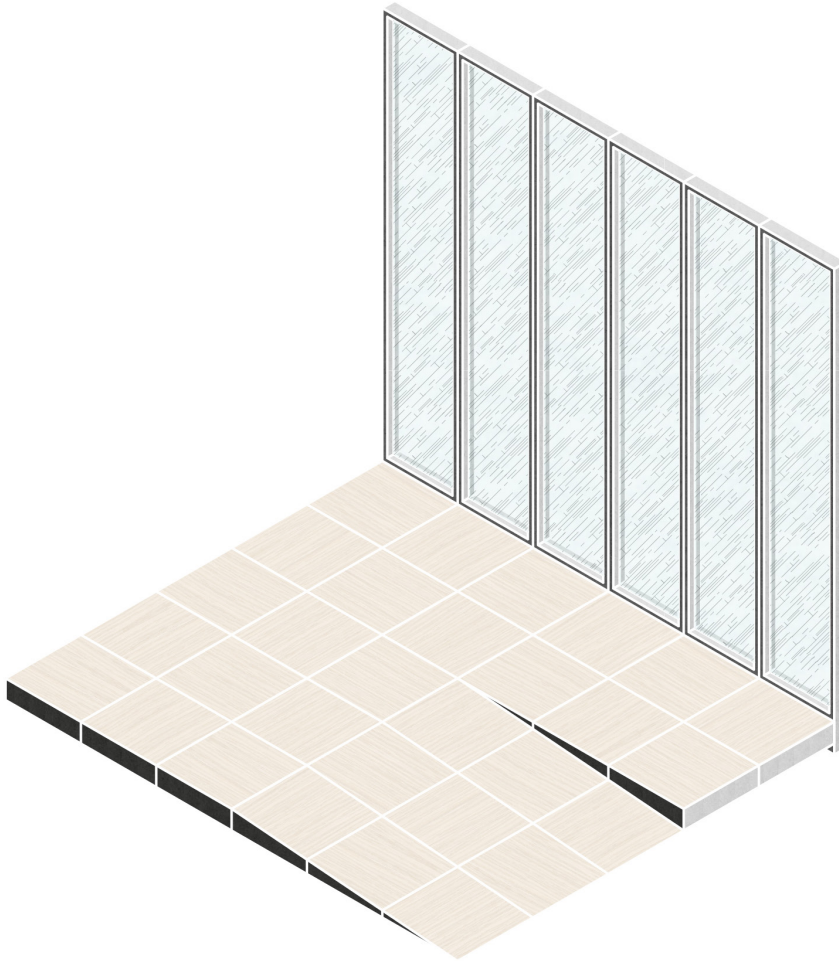
Antracite

FLOOR



Oak

Pine



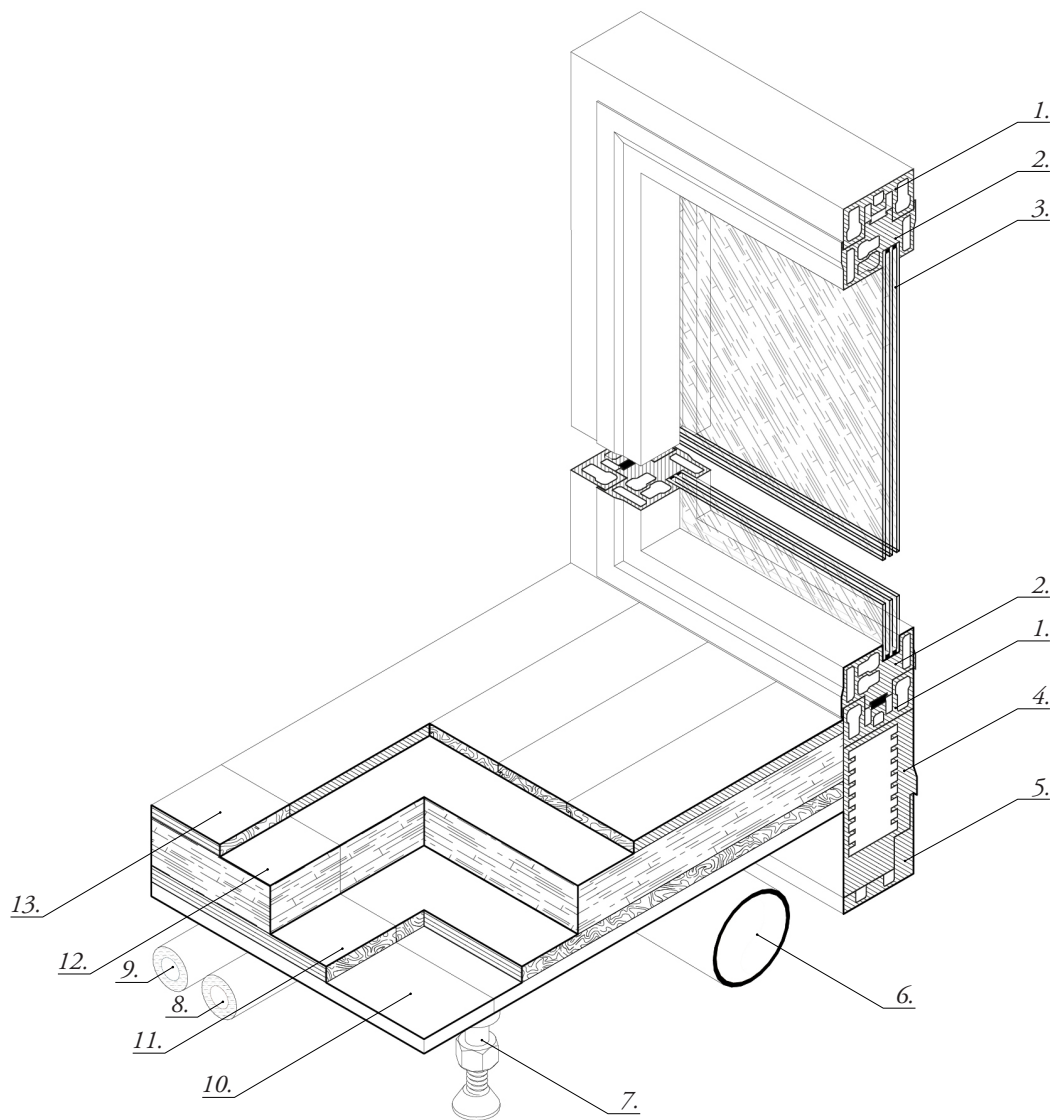
Envelope Aspect

ENVELOPE SYSTEM

The envelope is composed of two elements that are mounted in succession. The weather layer and the pipes layer. The first one is composed of 4 systems: a rail to the ground that connects the mullions to the slab, an insulated carter that enclose the pipes void under the suspended floor, the fixed mullions, and the movable one. The glass is triple glazed. The whole system is developed in modules of 600 mm and they are fixed between each other with a push and rigid system inspired by movable partitions. The suspended floor, very similar to the common ones that there are in offices, is mounted only after the unit has been plugged to the plants and pipes.

LEGEND

1. Fixed mullion (80mm x 40mm)
2. Openable window (80mm x 50mm)
3. Triple glazing glass
4mm Low-E Glass + 8mm Kryptonite cavity
4. Insulated carter
5. Aluminium rail
6. Waste Pipe
7. Suspended floor foot
8. Insulated hot water pipe
9. Insulated cold water pipe
10. Chipboard (Th. 15mm)
11. Hard insulation board (30mm)
12. Mineralized wood wool (70mm)
13. Wooden floor board (20mm)



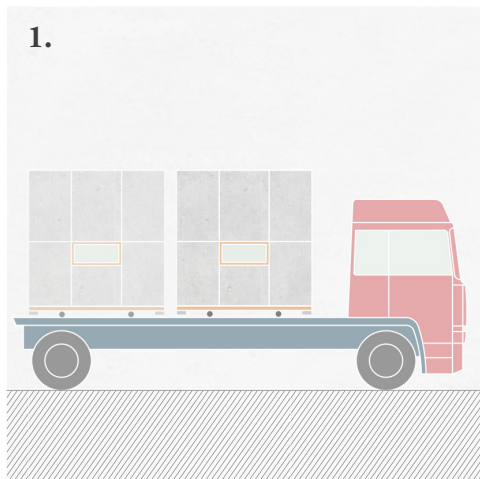
WINDOW'S MECHANISM DETAIL

P-P-P-P

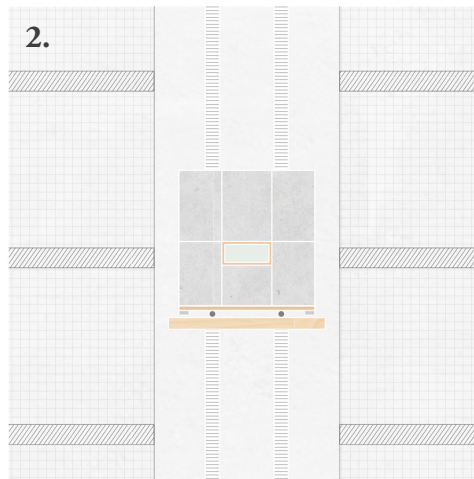
After few years or maybe only some months, the owner of the flat might want to enlarge his house and he will experience the 4P program that consist in: Put in Place, Plug and Play.

When a inhabitant of the Slab tower takes part to the program the first step is to place the order with an app or with a website. Different aspect can be defined when the order is placed: number and position of openings, internal finishing and furniture. In the time of about 3-4 weeks the unit will be ready and delivered on site.

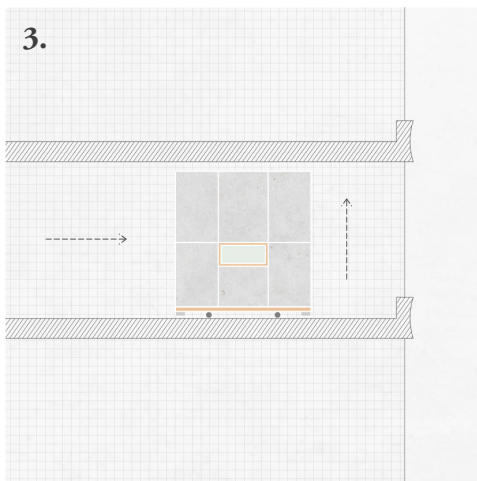
1. Every unit has been design to fit on a standard truck and so it can be delivered at a resonably low cost.
2. Once the truck is on the podium of the tower, only with 3 work man it is possible to load the unit on the hoist, that will take it to the right floor.
3. Once on the final slab the unit is placed in the correct position thanks to the use of the wheels and it lifted on it's feet to fix it.
4. Finally all the electric wires, water system, waste pipes and more are fixed to it and are covered with the suspended floor that will also thermally insulate the house.



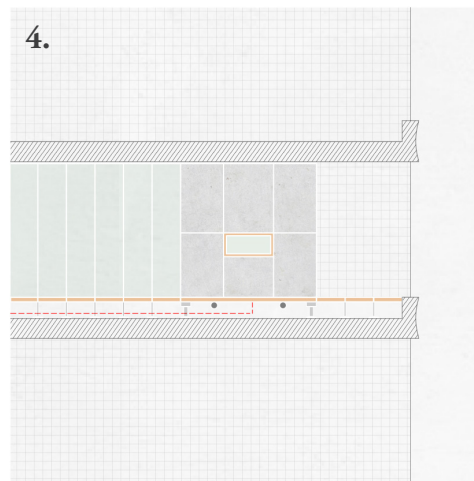
Delivery of the unit on site with a standard truck.



Lifting of the unit to the owner's floor.



Fixing of the unit in its final location.



Connection of the unit to the electric and pipe system.

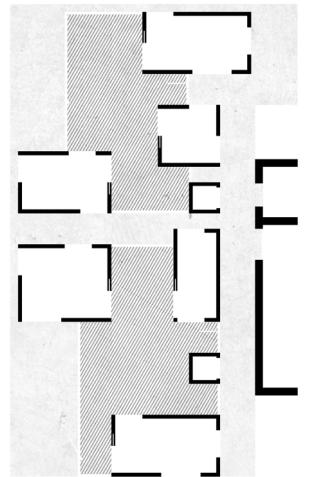
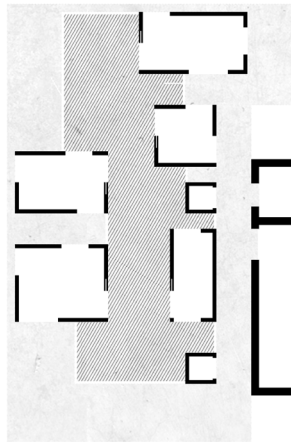
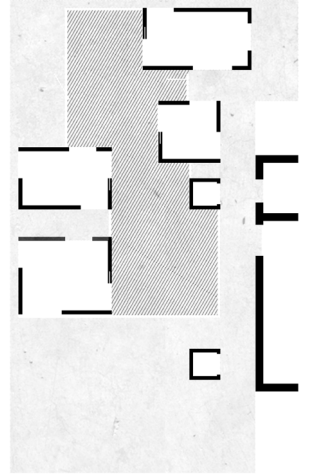
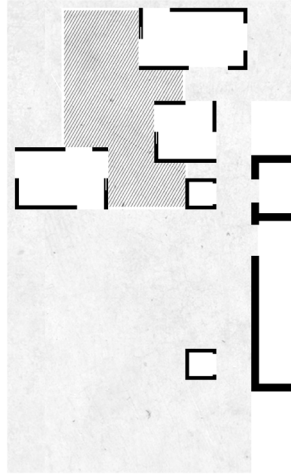
COMPOSITION

RULES AND SUGGESTIONS

There is no rule that obliges someone to start with a room or the other the house but there are some suggestions that if followed

Moriyama House, SANAA, Tokyo.

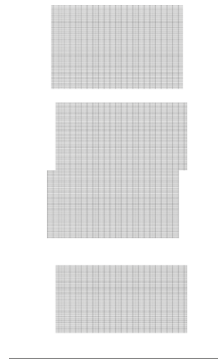
Slab System model.



The image is a vertical architectural rendering of a modern high-rise building. The building is shown from a low-angle perspective, looking up towards the sky. The facade is composed of a grid of horizontal concrete slabs and vertical perforated metal panels. Several balconies are visible, each with a person standing on it, providing a sense of scale. The sky is a clear, light blue. The overall aesthetic is clean and industrial.

SLAB TOWERS

NEW PRE-FAB HOUSING FOR MILAN



WORK IN PROGRESS

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CONTEXT

AROUND US

The site where the project will be located in Via Mario Pagano where there used to be the caserma Mascheroni.

The location was chosen between a wide choice of areas thanks to its position and orientation.

Sempione Park is walking distance from the buildings, and around us there are other highrise building that proved the predisposal of the area to fit tall building. The site is north-east oriented and this allows to have a good sun exposure during the day. Further more, thanks to the little numbers of building behind the site the shade impact of the buildings is actually not creating any particular problems to residential building.

The decision to make 2 towers was driven by the desire to create a prefab building that could become a landmark for the area and could improve the common thought about prefabbrication.

Putting two building realized with the same system but at different heights connect strongly one to the other and create a space “in-between” the two. This space is donated to the public with the creation of a square, that will be kept lived thanks to the activities that will be found inside the towers.

City life

Slab Towers

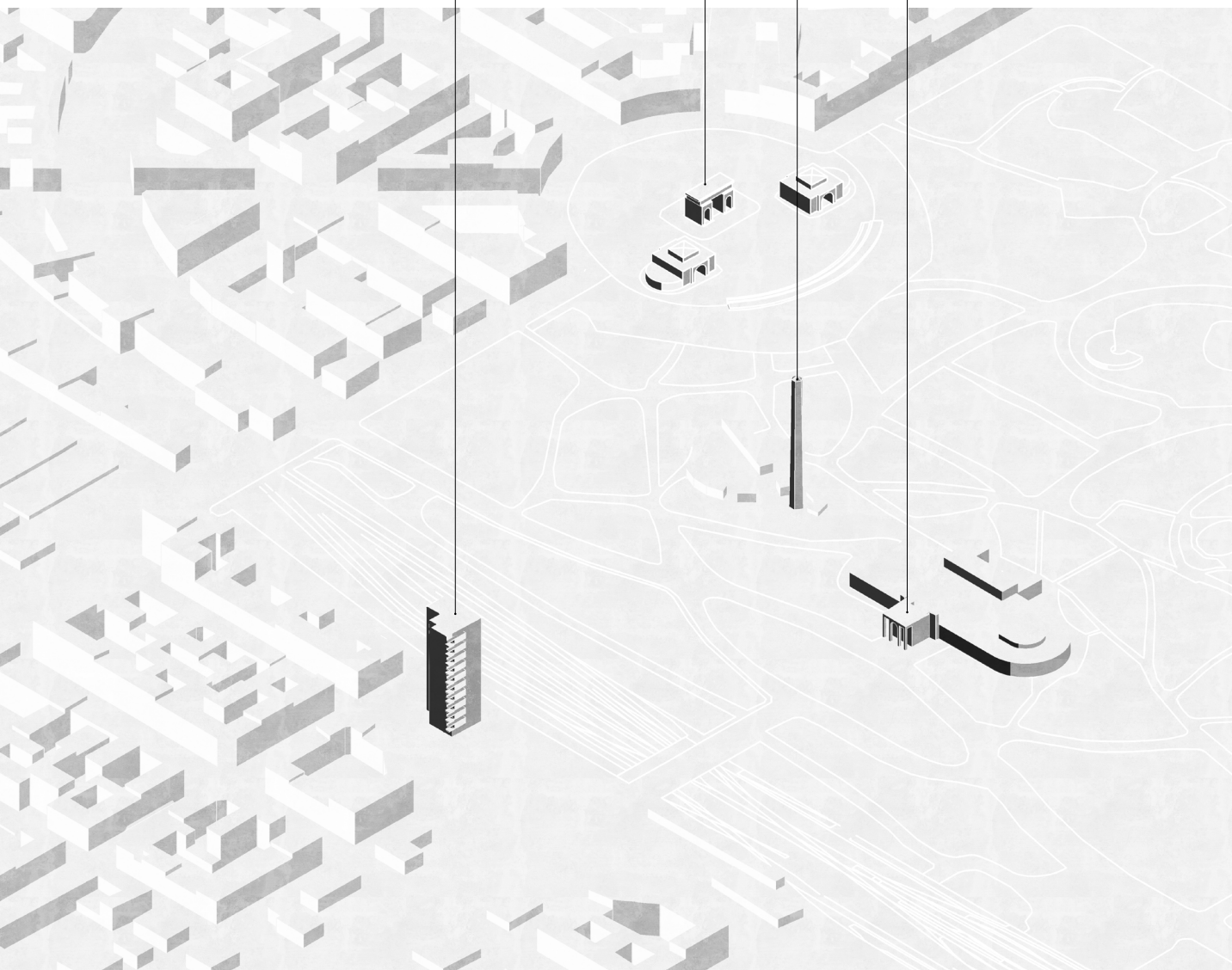


Torre al parco.

Arco della Pace.

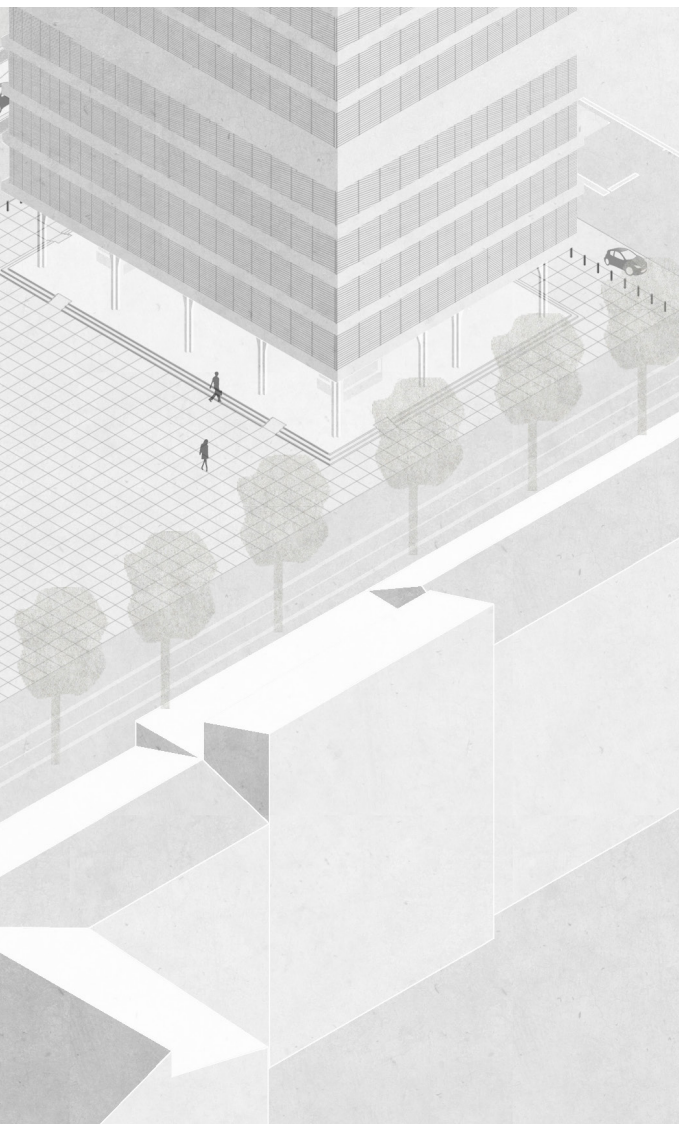
Torre Branca.

Palazzo dell'Arte.





VIA MARIO PAGANO 22



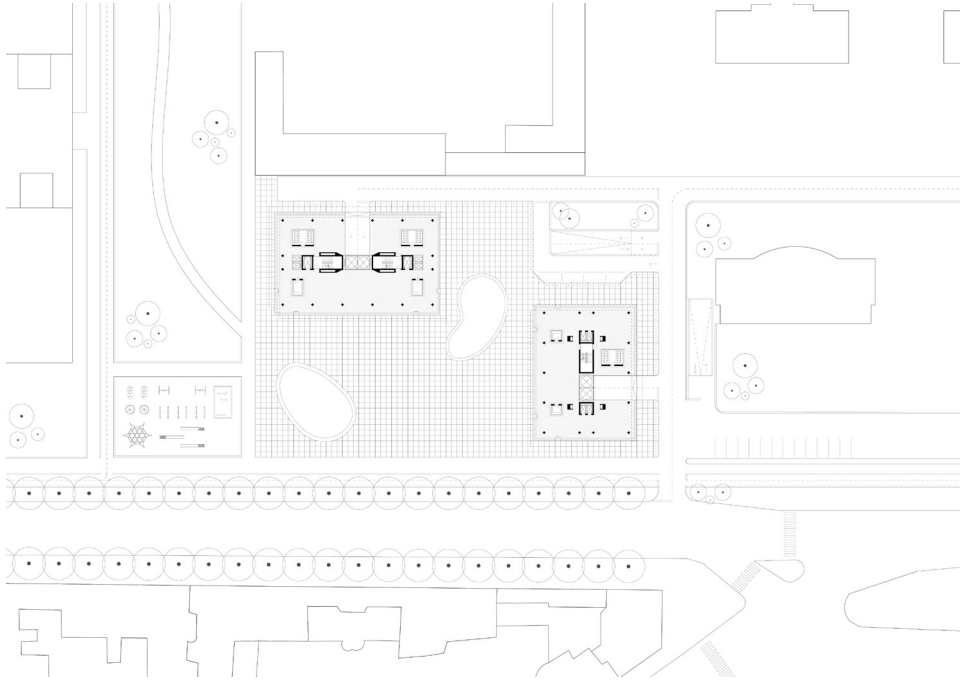
The two towers are landing exactly on the borders of the lot where there used to be the parade ground field of the military barracks. The space in front of the towers become a square where nowadays no more military are marching but all the people that are accessing the building and the park that has been developed on the side.

Both the towers stands out of the square thanks to a little podium that separate the public space of everyone from the more private access to the residential building.

Two organic shape brakes through the orthogonal grid of the square an connect the drop-off area to the main space.

The linear park thatpoints towards citylife is simply a carpet of grass and before touching the road it turns into a more urban ground with games for kids.

The whole intervention is resetting a big emptyness in the crossin between two main roads of the city that aree never perceives as so due to the strong presence of the trees in Via Pagano.

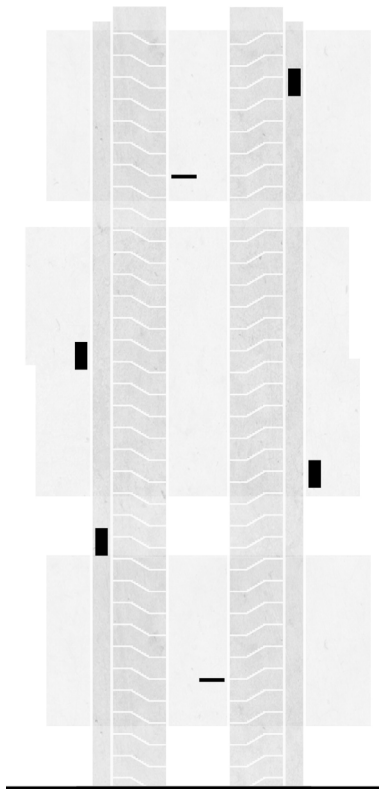


Location plan



View 1

SYSTEMS



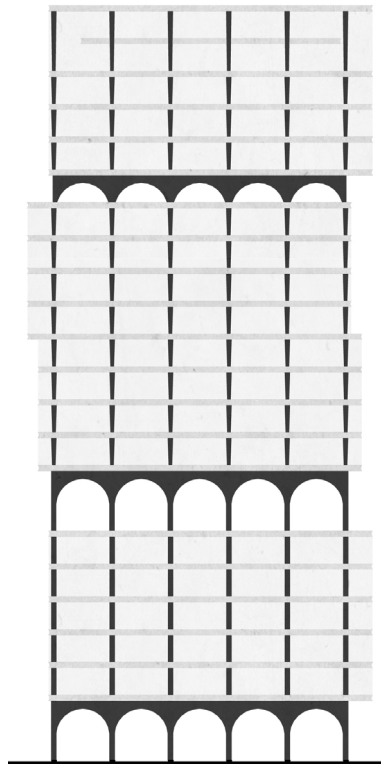
CORE

The core of the building is divided into 3 way up. The central one is the forklift/hoist that transports cars and units. The 2 on the sides are means of escape staircases. The last 2 bands are the elevators. Internal ones are for public transport; external ones are for private use of the residents.



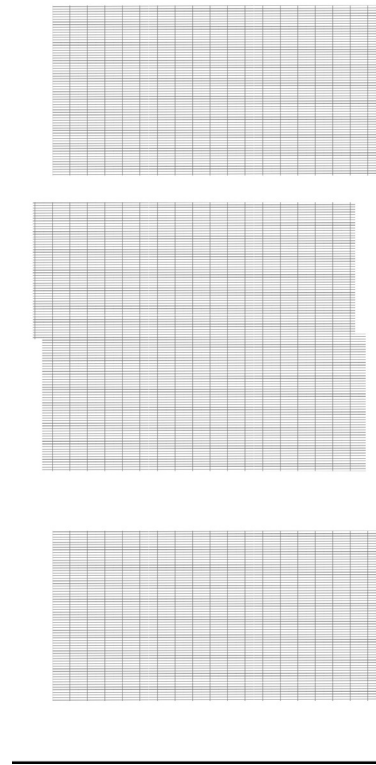
SHAFTS

The shafts are the way down to the ground for all the pipes of the residential floors. There are 8 of them at every residential floor but they become 4, connected to the core when they reach the public terrace at the 6th floor.



STRUCTURE

The structure is punctual and organized on a grid of 7200 mm x 6600 mm. It is mainly composed of pillars apart from those floors where there's a desire to emphasize that some other activities are happening.



VOLUMES

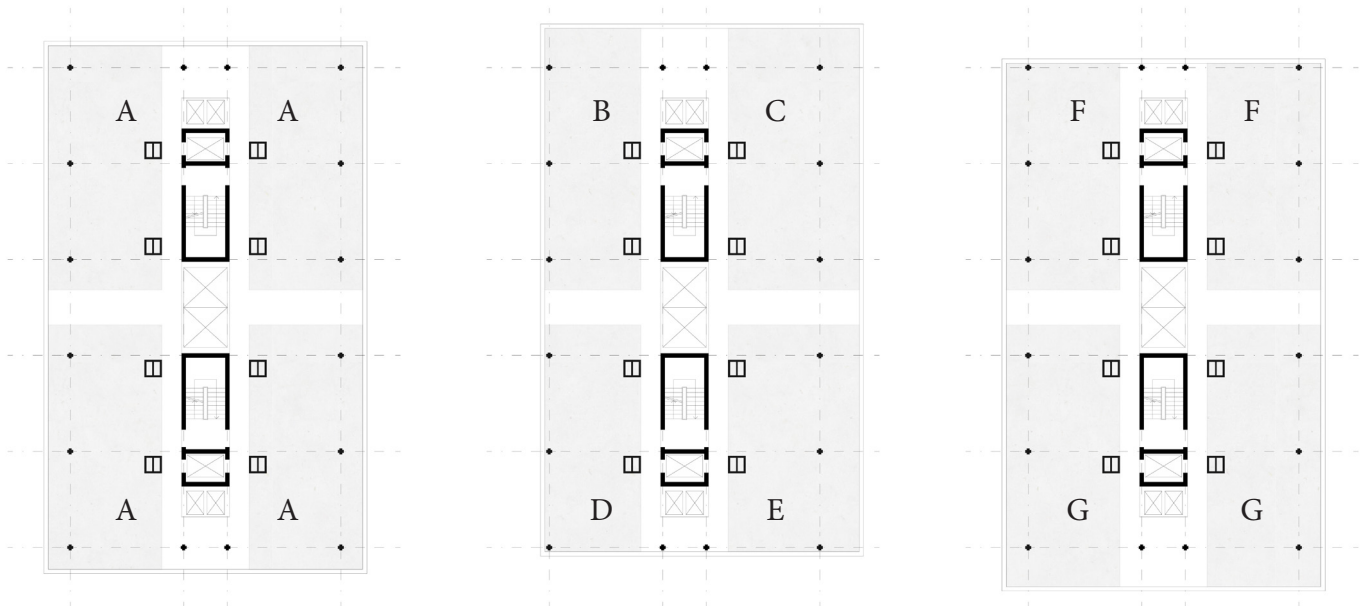
The whole building is finally clad with the metallic mesh and each block of 4-5 storey is shifted on the grid to give a more tectonic aspect to the project avoiding the pixelated facade. Typical of expandable project.

APARTMENTS LAYOUT

BLOCK'S AREAS

As mentioned in the “volume” system the tower’s slab is actually shifting its centre every now and then. This happens for two reasons. On one side it’s an aesthetic device to declare the movement inside the towers, on the other is a trick to create different areas of slab on the building. Doing so there’s a stronger variety of available areas and this increases the market value of the project.

The area are:	A	130 m ²	E	140 m ²
	B	120 m ²	F	120 m ²
	C	160 m ²	G	140 m ²
	D	100 m ²		



1st Block

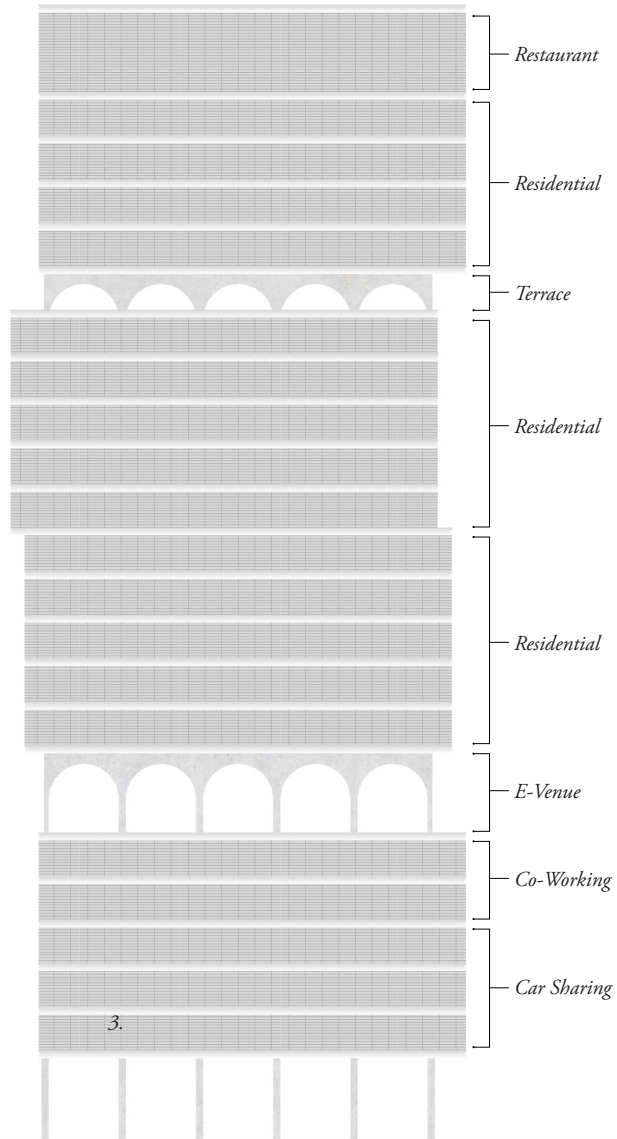
2nd Block

3rd Block

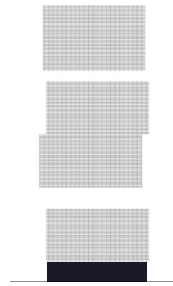
ACTIVITIES & FUNCTIONS

The main structure of the unit is made of a steel profile with squared section [70x70 sp.8] welded in the workshop. The maximum span is 2200 mm and the height of the frame is always 3300 mm. The main frame works as support for the window together with horizontal aluminium joist where needed. The structure is not touching the slab directly but it moves on wheels that are then locked only once the unit is placed in its final location. The locking happens thanks to extendable footing that lifts up the structure with a bolt and screw mechanism- The top of the unit is profiled with a soft neoprene sheath that get squashed with pressure and create a isolate room on top of the unit.

In the resulting space between the unit ceiling and the slab there is space to fit 2 fan coils that heats and cool the apartment. One Fan coil is directed towards the inside of the unit and the other one pushes air towards the “in-between” space. doing so, parallell to the increase of area of living space, it increases the quantity of heated mass of air.



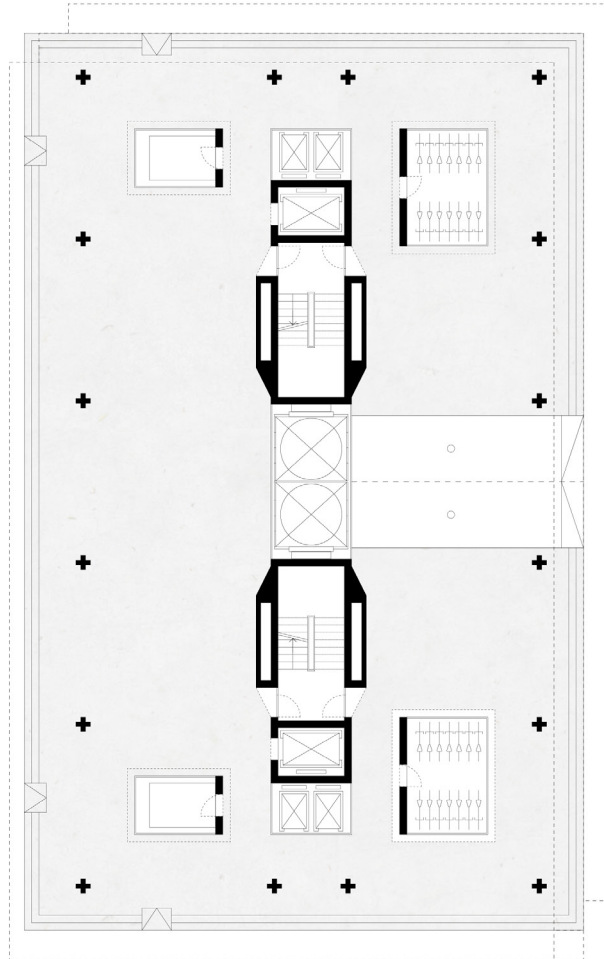
ELEVATION



ENTRANCE

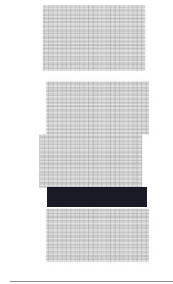
2 CRANES are placed on the roof top of the tower are daily used as car lift. Whenever anyone decides to expand his house the cranes are joined together to deliver the requested unit to the right level.

8 RISERS divide the access corridor from the area of property of the house. Each house is served by 2 risers and each of them connects an area of slab





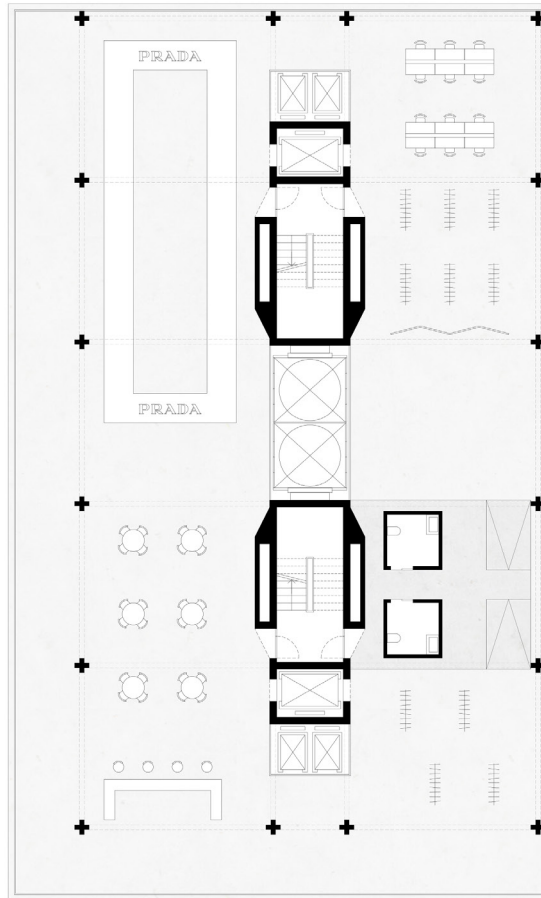




E-VENUE

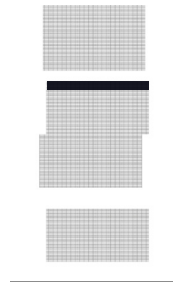
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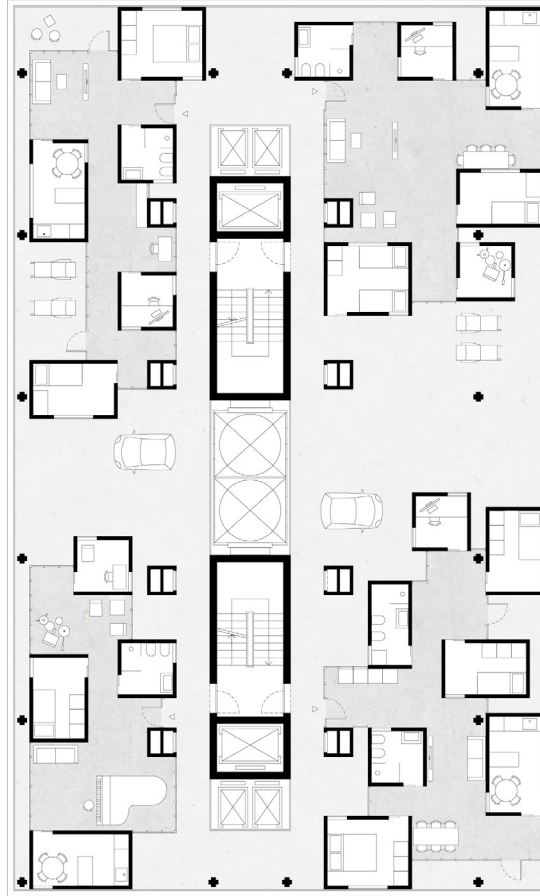


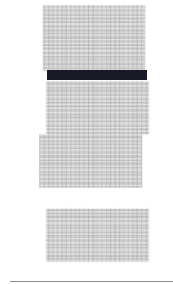


RESIDENTIAL

2 CRANES are placed on the roof top of the tower are daily used as car lift. Whenever anyone decides to expand his house the cranes are joined together to deliver the requested unit to the right level.

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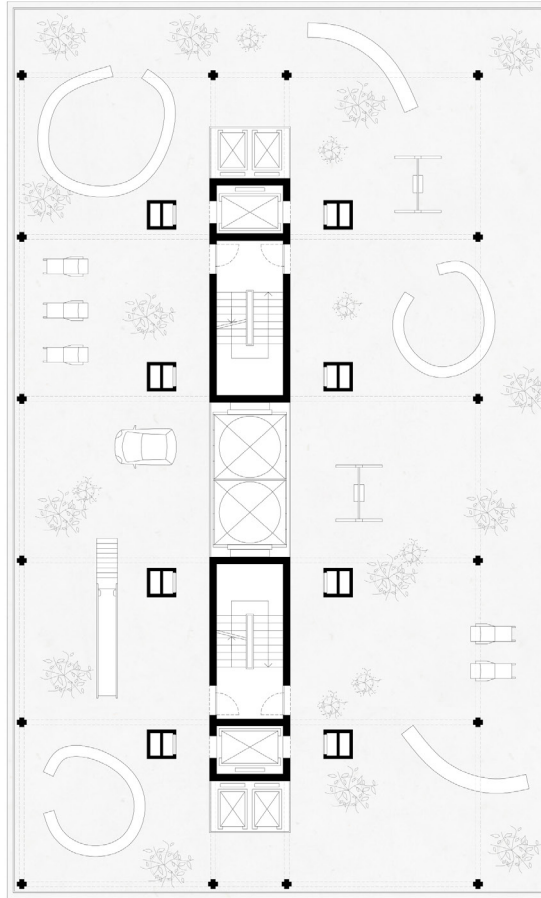




TERRACE

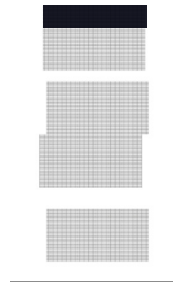
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RESTAURANT

2 CRANES are placed on the roof top of the tower are daily used as car lift. Whenever anyone decides to expand his house the cranes are joined together to deliver the requested unit to the right level.

8 RISERS divide the access corridor from the area of property of the house. Each house is served by 2 risers and each of them connects an area of slab

