



SMALLNESS

1+11 CONTEMPORARY URBAN DWELLING STORIES

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SMALLNESS

1+11 Contemporary Urban Dwelling Stories

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INTRODUCTION

Constantly rushing, lacking solid reference points and certainties of what will be tomorrow, society's lifestyle and the typical family structure went through significant changes in the last twenty years, and spatial needs of dwelling changed with them. These changes brought with them more and more urban-settled people, more one-person households, more rapid technological innovations, more dynamic and fluid relationships with each other. How is it possible to keep living in the same houses of fifty or more years ago?

This research work deals with micro-unit dwellings, protagonists of a contemporary phenomenon that is spreading worldwide and that try to react to a complex and not-always homogeneous set of emerging living necessities. The phenomenon has already hit many big cities worldwide as a way to deal with density and seek affordability by downsizing the house dimensions; declined in different ways, faced with various conditions, and tested at multiple scales, the phenomenon has proved to be a global one.

By moving between the social and economic dimensions, it gained popularity, highlighting the lack of solid foundations: there are currently few specific regulations controlling it, and there are still gaps in in-depth studies of the phenomenon and its application potential in terms of architectural and urban design, often leaving it to the logic of the market and of involved stakeholders. In recent years early attempts to deal with micro-units have been done by many global municipalities, which have been moved both by the emergency of the housing crisis and by the competition between cities. However, the phenomenon is still far to be a controlled experience and it is still perceived as an uncommon practice.

This research is placed within the framework of a transition moment that the phenomenon is experiencing, passing from an underground and underregulated one to a recognized and controlled one. The presented work makes the effort of being proactive, contributing to the debate on

the studied phenomenon by observing projects and processes of transformation of the dwellings due to the socio-economic context described. Indeed, the effort of this research is to intertwine the architectural and urban design perspective with the socio-economic and juridical dimensions, considering their roles on the transformation processes and their tangible effects on the built environment.

From a methodological point of view, the work has followed a path “from small to big” scale, taking the adAPT NYC Competition as the starting point of the research and deeply analyzing it. The question reported at first, of compatibility between old houses and new society is, indeed, one of the questions from which, the City of New York, ended up in promoting the 2012 adAPT NYC Competition. The call was a pilot tentative for developing and testing a new, downsized type of housing that meets the needs of an evolving metropolis. The competition, won by nArchitects with the project formerly known as MyMicro NY, was the first instance in which the city of New York allowed to waive regulations concerning unit’ size limits.

The operation, possibly due to its promotion, unleashed several controversial opinions and debates, allowing to retrace documents and project actions, which effects are not materialized only in the spatial dimension, but also in the normative one. This single experience had the merit of opening the discussion around the need of retooling the current city’s housing offer. The analysis of the design process allows to explore and detect the relation between architecture in its form of spatial modification, laws, and the socio-economic context in which is located, and it produced effects on these dimensions too, making the three seemingly different fields intertwined and indissociable when retracing the project’s process.

Retracing the history of the project has been the way for setting up a method through which to investigate other cases distributed worldwide, in their processes and spatial dynamics. Understanding the context, the process, and the outcomes of MyMicro NY constituted the basis for identifying comparable cases in other cities, and question them through an analysis matrix.

The described research focuses on two fields and three scales: the processes and the spaces are analyzed at the urban scale, at the building scale, and at the unit scale, with the challenge to keep together the architectural and urban dimensions of the micro-units phenomenon.

The findings of the analysis are the basis for a toolkit which starts from the evidence released in the research to suggest calls to action for all the actors involved in the city-making, starting with architects, designers, and planners, but including also developers, promoters, real estate agencies, municipalities, and even until potential users. The toolkit focuses particularly on design principles and spatial devices to take into account when considering, planning, and designing a micro-unit development, and it offers early advice to avoid unpleasant outcomes. These suggestions are meant as a first attempt tool that could be generalized, making the toolkit viable in different cities and considering situations not included in the analysis, bearing in mind also a potential expansion of this work.

For facing different scales of the projects and with different levels of deepening, this research is based on a complex and heterogeneous system of sources. Furthermore, researching recent events has the limits of the absence of extensive literature, forcing to go back to original documents. Thus, the work does not limit to secondary sources or already existing studies, but it deals with primary sources such as documents from the archives of the cities, direct interviews with the actors of the projects, or laws in place in the selected cities.

adAPT
NYC **1**

adAPT NYC the CALL

1 | INTERESTS AT STAKE

In 2012 New York City made a step forward in the field of dwelling and of city planning: the administration went further in the densification process through the shrinkage of dwelling unit's size. Densification was not new to the city, considering its iconic skyline (especially in the part of Manhattan) crowded with higher and higher skyscrapers, which rise in the search of space where developing useful square meters¹.

Recently, the City's administration bet on new dwelling types. On July 9th, former Mayor of New York Michael R. Bloomberg announced the adAPT NYC, a competition with the aim of searching new housing options. The intent was to give proper answers to the changed demography of New York and the different needs of New Yorkers, whose demand is unable to be satisfied by the market. (Loeser & Wood, 2012)

Although New York has been, in the nation, a pioneer in housing reforms and innovations, the city has faced continuously a severe problem in housing since it left its form of colonial settlement, from mid Nineteenth Century until today. (Plunz, 2016)

The reasons behind the decision of exploring new dwelling types, following the strategy of densification, laid under the numbers that effectively depict the city's condition. Mayor Bloomberg stated:

"Developing housing that matches how New Yorkers live today is critical to the City's continued growth, future competitiveness and long-term economic success. [...] People from all over the world want to live in New York City [...]" (Loeser & Wood, 2012)

As Bloomberg pointed out, it was not a secret that the Big Apple metropolis is the desire of many, but at the same time it is also well known the condition of the housing market prices, which are, constantly and never-ending, skyrocketing. The American megacity is one of the highest-prices real estate markets of the world, with a median gross rent that stands, as of 2018 reports, around 1'400 \$. The median gross rent is, however, not effective in representing the real estate market trends

¹ Carol Willis (1995) well illustrates reasons underlying the skyscrapers crowdedness in New York, and Rem Koolhaas (1994) describes his Manhattanism theory of hyper-density as foundations for the modern culture.

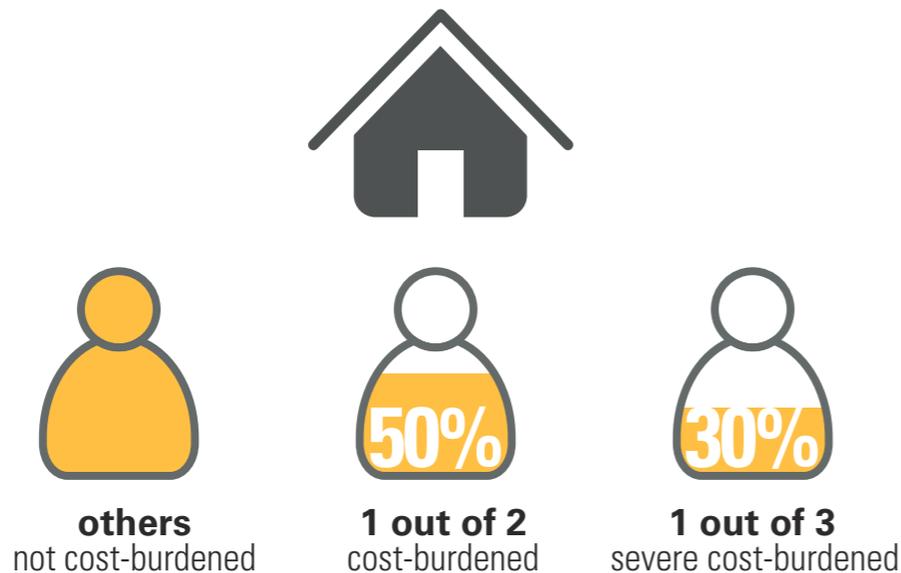
since it considers also subsidized and rent-stabilized units; therefore, looking at the citywide median asking rent², which excludes subsidized rents, the value rises at 2'650 \$, almost the double of the gross one, and it reaches the peaks of 4'000 \$ in Midtown District and more than 3'000 \$ in most of the Community Districts of the Manhattan Borough. These orders of magnitude have to face with the incomes of New Yorkers and with the cost of living in the dreamed city: the median household income in 2017 was reported to stand at 62'040 \$ annually, an amount of money that is extremely close to the housing cost-burdened limit, which means that a household spend more than 30% of its income in rent², and then it may have difficulties in buying food and daily goods. (NYU Furman Center, 2019; U.S. Department of Housing and Urban Development, n.d.A). In fact, considering the annual income, the median monthly income is 5'170\$, whose 30%, the monthly rent limit for not being cost-burdened, is 1'551\$.

Comparing rents and incomes makes evident how these prices make an high rate of New York's renters suffer for disproportionally high-prices of rents: more than a half of citizens appear to be cost-burdened, and furthermore one out of three New Yorkers is severe cost burdened, i.e. spend more than 50% of its income in rent. (Bloom & Lasner, 2016; NYU Furman Center, 2019)

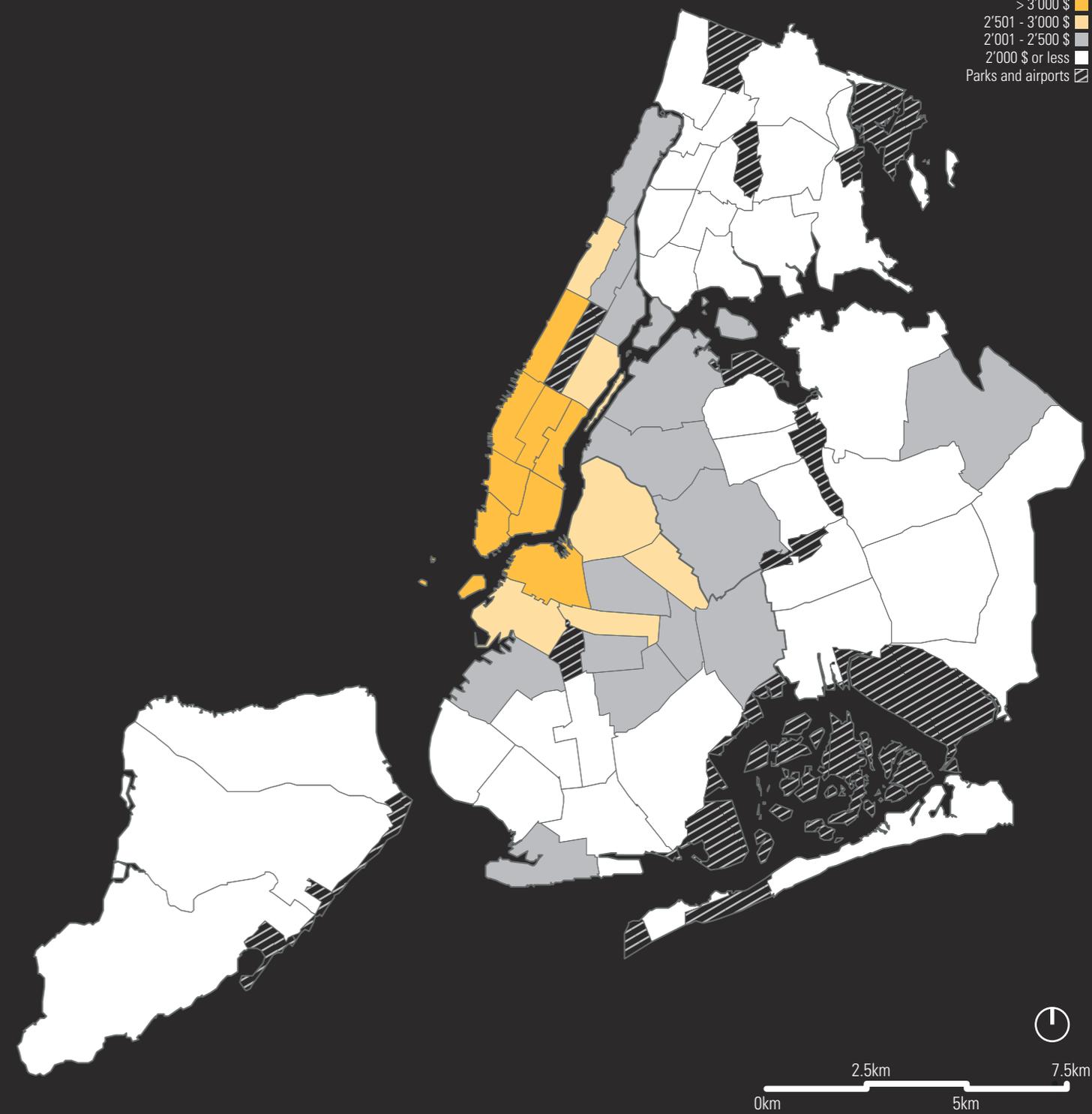
¹ For NYU Furman Center (2019): "rent for units being advertised for lease"

² A criterion defined by the U.S. Department of Housing and Urban Development (n.d.A)

* on the opposite page: Median Asking Rent by Community District, 2018. Personal drawing from NYU Furman Center (2019) data



Legend
 > 3'000 \$
 2'501 - 3'000 \$
 2'001 - 2'500 \$
 2'000 \$ or less
 Parks and airports



In addition to the extremely high housing prices on the market, the city of New York today faces also a changing in its demographic and an inadequate offer, as Bloomberg noted:

“The growth rate for one- and two-person households greatly exceeds that of households with three or more people, [...]”
(Lavorgna & Wood, 2012)

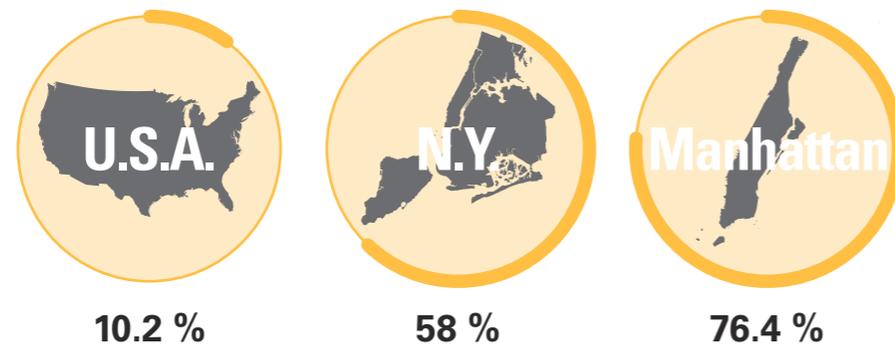
The competition started, indeed, from a bunch of facts: the city counted 1.8 million one- and two-person households while it can only offer a 1 million stock of studios and one-bedroom apartments on the market (without considering their prices and the affordability). (Loeser & Wood, 2012) Furthermore, the number of small households is constantly increasing, also because of the changing of social conditions and opportunities that people face; thus, if in 1950 in the United States 4 million Americans lived alone, today the number is more than 32 million, nearly a tenth of the USA's population¹ that rises to 58% if looking just at New York and that reaches 76,4% limiting the boundaries of the analysis just to the Manhattan Borough. (City Planning Commission, 2013a; 2013b) To get a wider picture it is better to consider households instead of single people, having 60% of them in the USA as households without children. (Haden, 2014; OECD, 2011)

In terms of housing market, the described condition triggers a chain reaction: since the lack of available studios and one-bedroom apartments on the market, people belonging to small households unable to satisfy

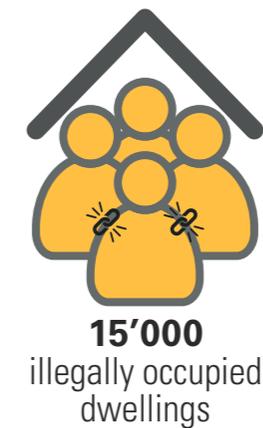
their needs in the market move to bigger houses, and if they can afford the higher rent associated, they occupy a bigger home on the market, leaving bigger families without the dwellings they were searching for. Thus, since bigger houses stock is currently in a better situation from a demand-offer point of view, but it is not a completely solved situation, the housing crisis persists. (Ross, 2013)

The unmatching need of households by the market and the prices out of control are pushing people in a situation of illegality. A research carried on by Sheth and Neuwirth (2008), found that between 1990 and 2000 in the City of New York were added more than 114'000 dwelling units without official permissions for construction, renovations or without any release of certificates of occupancy. The phantom apartments are illegal in New York's context, and they mainly include subdivided apartments, basement apartments, or conversions of commercial spaces into residential ones. The informal settlements are often not compliant with current laws and sometimes they put their tenants in dangerous situations, since safety design rules are not followed.

Even if the house complies all the design and safety rules, people could face to live in a condition of illegality. According to the American Community Survey carried on by the Census Bureau in 2008, nearly 15'000 dwellings in New York are occupied by three or more unrelated roommates. They all live in an illegal situation, since the Housing Mainte-



¹ 328.2 million (as of 2019) according to United States Census Bureau (2020b)



nance Code reports the term “family” for describing occupancy permissions, and the Title 27¹, Chapter 2 of the code defines “A family is: [...] (c) Not more than three unrelated persons occupying a dwelling unit and maintaining a common household; or (d) Not more than three unrelated persons occupying a dwelling unit in a congregate housing or shared living arrangement and maintaining a common household;” (The City of New York, 2020 : HMC 27–2004, art. 4c-d) This code was established in the Fifties, when the city struggled fighting the single-room-occupancy boom and tried to bringing back families in the boarding house brownstones. (Buckley, 2010) Of course, these living conditions are accepted by people since subdivided, overcrowded or unsafe dwellings are rented at a price that is one-third below the market rate. (Sheth & Neuwirth, 2008) Furthermore, many tenants do not even know the units do not comply with laws, as Buckley (2010) reported in her article.

However, these numbers are evaluated with a “rule of thumb” and are probably underreported, because, if illegality was reported, owners would fear legal citations and tenants would worry potential eviction and, subsequently, losing a “roof over the head” they can afford. (Sheth & Neuwirth, 2008)

The administrations and officials are aware of the problem, but a fast solution is not easy to find. Jerilyn Perine, Executive Director of the Citizens Housing and Planning Council, stated the limits should not be related to the number of people sharing, but to conditions in which these people share. (Buckley, 2010; Loeser & Wood, 2012) However, proceeding with evictions without having the housing shortage solved would only push evicted tenants in homeless situation.

Of course, among the housing crisis and social changes in New York, other interests moved the competition call. During the announcement the administration did not hide the willingness to attract and hold young people to live in New York City. (Loeser & Wood, 2012) The approach is made because of an open “competition” between cities oriented to the attraction of people and opportunities, especially in these last years, when people became more adaptable to the situation they face and less inclined to stay in a place.

Furthermore, private developers interests also fitted in the proposed programs. As Samuel Stein (2019) pointed out, the real estate market is a lifeblood for New York City economy, and it is nestled in every other question going on in the city. Thus, private developers were surely interested in a public-private venture for developing another, although small, lot.

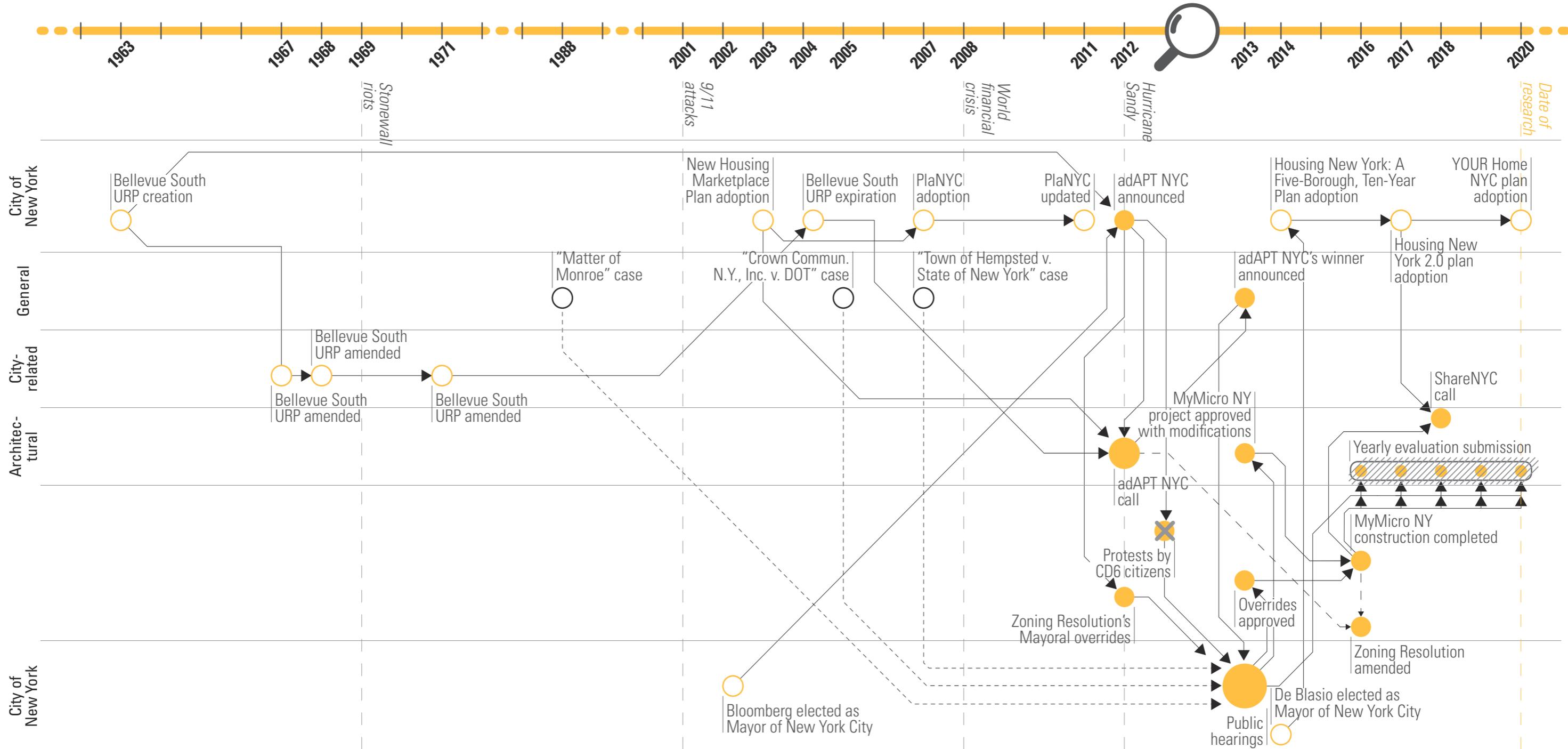
The adAPT NYC Competition is, however, not a completely new way to deal with the persistent housing crisis in New York. It represents a punctual tentative in a wider and longer context of plans which are constantly and continuously adopted and updated by the administration, among which there are, for example, the New York Housing Marketplace Plan, the PlaNYC, the Housing New York: a Five-Borough, Ten-Years Plan, its update Housing New York 2.0, and the last YOUR Home NYC Plan.

All the indicated factors describe the context in which the adAPT NYC competition stands, and the background from which it moves.

¹ Title 27 because the Housing Maintenance Code is formerly part of the Administrative Code of the City of New York, which groups all the local laws of the City of New York

* on the following pages: process of the MyMicro NY case. Personal drawing

POLICIES
DOCUMENTS
MATERIAL EFFECTS
EVENTS



- Directly related MyMicro NY actions
- Indirectly related MyMicro NY actions
- Periodic events grouping
- Actions not directly related to MyMicro NY nor to the site
- ✕ Periodic events grouping
- ▨ Probably canceled actions
- - - - -> Supposed influences
- - -> Indirect influences

2 | HISTORY OF THE COMPETITION

In this context of misalignment between needs and market arise the idea of searching new solutions by the city administration. On July 9th, 2012 then-Mayor of New York Michael R. Bloomberg, together with Deputy Mayor for Economic Development Robert K. Steel and Department of Housing Preservation and Development Commissioner Mathew M. Wambua, announced, at the New York Center for Architecture, the adAPT NYC Competition, which represented not just a chance of transformation of a city-owned area for the development of new housing at affordable prices, but also a pilot program in which designers and developers could imagine innovative way of living in the contemporary New York. (Department of Housing Preservation and Development, 2012; Loeser & Wood, 2012) Mayor Bloomberg described in this terms the hope for this competition:

“[...] we must develop a new, scalable housing model that is safe, affordable and innovative to meet their [of citizens, ndr] needs”
(Loeser & Wood, 2012)

The aim was then to find a system, a model, replicable at the scale of the city for facing the urgent housing crisis. The city administration, in the call document, recognized the effort other expensive high-density cities were doing in dealing with these new conditions, and tried to challenge the question with the adAPT NYC. (Department of Housing Preservation and Development, 2012) It is noteworthy the name given to the competition, which summarizes the willingness of “adapting” New York City to the new condition it is facing, and at the same point highlights the shorthand of the tools by which answering to the crisis, i.e. the “apartment” (short-handed in “APT”).

The competition, bureaucratically speaking, consisted of a Request for Proposals (from now on shortened in RFP in this research) launched on the same day of the announcement and held by the Department of Housing Preservation and Development (HPD), a New York City government’s department dedicated to the development, preservation and

maintenance of affordable housing stock in the city together with the Department of City Planning (DCP) and the Department of Buildings (DOB).

It was asked to participants to design, build and operate a new, mixed-use building that contains at least 75% of the number of housing units designed to be micro-units, meant as apartments smaller in floor area dimensions than what should be allowable under then-current regulations.

The site designated to host the development was chosen among City-owned properties in order to facilitate the competition procedures. The plot was located on 335 East 27th street, part of the neighborhood of Kips Bay, in the East side of Manhattan and part of Manhattan Community Board 6. (NYC Department of Housing Preservation & Development, 2012) The site was already formerly part of Lot 10 of the Bellevue South Urban Renewal Plan (URP), created in 1963, amended in 1967, 1968 and in 1971, and then expired in 2004 before the plot was redeveloped¹. (NYC Housing Preservation and Development, n.d.; NYC City Planning Commission, 1971)

In the years the competition took place, the site chosen for the development was used as a staff parking lot for the adjacent New York City Housing Authority (NYCHA) building. As reported on official documents, the Development Site was considered a *blighted area*, one of the crucial characteristics for picking that specific site as Development Site in the call. At the first stage of the URP, when it was created, the site was designated to be converted for a public use, but in 1971 amendment it was then changed to a residential use. (City Planning Commission, 2013b; NYC Department of Housing Preservation & Development, 2012)

The Project Area was part of the block bordered by the First Avenue, the two parallel streets East 27th (which in that section is considered as a Pedestrian Way) and East 28th, and the Mt. Carmel Place, but the Development Site was squeezed between the Pedestrian Way on the south, the Mt Carmel Place on west, and the massive 26-stories building occupied by the NYCHA delimiting the north and east sides. According to then-enforced Zoning Regulation, the area is within an R8 District.² (City Planning Commission, 2013b; NYC Department of Housing Preservation & Development, 2012)

In order to allow the implementation of the programs proposed by participants to the competition, and due to the fact that adAPT NYC aimed to represent not just a regular architecture competition but a way to explore new directions of housing, the municipality allowed the overrides of some constraints defined by the city's regulations and codes. In particular, it was allowed to participant to freely design and submit their projects overcoming Zoning Regulations regulatory barriers such as minimum units' size, bulk and densities limits, but Building Code limits were kept; however, it was given the option to developers to pointing out, during the submission process, possible changes to Codes for further developments of micro-units in the future. Indeed, the competition, due to its dual character of development and research, wanted also to find which limits imposed by the Zoning Resolution were outdated and no more effective in the contemporaneity, in order to modify and actualize the building regulations. In any case, some Zoning limits were kept, e.g. proponents were encouraged to develop maximum allowable FAR¹ but the limit was not raised or waived, nor accessibility requirements changes would have been accepted by the jury. Moreover, the minimum unit size was waived but it was suggested a floor area comprised between 250 and 300 square feet (equivalent to 23 and 32.5 m²) (Loeser & Wood, 2012; NYC Department of Housing Preservation & Development, 2012) It was allowed to change Zoning Resolution and not the Building Code because of the two normative natures of the tools: since the first one refers to the city planning and has a proposed vision it is more questionable than the second, which is related to the building scale and is based on scientific knowledge for ensuring quality standards. (Marshall, 2011)

Because of the possibility to Zoning Resolution's overrides and alteration, the project has to follow the Uniform Land Use Review Process (ULURP), a path that has to be done every time in a project there are "*changes to the City Map, designation or change of zoning districts, Special Permits within the New York City Zoning Resolution requiring approval of the City Planning Commission (CPC), and disposition of City-owned property.*" (NYC Department of Housing Preservation & Development, 2012)

The criteria for evaluating the proposals were set on multiple sides of the project and not just on the formal and spatial ones. Innovation,

¹ FAR is the acronym for Floor Area Ratio, a factor expressed for each district in the Zoning Resolution resulting from "*the ratio of total building floor area to the area of its zoning lot*".

It determines the maximum buildable floor area relating to lot's dimensions. (NYC Department of City Planning, n.d.A)

¹ The Urban Renewal Plans are policies used by the City of New York by which the City could acquire the property of sites in order to redevelop them, directly or by sell or lease, as long as the redevelopment follows Plan's vision and guidelines (NYC Housing Preservation and Development, n.d.)

² R8 District, is one of the 10 residential districts in which the city of New York is divide, according to New York Zoning Resolution. Other than residential districts, 8 commercial districts, 3 manufacturing districts and some special purpose districts are set. (NYC Department of City Planning, n.d.C)

Although the project was intended as a public-private venture, the RFP specified that the financing should have been on private developers responsibility. One of the documents to be submitted in the competition was a letter of intent from lenders stating the willingness to financially participating in the project. However, the administration took its part in the economic side of the project in two different ways: by not putting a base for the land purchase price, and by opening the possibility to require total or partial exemptions of New York City Real Property Taxes for a defined amount of time. (Department of Housing Preservation & Development, 2012)

According to the RFP, all the proposals had to be submitted by September 14th, 2012, leaving not too much time, for teams, for developing the projects. (NYC Department of Housing Preservation & Development, 2012)

The RFP, anyway, had to be considered as part of something bigger: the competition was intended to fit in the New Housing Marketplace Plan, a multi-billion dollar plan promoted by Mayor Bloomberg in 2002 for preserving and increasing the affordability in the housing market in New York. (NYC Department of Housing Preservation & Development, 2012) Since the plan is considered the largest operation on the City's housing stock since the 1985's Ten Year Housing Plan promoted by Mayor Edward I. Koch, a lot of funds were placed, and many private partners contributed to it, to such an extent that for every dollar the City invested, 3.48 \$ came from privates. (Furman Center For Real Estate Policy, 2006; City of New York, 2014a)

Furthermore, in the context of the City of New York, another important program related to the housing and the quality of life was operative at the time the competition was launched. PlaNYC, the long-term sustainability strategy, adopted by the City of New York in 2007 and updated in 2011, had a purpose that was summed up by the motto "A Greener, Greater New York." The plan gathered more than 25 City's agencies and launched, only in the first year, 127 initiatives for working on the one more million residents in just two decades projection, on the climate change and sustainability measures, on the strengthening of the economy and on the quality of life of New Yorkers. (Loeser & Wood, 2012; NYC Department of Housing Preservation & Development, 2012)

3 | ENDORSEMENTS AND RESISTANCES

The adAPT NYC competition received a huge success; the Request for Proposals had more than 1'600 downloads spread in hundreds of cities across the world. Thirty-three were the proposals submitted by the set deadline, making it the biggest response ever received for a housing project promoted by the New York City Department of Housing Preservation and Development. The results of the competition were announced at the Museum of the City of New York on January 22nd, 2013 by the Mayor of New York City, Michael R. Bloomberg, joined again by Deputy Mayor for Economic Development Robert K. Steel and Department of Housing Preservation and Development Commissioner Mathew M. Wambua.

The winning project was the formerly known MyMicro NYC¹, designed by the team composed of nARCHITECTS, Monadnock Development LLC and Actors Fund Housing Development Corporation. The selected proposal consisted of a prefabricated building composed of 55 micro-units, sized between approximately 24 and 34 m², sided by common and commercial spaces. The value of this proposal over the other was judged by the adAPT NYC Advisory Board, and decisive factors were cited to be the rate of micro-units on the total of dwelling units offered within the building, which represent the 100%, the level of affordability, reached by offering 40% of the units below market rents, and the overall strategy of the design. (Lavorgna & Wood, 2013)

The importance of the pilot program launched for searching new dwelling models was so important, for the City and for promoters, that the winning project and other four valuable projects were shown at "Making Room: New Models for Housing New Yorkers", an exhibition held by the Museum of the City of New York from January 23rd to September 15th, 2013, in collaboration with the Citizens Housing & Planning Council and The Architectural League of New York; the exhibition was the final point of the Making Room initiative, a design research started in 2011 where five teams² questioned points of the actual normative and proposed alternative typologies for the changing society structures. At the Museum

¹ Thereafter renamed as Carmel Place, borrowing the name from the street it faces to.

² Teams were coordinated by Stan Allen e Rafi Segal, Deborah Gans, Jonathan Kirschenfeld, Ted Smith, and Peter Gluck (Dennis, 2013)

there were showed studies, study cases, models, and drawings, included the ones selected from the adAPT NYC call, and also a 1:1 model of a micro-unit apartment. (Dennis, 2013)

Of course, after the announcement and the presentation of the project, the program encountered resistances and protests from citizens, especially residents of the neighborhood. The concerns affected some aspects introduced by the architectural project and about some operations allowed by the city in the process, making them assume a NIMBY-istic¹ attitude. These doubts were exposed during a public hearing² held by Community Board 6 on June 12th, 2013. In particular, some aspects were pointed out during the meeting:

- the belief that, due to the size of the units, the building could be used as a “dorm” or as “hotel”, placing a group of extremely short-term guests, instead of residents, not suited for a mainly residential neighborhood as Kips Bay is;
- the opinion the project was not considerable “affordable” as it was depicted, and that this could lend to a gentrification process;
- the concerns about the necessity of removal of 6 mature trees at 344 East 28th Street during the construction process;
- the fear that the presence of a café-type commercial space could induce other eating or drinking commercials to set in the area and starting the sale of alcohol, with a negative impact on the area;
- the opinion that the area, even if used as a parking lot, could not be considered a “blighted” area, justification used for qualifying it as a UDAAP³, because clean and well-kept;
- the belief that Mayoral overrides on certain regulations were unsuitable to this program since the development is carried on by private actors, while they should be permitted only to city-owned property.

¹ From NIMBY, acronym for “Not In My BackYard”, a term referred to people that don’t want something considered dangerous or unpleasant being placed in their neighborhood, but rises no concerns if the same thing is developed/placed somewhere else. (Oxford University Press, 2020) The NIMBYistic attitude emerges for a wide range of kinds of developments, among which housing developments.

² The public hearing, as well as several government approvals, is an obliged step in the Uniform Land Use Review Process (ULURP). (NYC Department of Housing Preservation & Development, 2012)

³ Acronym for “Urban Development Action Area Project”, a New York State tax exemption program for new construction or housing rehabilitation in City-owned land (Department of Housing Preservation and Development, n.d.)

These claims were presented to the hearing with 33 votes in favor, 7 against and 2 not entitled to vote. The Borough President considered and evaluated the resolution recommending disapproval and, on July 17th, 2013, he authorized the project with certain conditions:

- private developers should supervise the use of the units by tenants for preventing sublease or any other inappropriate use;
- the city should prioritize permanency of affordability of the units by reaching an agreement with the applicant for extending the affordability both in level and time terms; moreover, the applicants are requested to find further options for making the units more affordable and to advertise the affordable units in the neighborhood;
- private developers already expressed agreement in relocating the removed trees after the construction process;
- the development team should ensure that the commercial space managers will not sell alcohol in the new retail space;
- considered the article 16 of the General Municipal Law¹, the Development Site could be considered eligible for being a UDAA;
- due to the character of innovation, within the City of New York of this project, developers could proceed with it only after the submission of a detailed evaluation plan with clear metrics established for determining the success or failure of the project itself. This operation could let the further development of other micro-units buildings within the city’s boundaries

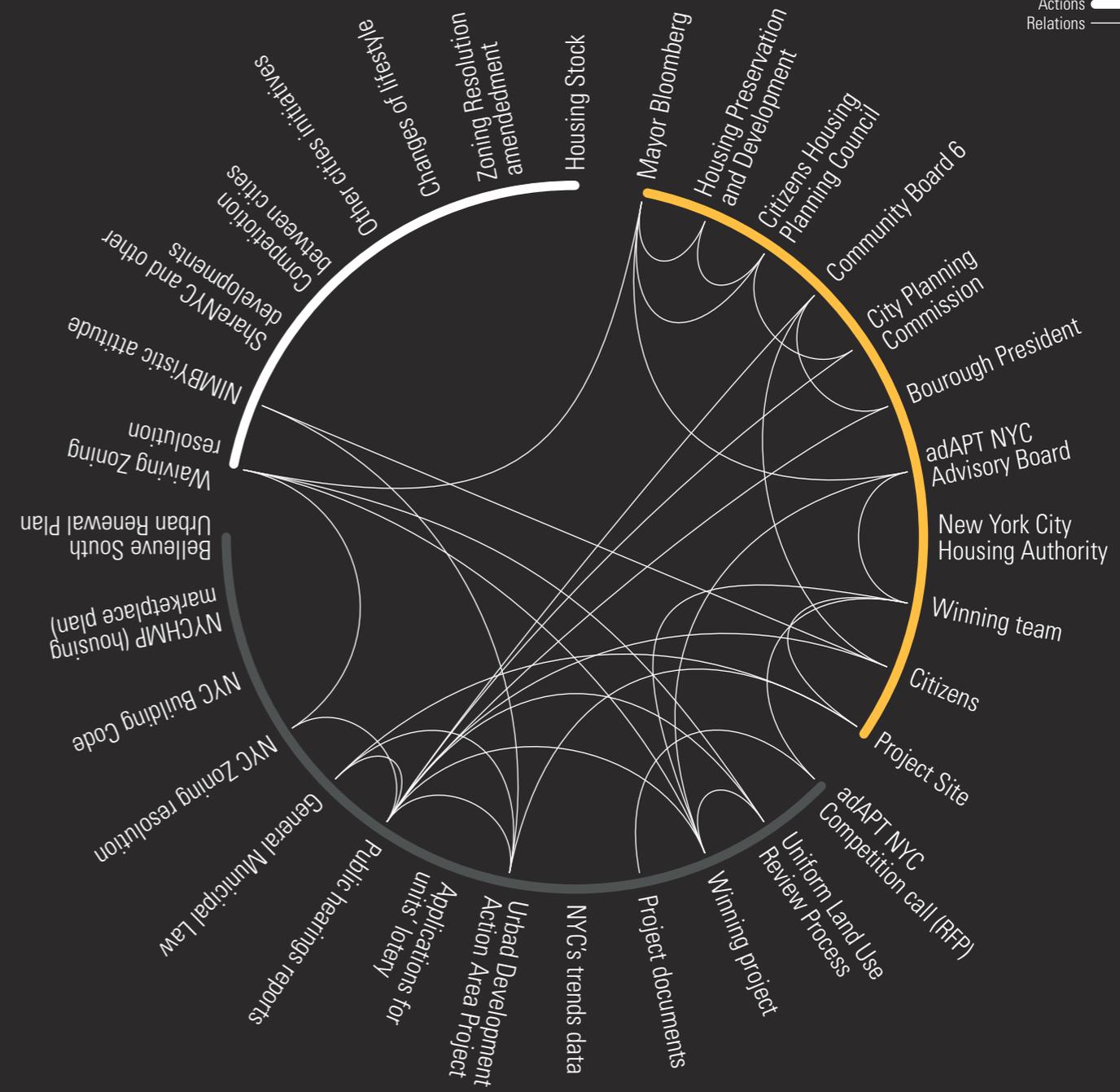
Concerning the Mayoral overrides on regulations, a wider discourse should be taken because of some legal precedents that modified the regular limits related to the power of waiving regulations by the Mayor of the city. In fact, if in the past this procedure was applicable only to governmental buildings (i.e. schools, city’s offices, etc.), as expressed by the Community Board 6, the “Matter of Monroe”, a case of 1988, revised the simplistic use of the overrides, which didn’t consider some kind of developments, like the ones for affordable housing or health facilities, to

¹ The article 16 of the General Municipal Law is the “urban development action area act”, which rules the definition, designation and application of limits and requirements for the Urban development action area project (New York State, 2019)

waive zoning regulations; The “Matter of Monroe” cases introduced a method for deciding if the overrides are applicable or not. Later on, two cases, the “Crown Commun. N.Y., Inc. v. DOT” in 2005 and the “Town of Hempstead v. State of New York” in 2007, paved the way for extending overrides not only to entirely public developments but to private-public ventures too, as long as the balancing test is evaluated. These precedents legally allowed Mayor Bloomberg to approve overrides to the zoning resolution for the project discussed, and so the objections to this topic, submitted by the Community Board 6, were rejected. (City Planning Commission, 2013b)

The City Planning Commission held a public hearing too, on July 24th, 2013, but the result was fourteen speakers in favor and no speaker against the project, so no objections were submitted. All the speakers were active actors of the process that this pilot program follows; among them representatives of the development company, of the CHPC and of the Mayor’s Office. (City Planning Commission, 2013b)

Even though it is hard to establish whether an operation has been a success before its completion, it could be argued that the call was fully succeeding until that point; the largest ever-achieved interest in a city-promoted competition, the number of received applications, and the after all small protests, limited to the raise of doubts and disagreements in planned moments of discussion, were a good omen for the further steps the project would have taken.



* on the opposite page: relations and interactions occurred in the resistances stage of MyMicro process. Personal drawing.

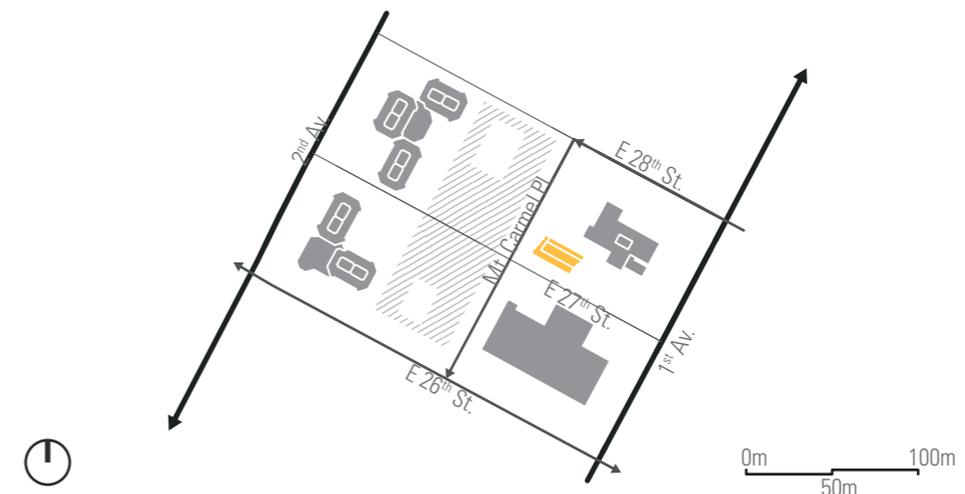
adAPT NYC the PROJECT

1 | THE WINNING PROJECT

As already illustrated in the previous chapter, the winning project for the adAPT NYC competition was selected to be the one designed by the team led by nArchitects firm, a New Yorker architecture firm founded in 1999 and based in Brooklyn, together with Monadnock Development LLC, a New Yorker development firm specialized in low and middle income housing developments, and Actors Fund Housing Development Corporation, an historical, nationally spread, charitable organization for the developing of low-income housing for the performing arts and entertainment community.

The proposal is a single small nine-story tower composed of prefabricated modular units, assembled on site, which offers 55 new micro-units dwellings joined by common spaces and shared amenities, together with commercial spaces opened even to non-resident people. (City of New York, 2013)

The building, formerly known with the name of MyMicro NY, rises on a nearly 1'400 m² Project Area, of which only 440 m² consisted of effective Development Site. The Area's limits consist of NCHA land plot on the north and east sides, Mt. Carmel Place on the west side, and East 27th Street (which is a pedestrian street) on the south side. (City of New York, 2013)

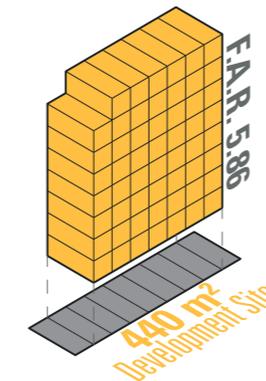




The site is located in the Kips Bay neighborhood, in the Manhattan East Side. The site faces a park and has 3 different hospitals at its back. The block in which the development is located is broken, and offers mainly separated towers rather than a continuous street wall. The Area position make the development well connected, with subway station on the nearby Park Avenue. Even if well connected, the area is well served with almost all the daily facilities needed. (City of New York, 2013)

The project looks like four mini-towers adjacent one to the other, recalling and merging the ideas of the micro-dwelling offered inside and the context and character of the city in which the building is located. This looking of multiplicity is enhanced by the different shades of colors (from white to dark grey) applied to the different “towers” that, progressively, move back. Indeed, the block is affected by the setbacks and indentations of the volume, preventing the building to look like a monolithic volume and, at the same time, positioning itself inside the iconic legacy of New York City “wedding cake-shaped”¹ buildings. The building height, that reaches nearly 34 meters, sets back from 2.4 to 3 meters on the west side, and 4.6 meters on the Pedestrian Way side, while the set back in height start at approximately 26 meters. (Murphy, et al., 2019; nArchitects, s.d.)

The development offers a total floor area of approximately 2'571 m² (with an FAR resulting of 5.86), divided in 2'406 m² dedicated to residential spaces, 110 m² dedicated to community facility spaces, and 50 m² left to commercial spaces.

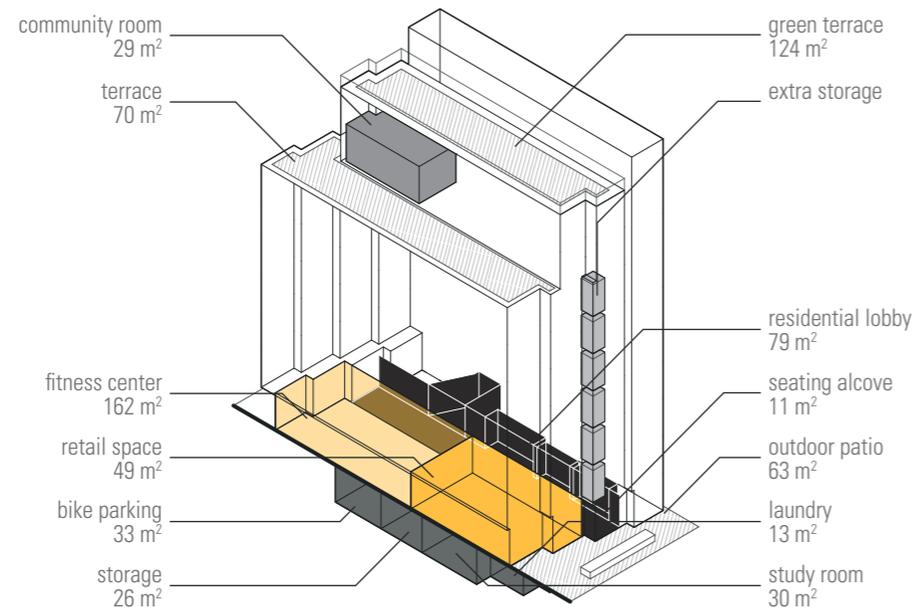


¹ Wedding Cake buildings is a colloquial expression which refers to the shapes defined by the 1916 Zoning Resolution's limits. (Willis, 1995) The “wedding cake” rules’ outcomes were already well pictured in famous Hugh Ferriss’ illustrations included in his 1929 book “The Metropolis of Tomorrow”. (Ferris, 1929) Since three quarters of of currently existing square feet have been built between 1900s and 1930s, (Bui, et al., 2016) it is very common, at least in Manhattan, to see buildings with such shape

* on the opposite page: picture credit nArchitects

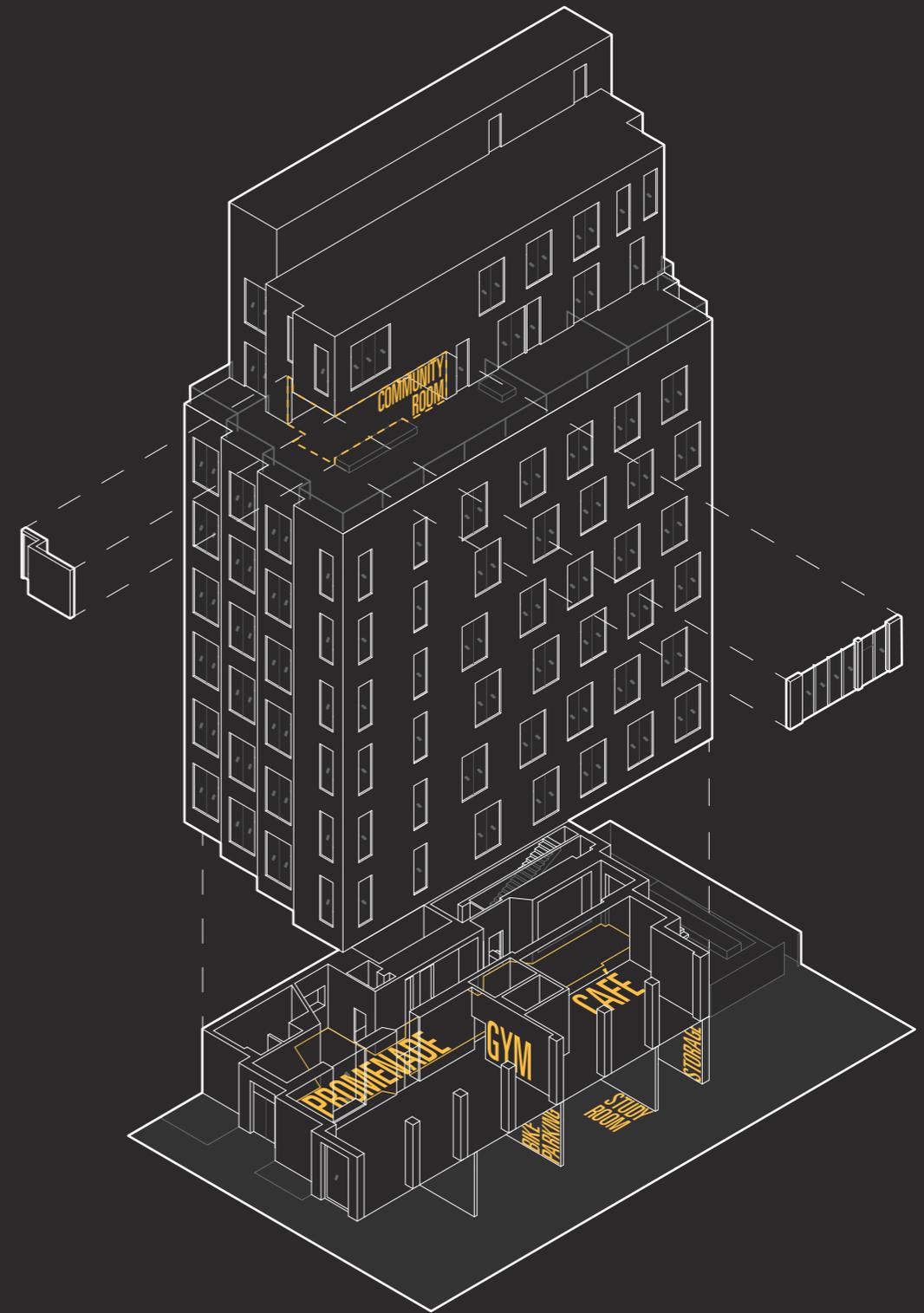
The distribution of the spaces, however, is not homogeneous, since it has been thought to concentrate the common spaces and activities in areas where all the tenants regularly pass through, in order to invite residents to socialize and being a community instead of neighbors. Thus, the ground floor is exclusively used for the retail space, which covers 49 m², the residential lobby, a flexible space of 79 m² conceived as a west-east promenade, a fitness center, of 162 m², additional spaces like a seating alcove (11 m²) and the distribution services like elevators and stairs (other than an outdoor patio located on the east side and occupying 63 m²); a bike parking of 33 m², a small study room of 30 m², the common laundry, which takes up just 13 m², and a storage space of 26 m² are, instead, entirely located in the cellar, and only the upper floors host the units. In addition, at the first setback in going up are located a 70 m² terrace and a 29 m² community room accessible by all the tenants; while an additional green terrace covers 124 m² on the top of the building and remains accessible. (Murphy, et al., 2019; nArchitects, n.d.)

The project, other than just dealing with squeezing the size of the units, worked also for offering solutions that suit properly inside such small units proposed; for this work the units were designed making a



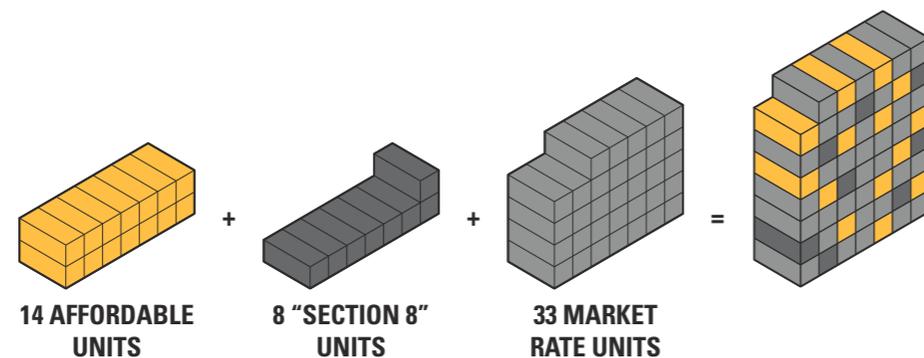
* on this page: volume and distribution of amenities. Personal drawing.

* on the opposite page: building exploded axonometric. Personal drawing.



net distinction between two different areas of the dwelling: the service block, called the *toolbox*, and the free and flexible space delimited by the so-called *canvas*, a term that identifies a 2.15 x 2.75 meters high sliding glass doors with a Juliette balcony (with guardrail made by glass too) for extending the unit to the outer space. The wide transparent surface of the units allows them to be reached by abundant daylight and, together with 3 meters tall ceiling, to maximize the perception of the size of the volume, compensating the lack of floor area. Furthermore, the height of the ceilings allows an extra storage space (this time a private one) to be placed inside the toolbox, positioning it on the bathroom block. Because of the size of the units, particular attention was also dedicated to the design of the furniture, included in the project and in the rent leases. nArchitects decided to use flexible built-in furnishings, which sometimes serves as proper finishing; some of them are represented by wall systems, Murphy beds turning into couches, or folding tables. The interiors were realized in collaboration with Resource Furniture and Stage 3 Properties and the dominant color is white, enhancing the lights that enter in the unit. (Murphy, et al., 2019; nArchitects, n.d.)

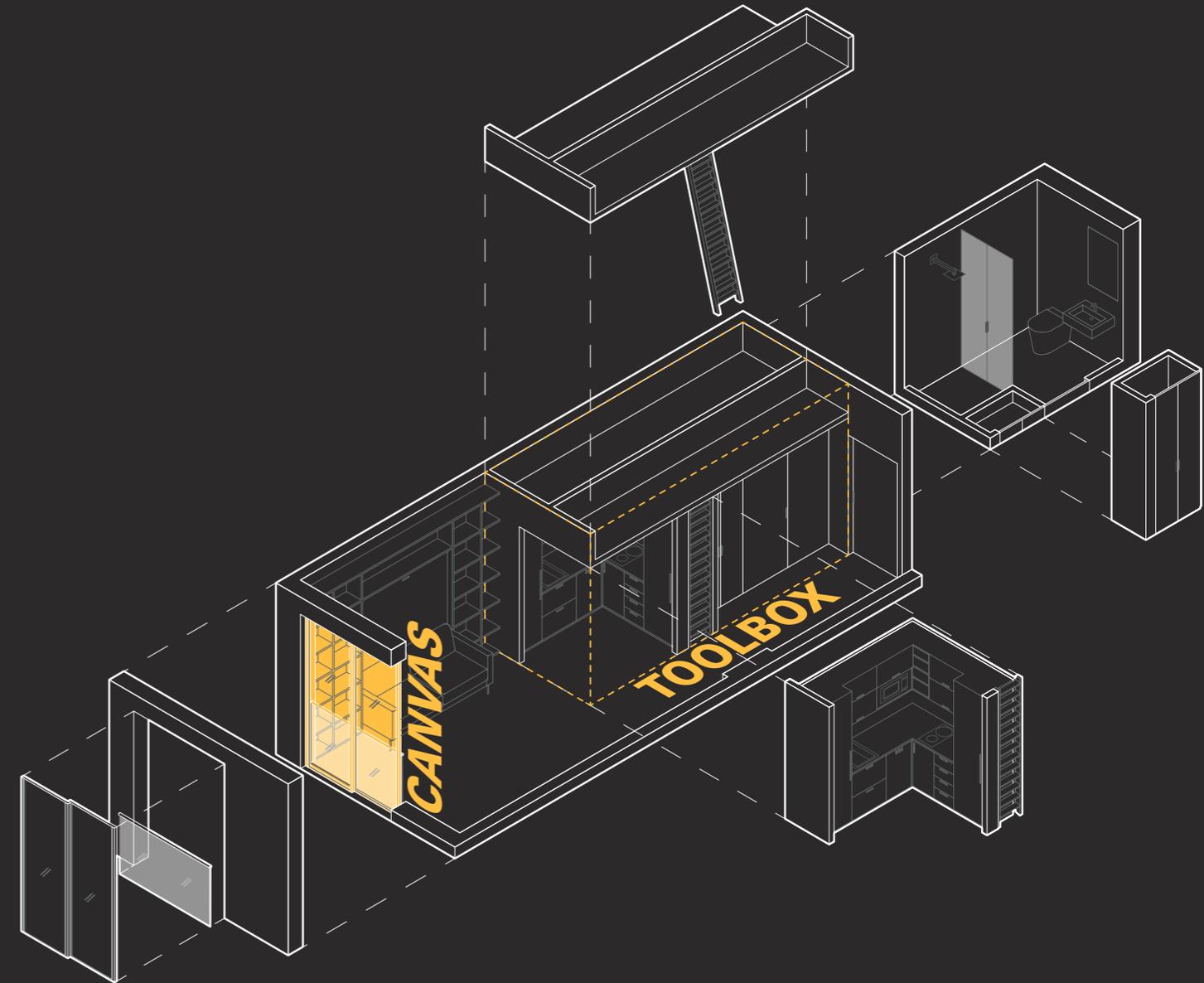
The building offers seven different types of units, all ranging between 25 and 34 m², due to the collocation inside the building and the relationship with the limits defined by the envelope. The units are allocated in different ways: 22 out of 55 units (representing the 40% of the total) are exclusively dedicated to the affordable housing market¹, of which 8 of them are reserved as "Section 8", i.e. are reserved to homeless veterans of the U.S.' army. The affordable units should be distributed at different individuals, whose income ranges between 80% of AMI² (estimated to



¹ For Affordable Housing Market here is meant houses given at subsidized prices to income and credit qualified people through lotteries' systems (NYC Mayor's Office for People with Disabilities, n.d.)

² Average Median Income. It is used for determining who could enter lotteries for affordable houses and it represents the middle point of incomes of a certain area (a neighborhood, a City, a State); for this case of the City. It could be considered a questionable measure since different City's areas shows different values. (Murphy, et al., 2019)

* on the opposite page: unit exploded axonometric. Personal drawing.



1'115 \$) for 11 units, 145% of AMI (estimated to 1'811 \$) for 5 units, and 155% of AMI (estimated to 1'940 \$) for 6 units. The affordability is granted for 30 years since the competition of the building. The left 33 units are offered at market rate. Because of the character of community designers wanted to promote inside MyMicro NY, the affordable units are distributed across the whole building and not concentrated in just one side or floor, for avoiding a sense of segregation of poorest people. As the building was completed in 2016, 14 affordable units¹ were available to people by applying to it with dedicated procedures, resulting in more than 60'000 applications. (City Planning Commission, 2013)

Market units' rents were considered all-inclusive and managed by a company named "Ollie" (which sounds like a word-play for "all-inclusive"). Rents included, other than the built-in furniture provision, the presence of fast Wi-Fi and cable, weekly tidy housekeeping and monthly deep cleans, a membership cards for access events organized through the city. Furthermore, a service called "Hello Alfred" for running small errands (like picking up the laundry or shipping mail) is included too. (Murphy, et al., 2019)

It is left to others the honor and duty of retracing the building construction history. However one point is worth of note and shows implications in the process above discussed.

Due to its character of scale and the need of bring the prices down for the affordability, a modular system construction has been used. In fact, this allows the idea of the project, if reused in a different lot or with different overall dimensions, to add or remove units without drastically change the project. Moreover, the fabrication of the 65 individual modules (55 reserved for the dwelling units and the remaining 10 dedicated to the building's core), each of them with a self-supporting steel frame, was carried on off-site² and then the modules were transported and stacked on-site, waiting to be assembled and completed with the finishing and appliances. Only foundations and ground floor were built on-site. This construction process allowed a construction significantly less disturbing for the neighborhood and enabled to the team a better control on the quality of manufacturing in a controlled environment. Furthermore,

the choice of using modules theoretically should have brought down construction costs (and, consequently, rents) because of the principle of replicability of the production of the elements. At the time of completion, the building was also the tallest multi-unit prefabricated building in Manhattan. (nArchitects, s.d.) However, the market units' rents remained high even with the modular construction system. According to Viren Brahmbhatt this is related to the fact that the small lot did not allowed to stock the units on site waiting to be assembled, and thus they had to be transported progressively to the site. If it is true that the transportation happened at night for creating less troubles, it is also true that the closure of the streets (for permitting the transit of trucks transporting large elements) in New York has high costs, and doing it for multiple times increases the overall construction costs. (Brahmbhatt, 2020)

¹ Excluded the 8 dedicated to veterans, which were allocated with different procedures.

² The fabrication took place in the Brooklyn Navy Yard, at the Capsys factory.

2 | OVERRIDES NEEDED

For proceeding with the construction of the building, the project had to waive a certain number of limiting rules expressed by the New York's Zoning Resolution. The option of overriding regulations was considered since the beginning of the process; indeed, as stated in the previous chapters, both then-Mayor Bloomberg in the competition announcement, and the Request for Proposals document, invited designers to not consider the limit of dwelling unit's minimum size and other limits expressed by the New York Zoning Resolution¹. (Department of Housing Preservation and Development, 2012) Furthermore, both Bloomberg and the RFP asked for suggestions and proposals for regulations changes with the aim of allowing, in the future, as-of-right developments, even entirely promoted by privates, of this micro-units dwelling typology. However, overrides, for this pilot project, were limited to the Zoning Resolution and did not affect the New York Building Code², or the rules concerning the accessibility. (Department of Housing Preservation and Development, 2012; Loeser & Wood, 2012)

All the applications for carrying on the overrides process and the Uniform Land Review Process were proposed to the Department of City Planning by the NYC Department of Housing and Preservation, which closely collaborated with the winning team in the development of the project. (City of New York, 2013)

In this subsequent chapter, every time is needed by calculations, the measures are reported in square feet, considering the unit system used in USA. Furthermore, all the references to the Zoning Regulations (here indicated as ZR xx-xx) are based on the current Zoning Regulation (approved in 1961 and last amended in 2020), but all the precedent modifications can be checked through the button "History" of the relative chapter browsing the New York City's online Zoning Resolution's tool.

The main overrides the project applied for are reported in the following pages.

¹ The "Zoning Resolution of the City of New York" is a Zoning Code regulation, the group of laws that rules how a piece of land in a geographically defined area can be used, what can be built on and some limits of the buildable construction such as size, height, density, etc. The current Zoning Resolution of the City of New York was adopted in 1961 and is still effective, even if numerous amendments passed through the years. (City of New York, 2020)

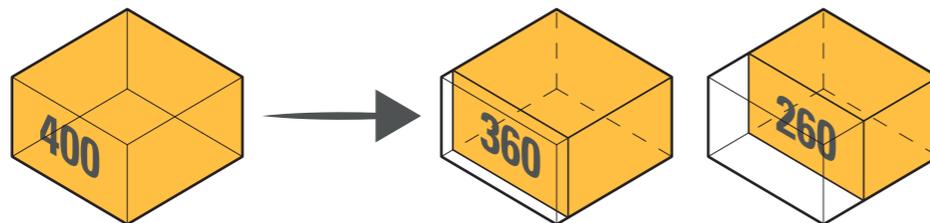
² The New York Building Code is a localized and adapted version of the International Building Code, a set of rules meant to ensure a certain level of standard to the buildings. (City of New York, 2014b)

Allowing dwelling units smaller than 400 sq.ft.

Even if, since the 2016's amendment of the Zoning Resolution¹, no limits in dwelling units' size are imposed (*ZR 23-24*), at the time of the competition the limit of 400 ft² was set as minimum standard for all the residential units built in New York. According to the aim and the rules of the adAPT NYC Competition, this limit had not been considered by designers submitting a proposal. The Mayoral override for this particular limit, which was the only certain override and was already announced at the launch of the competition, was necessary for the purpose the call had and for the experimental nature of the competition, and it was granted for allowing the construction of the pilot micro-unit project. (City of New York, 2016; 2020)

However, since no override to the Building Code was planned, a minimum dimension was still to be considered in order to ensure the accessibility of all the spaces. The Code requires, indeed, minimum size for a room of 150 ft² (*BC 1208.3*) of net floor area, other than placing limits in width, height, etc. Furthermore, the minimum areas were also influenced by limits (floor areas per person, volume and heights, width) imposed by the Multiple Dwelling Law². (*MDL 3.31 and 3.32*) According to Ginsberg & Beaumont (2017), a unit compliant with all the regulations should have at least 270 ft² of floor area.

In conclusion, overcoming the limit was approved due to the units typology intended to be built and because of the competition's goal. This led MyMicro NY to be erected with its units ranging from 260 to 360 ft². (City Planning Commission, 2013a)



Allowing to overcome the limit of maximum number of dwelling units allowed on the plot

According to the current Zoning Resolution, the maximum number of dwelling units allowed on a lot (*ZR 23-22*) is given by a simple calculation:

$$\frac{\text{max. residential floor area permitted on lot}}{\text{factor for dwelling units}}$$

Concerning the factor for dwelling units, it is a given index, specific for each zoning district, to use for calculations of maximum permitted dwelling units on a lot. It is expressed in the Zoning Resolution, and for the regulated R8 District it is equal, today, to 680. However, before 2016 amendment, it resulted at 740. (City of New York, 2016; 2020)

Maximum residential floor area, instead, is the maximum buildable floor area dedicated to residential uses, and has to be calculated. It is equal to the effective area dedicated to other uses subtracted from maximum permitted floor area on lot; thus the relation governing it is:

$$\frac{\text{max. floor area permitted on lot}}{\text{effective area used for other purposes}}$$

The maximum floor area is the maximum buildable floor area, while the effective area used for other purposes is the floor area which, according to the submitted project, has no residential use destination.

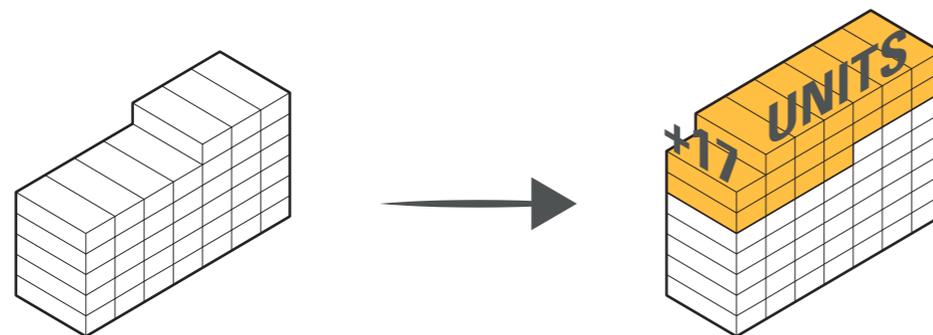
Considering the extension of the lot (4'725 ft²), and the floor area ratio effective on the site (F.A.R. of 6.02), the maximum buildable residential floor area permitted should have been of 28'444.5 ft² (City of New York, 2013), that would have allowed, according to the first equation here reported, a total number of dwelling units of:

$$\frac{28'444.5 \text{ ft}^2}{740} = 38 \text{ dwelling units}$$

¹ The N 160049 ZRY application, submitted by the Department of City Planning, proposed the text amendment of different New York Zoning Resolution's points, among which minimum unit size and dwelling density. The proposal was filed on September 18th, 2015 and fully approved by the City Council on March 22nd, 2016.

² A State-level code, adopted in 1929, which prevents hazardous or unsafe situation in multiple dwelling buildings. (New York State, 1929)

Which means 17 units less than what was proposed. This happened because the RFP clearly encouraged to maximize the use of all available F.A.R., and at the same time required a minimum of 75% of the development to be composed of micro-units. This combination of requirements took all the proposals to exceed the limit of dwelling units allowed. Furthermore, overcoming the limit was needed also from an economical point of view, resulting financially unviable to operate such small number of micro-units at below-market rents. Thus, a waiver was needed for proceeding with the project. (City Planning Commission, 2013b)



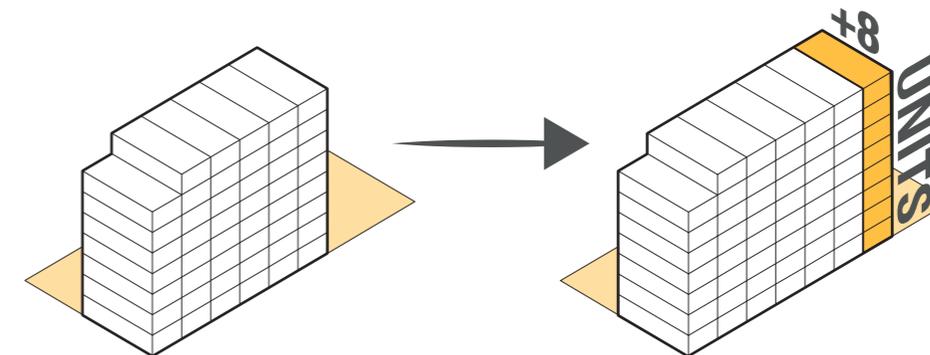
Allowing an increase in maximum lot coverage

Although the 2016 amendment changed the lot coverage for Corner Lots (City Planning Commission, 2016), according to the Zoning Resolution effective at the time of the competition, a limit in covering the lot area was determined at 80% of the lot's area for a Corner Lot¹ and at 70% of the lot's area for Interior Lot² (ZR 23-153). (City of New York, 2016; 2020)

The project site is classified both as corner and interior lot, with different extensions in one or the other category (respectively 4'500 ft² as Corner Lot and 225 ft² as Interior Lot). The part classified as Interior Lot, in the project, has not been developed, while for what concerns the Corner Lot, the maximum coverage would have been:

$$80\% \times 4'500 \text{ ft}^2 = 3'600 \text{ ft}^2$$

So, a total of 264 ft² (the total coverage proposed counted 3'864 ft²) exceeded the limit imposed by the Zoning Regulation. The waiver was considered necessary because it allowed to build (ideally) one more micro-unit per floor, for a total of 8 more units, capable of reaching the number of 22 affordable housing and pushing forward the affordability of the project, and at the same time was correlated to the modularity of the building' structure. (City of New York, 2013; City Planning Commission, 2013a)



¹ According to the Glossary of Zoning Terms by the NYC Department of City Planning, "A corner lot is a zoning lot that adjoins the point of intersection of two or more streets; it is also a zoning lot bounded entirely by streets" (NYC Department of City Planning, n.d.A)

² According to the Glossary of Zoning Terms by the NYC Department of City Planning, "An interior lot is any zoning lot that is neither a corner lot nor a through lot" and a Through Lot is defined as "any zoning lot that connects two generally parallel streets and is not a corner lot" (NYC Department of City Planning, n.d.A)

Allowing a variation in height and setbacks

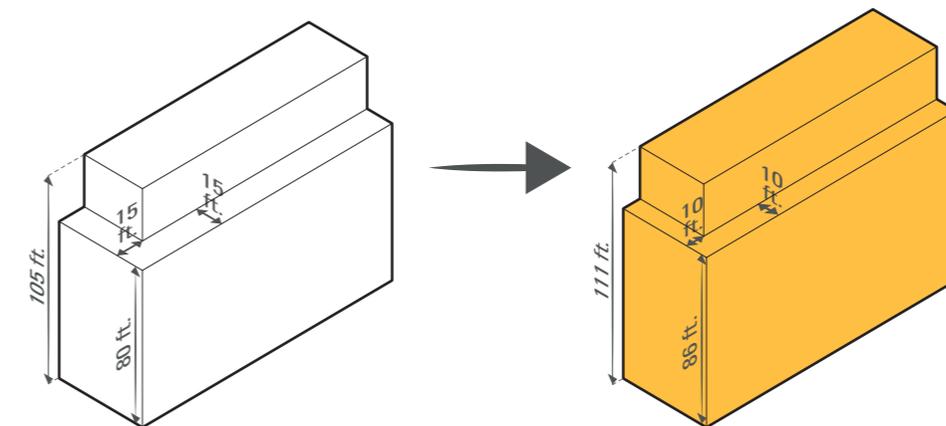
The setbacks¹ from the street line after a certain height for allowing light and air reach the street level are one of the characteristics that made Manhattan's streets iconic². Although the original setbacks requirements are no longer effective since 1961, the Zoning Resolution still imposes building to not exceed a defined height on the street line. When that height is reached, the building shall comply with the Sky Exposure Plane, an imaginary inclined plane. In defining and explaining these regulations, the Zoning Resolution uses the word setback with the mean of indentations.

MyMicro NY, due to the use of a modular strategy, could not comply with the limits required by the Zoning Resolution (ZR 23-641). Indeed, at the time of the competition, the law asked for a maximum height of 80 ft. (equal to 24.38 meters) on the plane of the main façade³, before the setbacks determined by the sky exposure plan inclination started. The project's building, instead, projected to rise for approximately 86 ft. (more than 26 meters) before the setback started. In addition, being located in an R8 District, the project's building could not take advantage neither of the Tower Regulations (applicable only in R9 and R10 Districts) (ZR 23-65), which allows buildings to penetrate the Sky Exposure Plane with a determined percentage of the lot extension.

The Mayoral Zoning Override was granted because of the modular nature of the building structure, which was capable to reduce construction costs but required two different layers for each module (floor and ceiling) instead of sharing them, increasing the total height.

Furthermore, even the minimum initial setback, once the building reached the maximum streetwall height, was not compliant with the law. The minimum setback, indeed, was fixed at 15 ft. (4.5 meters) both on Mt. Carmel Place and on the pedestrian way, all of the above considered narrow streets. However, due to the structural behavior of the modules, the building could setback only 10 ft. (3 meters). For the same reason, the limit in the total height of the building, fixed at 105 ft. (32 meters), was overcome, reaching 111 ft. (nearly 34 meters).

All of these waivers were accepted because of the nature of the building, which was one of the key features that have persuaded both the jury and the initiators of this process. (City of New York, 2013; City Planning Commission, 2013b)



³ (opposite page) The limit has been modified in 2016 amendment, pushing the maximum streetwall height at 85 ft. or 9 stories, depending on the lowest height. The stories variable was introduced for avoiding developer to making lower internal heights with the aim of filling more spaces within the height limits (City Planning Commission, 2016)

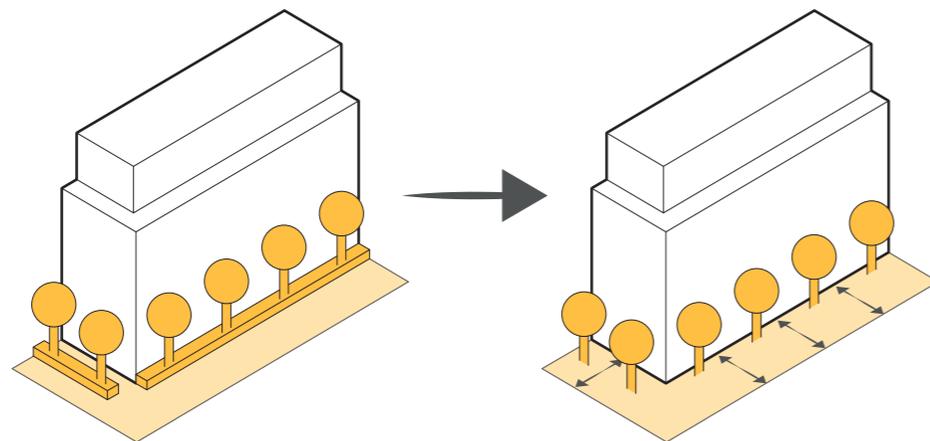
¹ According to the Glossary of Zoning Terms by the NYC Department of City Planning, "A setback is the portion of a building that is set back above the base height (or street wall or perimeter wall) before the total height of the building is achieved. The position of a building setback in height factor districts is controlled by sky exposure planes and, in contextual districts, by specified distances from street walls." (NYC Department of City Planning, n.d.A).

² The setbacks requirement was what shaped wedding cake buildings from 1916, the year of the first Zoning. In 1961, with the adoption of current Zoning, it has been substituted with the Sky Exposure Plane, which has different logics and requirements, even if the word setbacks is still used (Lehnerer, 2009; City of New York, 2020)

Remove the requirement of planting areas

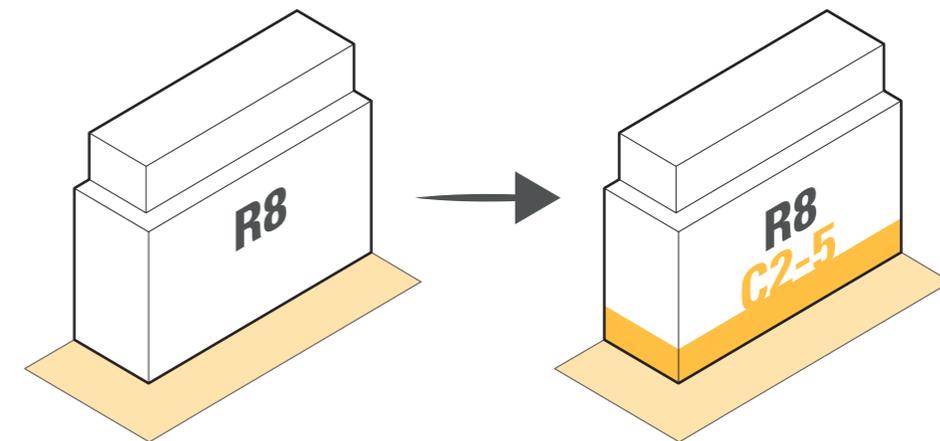
The Zoning Regulation of the City of New York requires that the area between the street line and the streetwall should be fully occupied by planting areas, except at the entrances (both pedestrian and vehicular) of new development (ZR 28-23). The project proposed no planting areas neither in front of the building (on Mt. Carmel Place) nor on the side (on the pedestrian way), because the intent of the project was to provide an active pedestrian space and encouraging the relationship between the ground floor and the external space.

Nevertheless, the requirement of providing one tree planting every 25 ft. of street frontage of the lot (ZR 26-41) was complied, adding 2 trees on Carmel Place and 4 trees on the pedestrian way, since the punctual placement of them does not block the street-building relation. Due to the requirements of the call, which asked for providing a strong connection between the private dimension of the building and the public space of the street, trying to “enliven the streetscape around the base of the proposed building”, (City of New York, 2013 : 9) the override of providing continuous planting areas were accepted. (City of New York, 2013; City Planning Commission, 2013b) Furthermore, since the publication of the adAPT NYC call was declared the “activation of the street” (Department of Housing Preservation and Development, 2012 : 10) was an important point to look at, and the override’s purpose was to pursue those guidelines.



Allowing a C2-5 commercial overlay within an R8 district

The Project Site was located in a simple R8 district, which, according to the Zoning Regulation, could not host any commercial space (ZR 22-10). However, in order to provide more communal spaces and services to the building, and for strengthen the projet’s economic plan, commercial spaces were introduced at the building’s ground floor. Thus, a commercial overlay¹ was needed. The change to the Zoning Map was approved because this action “enliven the streetscape around the base of the proposed building and for the residents of the adjacent NYCHA development” (City Planning Commission, 2013b : 9). The overlay on the Site was done extending the pre-existing C2-5 overlay then-valid on the First Avenue to Mt. Carmel Place, theoretically providing an entire front line of street level commercial along the north side of the pedestrian way. (City of New York, 2013; City Planning Commission, 2013b)

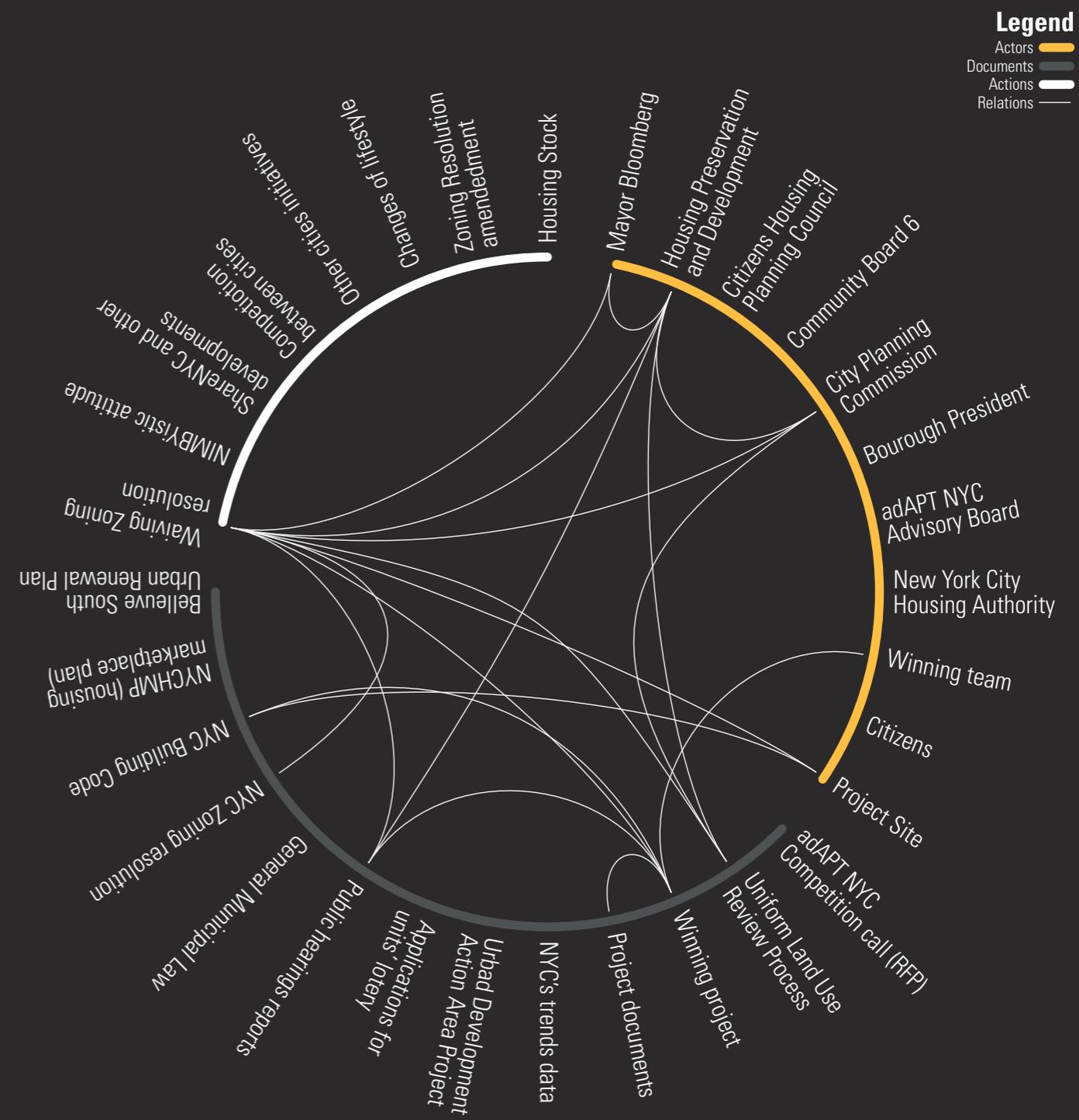


¹ According to the Glossary of Zoning Terms by the NYC Department of City Planning, “A commercial overlay is a C1 or C2 district mapped within residential districts to serve local retail needs (grocery stores, dry cleaners, restaurants, for example).” (NYC Department of City Planning, n.d.A)

All the illustrated overrides, required and approved in the process that led to MyMicro NY completion, well describe the purpose of innovation this dwelling typology had in the City of New York. Although, some more considerations must be done for contextualizing a bit more the events.

The fact that the initiative started from a public actor facilitated the process. Indeed, the project took only 4 years for completing the project from the competition stage to completion of it, even if it had to pass through all the reviews and submissions required by the Uniform Land Use Review Process, required because of the overrides need. This was possible also because the public actors were already opened to possible changes to the regulations, and all the negotiation happened faster because of shared visions between promoters, sponsors and developers.

Secondly, the choice to promote the development on a public property that would have been sold to the Developer facilitated the waivers' process, allowing Mayoral overrides because of juridical precedents. The decision to test this pilot project on a public lot, in a public-private venture, allowed the administration to not set new legal precedents of Mayoral overrides on entirely private lots, which would have allowed developers to replicate the initiative even in the case the test failed.



* on the opposite page: relations and interactions occurred in the overrides stage of MyMicro process. Personal drawing.

adAPT NYC the OUTCOMES

1 | RESULTS

The completion of the building makes the affordable units' assignment process begin. In November 2015, when the construction faced the last stages, the assignments started both for the market units, by opening the leases, and for the affordable ones. These last ones were assigned through a lottery held by the City of New York, launched at the beginning of the month and with results announced in January 2016. As already anticipated in previous chapters, the lottery received more than 60'000 applications for 14 apartments listed (the 8 dedicated to formerly homeless Veterans were assigned through "Section 8" vouchers¹). These numbers made only one person out of 4'285 obtain the apartment, a quite unproportioned ratio, determining a percentage of being selected of 0.02%. (Kaysen, 2015; Murphy, et al., 2019)

It was a predictable outcome; since the everlasting affordable homes demand by New Yorkers. The affordable housing system in the City of New York is governed by over 200 programs (at the city, state, or federal level) that create, regulate, subsidize, and provide houses for low-income households. (NYU Furman Center for Real Estate and Urban Policy, n.d.)

Another outcome of the adAPT NYC competition process could be traced, instead, in the ex-post evaluation of the pilot project. During the public hearings, indeed, it was established that the winning team should have prepared a monitoring program for an ex-post evaluation of the project. The program was meant for checking whether the project had to be considered a success or a failure. The project was considered a test since the beginning of the process, and a post-construction and post-occupancy evaluation should have helped the decision of whether or not developing further micro-units. The evaluation, according to Manhattan Borough President's recommendations, should have been based on clear and objective metrics, such as tenants demographics, satisfaction, and unit and building lifecycles; furthermore, the results should have been presented regularly to the Department for Housing Preservation & Development (HPD) and the Commission. (City Planning Commission, 2013b)

¹ The Housing Voucher Program Section 8 is a federal government program meant to provide housing assistance by paying subsidies to private landlords in place of tenants, and tenants pay the difference. This program is different from a subsidized rent, where starting rents are agreed between private and public actor and fixed at lower levels in change of taxes' reductions or other advantages. (U.S. Department of Housing and Urban Development, n.d.B)

60'000 APPLICATIONS

0.02%

1 out of 4'285

Despite the premises were interesting and would have allowed to trace down a better and longer description of the project's process by going deeper into what the outcomes are, no records of the requested evaluation have been found out. Since it would have been a document submitted to public agencies, it should have been accessible to everyone, but no research in the HPD digital archives has shown the presence of these evaluations. (NYC Department of Housing Preservation and Development, 2020)

It is no clear why no submission can be traced. The viable supposed options could be that documents have been submitted but, due to unknown reasons, are not accessible by the general public, or that the evaluations have not been carried on by developers, and have never been submitted.

It could be interesting, in future developments of the research, to further investigate the process and recover these information, or, if the analysis has never been carried out, to conduct a first-hand post-occupancy evaluation for understanding what is the actual situation after 8 years from the beginning of the process.

* on the opposite page: ratio applications/units. Personal drawing.

2 | EFFECTS

MyMicro NY is a project interesting from many different points of view. The complex process that allowed the building to be erected is certainly noteworthy, especially considering that the development has followed a non-linear path, needing public hearings and regulations overrides, requiring legitimations from past events, facing protests, and generating large discussion among scholars and non.

However, MyMicro NY is not the only project to face this kind of situation; many other projects require normative waivers or generate debates on their developments. Few of them, instead, produce effects that go beyond the construction and completion of one or more buildings.

Since the beginning of the adAPT NYC competition, one of the goals was to understand if changing the limits of the regulations on dwellings was necessary for keeping up with an evolving society and, in case, identifying which of them had to be changed. Already in the announcement phase, as reported in the Office of the Mayor news section by Loeser & Wood (2012), Jerilyn Perine, Executive Director of the Citizens Housing and Planning Council, said:

“This pilot project will not only create new types of much needed housing; but will also set the stage for much need regulatory relief to make room for more housing choices for our growing population.”

The wishes of the early stages has been transformed into reality in 2016, when the building was completed and the Zoning Resolution in force has been modified through the Zoning for Quality and Affordability text amendment in several points affecting dwellings. (City of New York, 2016; City Planning Commission, 2016) The changes concern subsequent limits:

Minimum unit size, which has been removed by the actual zoning, leaving other codes the duty to regulate units' dimensions and configuration

Dwelling density, which has been increased in certain Zoning Districts by dropping down the density factor¹ from 740 to 680

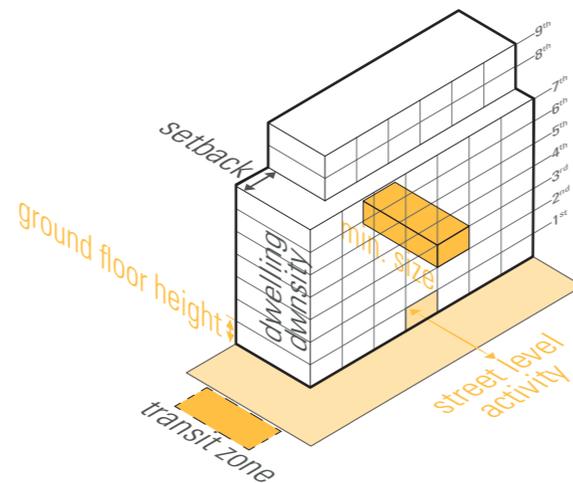
Off-street parking, which has become optional for affordable housing located in “Transit Zones”; areas located within 1.5 miles away from a subway station

Ground floors, to which it has been increased the height for granting privacy for dwellings located at the ground floor by rising them, or for ensuring high-quality retail spaces

Commercial ground floors requirements, which have been simplified and reduced, making it easier for practitioners to design and operate and to promote more active ground-floors, encouraging them to be street’s active part

Setbacks requirements, which have been modified in the point from which measuring them, allowing smaller initial setbacks if the building is not located exactly on the street line but it already setbacks at the ground level

Number of stories, which is a new variable (with a maximum cap) in defining the overall building bulk, preventing developers reducing the internal floor-ceiling heights for cramming more floors (and more units) in the maximum allowed height



The Zoning for Quality and Affordability text represents a great achievement for the City of New York, answering to already spread and pushing phenomenon. However, if it could be described as an effect produced by MyMicro NY, there is no certainty in stating that. Indeed, no document nor declarations in the amendment’s approval process have been found, and even if the adAPT NYC competition had the aim to search for changeable limits, the N 160049 ZRY application, which proposed the changes to the Zoning, was filed on September 18th, 2015, before MyMicro NY completion, which ended in 2016. (City Planning Commission, 2016) Thus, no “results” of the proposed test were tangible yet, but the Zoning update has been carried on anyway. These findings suggest that no cause and effect concretely happened between the building construction and the normative change, but in some ways, one influenced the other, probably thanks to the wide interest generated by the competition or by the high number of applications for affordable units of the project; what it is certain is that now micro-units are buildable in New York.

From then on, new micro-units developments were constructed in New York, some of them with a percentage of affordable units, and so featured with the Department for Housing Preservation and Department, such as Brooklyn located “BAM North Site II” by Dattner Architects or Bronx placed “Webster Residence” by COOKFOX.

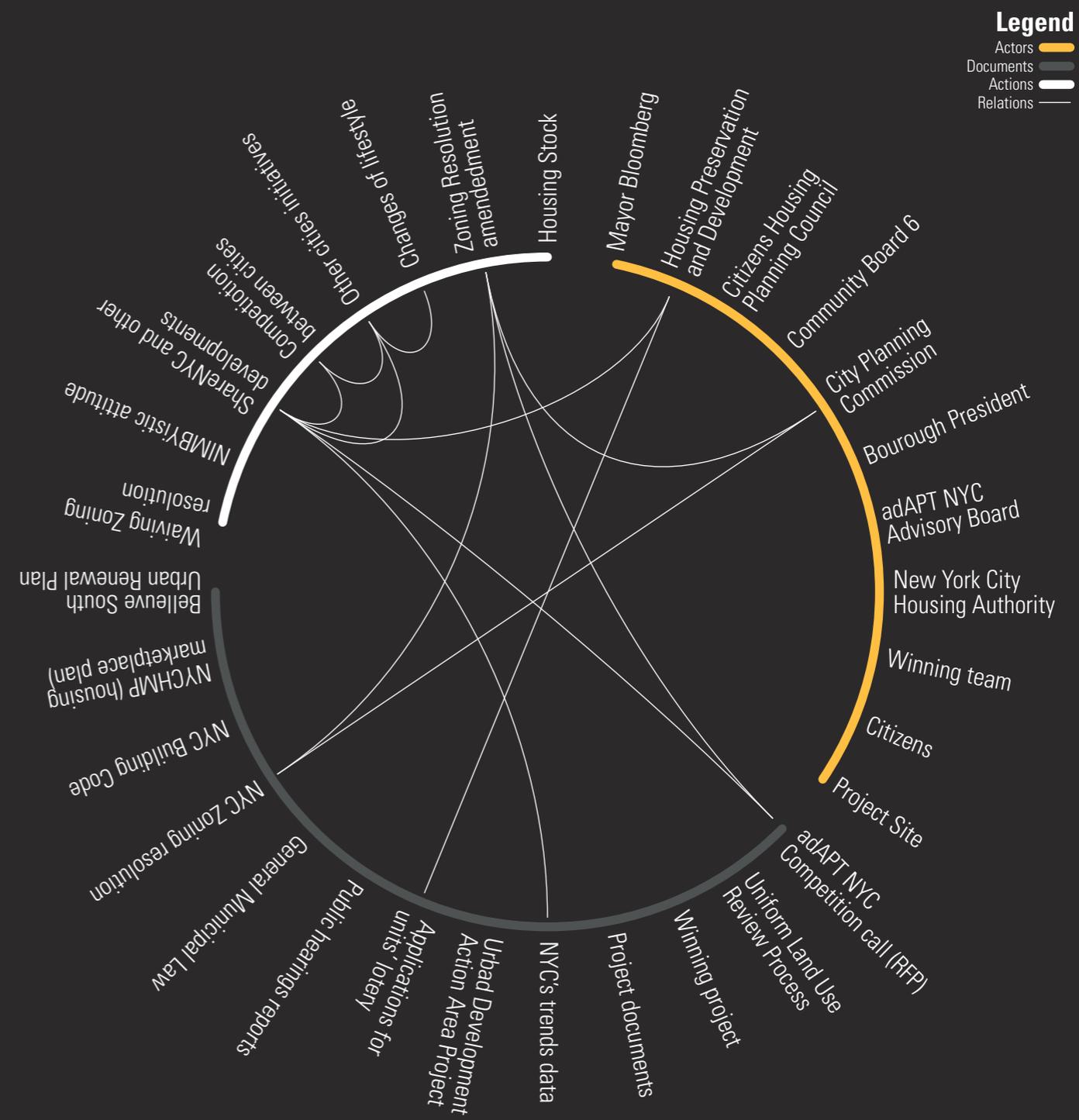
However, private developers are not the only ones keeping the interest in new housing typologies for matching new social dynamics. In 2018 the City of New York, together with the Department for Housing and Preservation Development, launched a new pilot project competition, called ShareNYC, which focuses more on new models of shared housing. One of the goals of the call is to make an effort in bringing down rents compared to how much is asked by currently spreading luxury co-living, like the ones operated by WeWork or The Collective companies. Furthermore, again a normative-related aim has been set: trying to overcome the three-unrelated-people rule¹, a norm expressed in the Housing Maintenance Code limiting the housing occupancy permission to no more than three unrelated adult people living in the same dwelling unit. (Chen, 2018; Department of Housing Preservation and Development, 2018; The City of New York, 2020 : HMC 27–2004, art. 4c-d)

¹ It has already been explained what the density factor is and how it determines the dwelling density in a building in the 1.2.2 - “Overrides needed”

¹ The law and its consequences are explained in detail in the 1.1.1 - “Interests at stake”

This chosen field of application surely experienced the influence and the lesson learned of the received proposals for the adAPT NYC call and the researches showed at the "Making Room: New Models for Housing New Yorkers" exhibition, making the updating dwellings experimental process improve.

The continuing research in new dwelling typologies is surely pushed by all the facts and data reported in previous chapters while describing the background (all reasons underlined even by actors involved in the process), but are carried on also for attracting new inhabitants to the city by offering more housing solutions, in an endless competition among municipalities in pushing people to inhabit their cities. In this, some cities already are steps ahead of New York City, as it will be explained later on in this research work, and the distance should be fast recovered if it wants to keep its position as the most desirable destination by everyone, as proudly stated by Bloomberg in launching adAPT NYC. The direction and the willingness seem to be these ones, but results have to be proved with material effects.



* on the opposite page: relations and interactions occurred in the post-construction stage of MyMicro process. Personal drawing.

living
MICRO 2

Living MICRO NYC + World

1 | PAST EXPERIENCES

New York administration was aware that the adAPT NYC Competition was not an isolated case of micro-unit, but was part of a long series of experimentations and similar phenomena. Others experiences of apartments shrinkage happened through the history, but they were moved by different objectives and with different outcomes. The aim of this chapter is not to trace a comprehensive history of a long and complex phenomenon as the housing crisis and the micro-living is, but it makes the effort of highlighting some key moments of this long path. Indeed, even if these events arose in contexts diverse from the one of the contemporaneity, some of them showed touching points with the one that is the protagonist of this research, including social, spatial and economic conditions.

During the Industrial Revolution Friedrich Engels (1872), in *The Housing Question*, highlighted the social injustices and inequalities between upper and lower social classes, reporting a spread housing crisis. Masses of people flew into the city which were unable to grow equally fast as the population grew, determining an overcrowded and undignified city. (Engels, 1872; Hall & Tewdwr-Jones, 2020)

In the same years the politically-moved transformation accomplished by Baron Haussmann on Paris strengthened the social classes division inside the buildings determining hierarchies in which the lower, bigger and with higher ceilings apartments were dedicated to the emerging bourgeois, while the upper and smaller apartments, usually residual spaces to be filled by developers, were destined to the maids and servants. (Jordan, 2004; Sennett, 2000)

A well-known experience in the shrinkage of the apartments is the Existenz-minimum one, in which rationalist architects make the effort to face the housing crisis by setting minimum standards for a dignified human living condition, considering taking into account movements needs, physical needs and psychological needs. (Bevilacqua, 2011; Gropius, 1962; Klein, 1975; Teige, 2002)

The early decades of the Twentieth Century set the stages for the birth of cohousing too, meant as communities where people voluntarily choose to live together in smaller-than average private houses but sharing additional spaces and participating in the management and maintenance of the communal parts. (Gresleri, 2015)

2 | **FRAMEWORK**

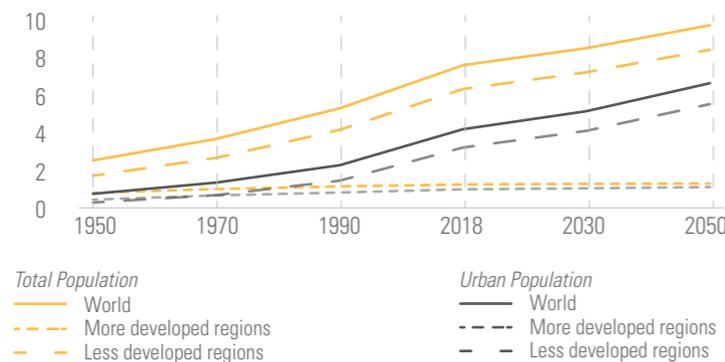
All the precedent examples that dealt with small apartments did it because of events and social conditions of their times, whether these were caused by mass immigration in cities, by a social classes hierarchy definition, by the unhygienic and undignified living conditions, or by the willingness of being part of a community. The problems to which these experiences made the effort to answer, however, are not shiftable outright in contemporaneity because the background and the framework in which micro-units and small apartments operate are partly changed again. The declarations Bloomberg made in the adAPT NYC launch, describing it as not an isolated case of micro-unit but as part of a wider phenomenon that is happening, and depicting a changing society in New York, were based on studies, long term trends, and projections, but although the former-Mayor referred to it at the American city scale, they assume similar trends worldwide.

The following pages show an overview of data, facts, and trends underlying the micro-units phenomenon in the contemporaneity. The chapter aims to describe a framework in which the analyzed phenomenon is collocated.

Population

New York City is facing a population growth for almost Fifty years. Since the Eighties, it passed from barely 7 million residents to almost 8.5 as of 2019, (NYC Department of City Planning, n.d.B; Salvo & Lobo, 2010) and future projections depict New York will reach 9 million residents by 2030. (Citizens Housing & Planning Council, n.d.)

This growth, however, is global, with the urban population overcoming for the first time, in 2007, the number of countryside residents on a global scale. If in 1950, just seventy years ago, the global urban population did not reach one billion (reached only in 1959), in 2018 the numbers have more than four-fold, reaching 4.22 billions of people living in cities. (United Nations, Department of Economic and Social Affairs, Population Division, 2019)



* on this page: Population trends (in billions). Personal drawing based on data available in United Nations, Department of Economic and Social Affairs, Population Division (2019)

Households Composition

Other than the number of people living in New York, also the households type changed. Ginsberg & Beaumont (2017) report that in 1950 households were, for the 78% of the total, composed of married couples with children, representing the traditional nuclear family, a percentage that dropped down to 56% already in 1989 and reached the 15.9% in 2015 of total households, giving space to the rise of *singletons*¹, those one out of three New Yorkers who lives alone. (United States Census Bureau, n.d.C)

Out of New York the average households are composed of less than 3 people in almost all Europe, North America, Australia and New Zeland, and the Asian Russia plus Japan, Republic of Korea, and Hong Kong, essentially the Countries that early faced the industrial revolution. At the same time the rate of people living alone is quite high in many countries, especially in Europe, counting 12 countries with a share higher than 33% of people living alone (from 33% of Luxemburg to 41% of Finland). (United Nations, Department of Economic and Social Affairs, Population Division, 2019) The Euromonitor's 2017 predicts that single-person households will face, in the period 2016-2030, faster growth than any other households typology analyzed. (World Business Council for Sustainable Development, 2018)



¹ The term singletons is here used as meant by Eric Klinenberg (2012), defining people who live alone and not the ones who are singles.

* on this page: new households typologies defined by trends.

Housing occupation

The composition of families and households is then quite complex and is not in alignment with the housing stock offered by the city.

Of the housing units offered in the city of New York, only 1.3 million of them are Studio or one-bedroom apartments, a quantity that does not satisfy the 1.6 million singles and married couples without children, categories who, potentially, could fit them. (United States Census Bureau, n.d.B) Indeed, according to the Citizens Housing & Planning Council (n.d.), one out of three people living alone is currently under-occupying the units he lives in, meaning that it has two or more bedroom; as previously described this situation starts a reaction in which people that does not meet their needs in the small-units market, search for bigger options, if they can afford it from an economic point of view, occupying houses meant for bigger households. Even if no data are found, it is reasonable to think that a good rate of couples without children are under-occupying bigger units too.



* on this page: mismatch between housing offer and households composition. Personal drawings

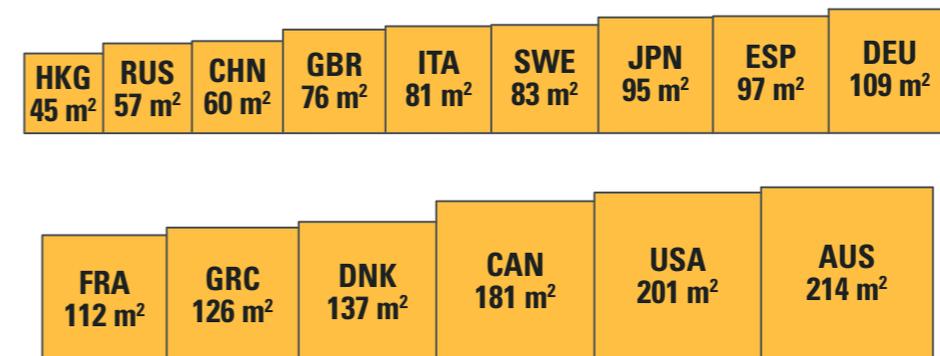
Housing size

Housing sizes are reducing too: if in the past houses were generally increasing in size, now a turnaround is happening. In the New York metropolitan area the average newly built apartment size, in the last two decades, has shrunk from 890 ft² to 866 ft² (83 m² to 80 m²), registering a -3% share. (Talkington & Healy, 2016)

However, in New York the shrinkage is still moderate if compared to other regions: considering the whole U.S. area, it dropped down of -7%, while other worldwide areas have double-digit shares, like the -24% in Mumbai.

Considering another point of view it is interesting the case of Hong Kong, where more than 40% of new-built houses are smaller than 37 m². (World Business Council for Sustainable Development, 2018)

The housing size, indeed, depends on many variables that can not be easily summed up. Nevertheless, a consideration could be done: if Countries, instead of cities, are compared, some of the urban factors pushing towards a dwelling's downsize become less relevant, but extreme differences in newly-built houses' average dimensions persist. An explanation of this could lay in the cultural factor, which pushes people to need more or less space depending on their culture and background. (Wilson, 2013)



* on this page: average new home size around the globe comparison. Personal drawings based on data provided by Lindsay Wilson (2013)

Housing prices

If housing sizes are decreasing, prices are rising. According to CBRE, New York is among the top 5 cities for housing prices both for monthly rent and for unit price. (Skytt et al., 2019) The economic trends contribute to increase the affordable housing gap, determining a widespread cost-burdened condition. Indeed, as anticipated at the beginning of this research work, as of today half of New York's households are in a cost-burdened situation and for one-third of New Yorkers the situation is even worst, since they are experiencing a severe cost-burdened condition. (NYU Furman Center, 2019)

Although it is one of the leaders, New York is not the only "privileged" city to experience such a rise in housing prices. In mostly all cities the growth of housing prices has gone faster than incomes one, which remained stagnating, (Woetzel et al., 2014) and in some of them, they are rising even faster than in New York. Indeed, according to Skytt, Siebrits, & Collins (2019), New York City is not in the top ten cities for housing price growth nor for rental housing growth; other cities like Moscow, Hong Kong, Cape Town, or Los Angeles are growing faster. The rise of the housing costs worldwide is producing the same effect of increasing the affordable housing gap. According to projections, if trends are confirmed, by 2025 one-third of the urban population will be cost-burdened. (Woetzel et al., 2014)



**1 out of 3 people will
be cost-burdened**

3 | TARGET OF USERS

The contemporary micro-units phenomenon then fits inside the described condition, and challenges to address this dwelling typology to an emerging target of the nowadays society. Although no limits on who could live or not in this typology are set, the ideas of promoting or accepting micro-units development by municipalities are thought with a potential target of users in mind, expecting they will be the most interested people in micro-units.

The expected target is an up-and-coming group, primarily identified with young single professionals, newly-graduated or just stepped-in the working world. They could be seen as part of the *Generation Y*¹, the one that is graduating and starting to work in these last decades and is facing most the great changes previously described. This young target desires to live in central, well-serviced locations, rich of opportunities and services, and field for a great number of connections with other people. The characteristic of centrality is relevant also because of transportation issues: today young workers usually do not own a car because they cannot afford it or because of higher attention to environmental questions, preferring shared or public transportations, or slow-mobility devices. Housing in central parts of the city is expensive, this is why they are willing to trade apartment dimensions for lowering absolute rents, even though, in theory, the price for square meter ratio increase. Despite this, the higher prices in those areas are compensated by the savings on the public transportation costs, which in great urban areas are usually quite expensive, for everyday commuting. (Lau & Wei, 2018; Whitlow et al., 2014)

Of course, siding this target, other categories of people could be seen as potential users. Singles or recently divorced people, even if no more between their twenty and thirty, could benefit from micro-units, as well as traveling workers who spend only few days a week or a shorter period of time of the year in the city. Students and elders could have an interest in living in these apartments too, but for the last ones, the build-

¹ *Generation Y*, also called *Millennials Generation*, is the generation comprising people born between 1981 and 1996. Millennials are entering now in the workforce during a worldwide economic recession, and they are the first one being born and grew up in the internet era. (Dimock, 2019)

ing should provide communal spaces too or, the unit should be in close proximity to relative's apartment or to communal recreational structures in which they could spend most part of the day together with other people.

There are then people which are fascinated by these small apartments, for who logic discourses are less valid and are driven by emotional forces. However, speaking of numbers of people interested, they are more into other phenomena, particularly into the tiny houses movement, which concerns small independent houses, sometimes movable, but usually placed in natural areas and not in cities. (Ford & Gomez-Lanier, 2017)

In conclusion, if users are not restricted to a group, a target could be defined because of communal social, economic, and behavioral characteristics.

Living MICRO the LIMITS

1 | MISSING RULES

Marshall (2011) makes his introduction to *Urban Coding and Planning* book starts with this sentence:

“Cities exhibit a typical mix of order and diversity: more order than a random aggregate of architecture; more diversity than an artefact crafted by a single hand.”

The order and diversity Marshall talks about are the results of a set of plans and codes that are applied on cities. The urban design always deal with rules, and for Alex Lehnerer (2009) it “*consists more of the conscious positioning of rules than the drawing up of plans*”. The role rules have in shaping the physical form of the city is indeed relevant. (Lehnerer, 2009)

However, rules always are set after the emergence of the phenomenon, determining an overall delay in ruling and controlling it. (Roncayolo, 2002) MyMicro NY case, forced to use overrides to be constructed, is a tangible example of it, demonstrating that although the phenomenon already emerged, it is still not recognized.

Taking New York City as example, hereafter is reported how micro-units are hindered by existing rules in their tentative of dealing with the new, changed framework previously described. Of course, each city is governed and planned by its set of rules that could not be the same of New York ones, but this example is useful to understand that the phenomenon is already spreading but is not ruled yet nor recognized by rules.

2 | RULES OBSTACLES

Many limits imposed by regulations still are an obstacle for developing micro-units.

The first and foremost important obstacle to micro-units developments is the presence of a minimum dwelling size. Even if the 2016 amendment we cited in the previously part already removed the limit from the Zoning Resolution, it appears to be still defined indirectly in other regulations. The Multiple Dwelling Law, for example, contains a series of limits, specific for type and characteristic of the building, limiting floor areas per person or per room typology, limiting volume and heights, setting minimum width. (New York State, 1929 : art. 3.31-3.32) The New York City Building Code places limits that influence the floor area as the minimum room widths or the minimum ceiling heights. (Articles 1208.1 and 1208.2 of the New York City Building Code) Furthermore, it still presents an article limiting the area of a room to 150 ft² (13.9 m²) of net floor area. (City of New York, 2014b : art. 1208.3)

Ginsberg & Beaumont (2017) conducted a design study for finding the dwelling units' minimum floor area compliant with current regulations, and they found out it stands at 270 ft² (25.08 m²), a size which is well below precedent limit imposed by the Zoning but it is still far from dimensions reached in other parts of the world (Paris, Hong Kong, Tokyo, ...) (Ginsberg & Beaumont, 2017)

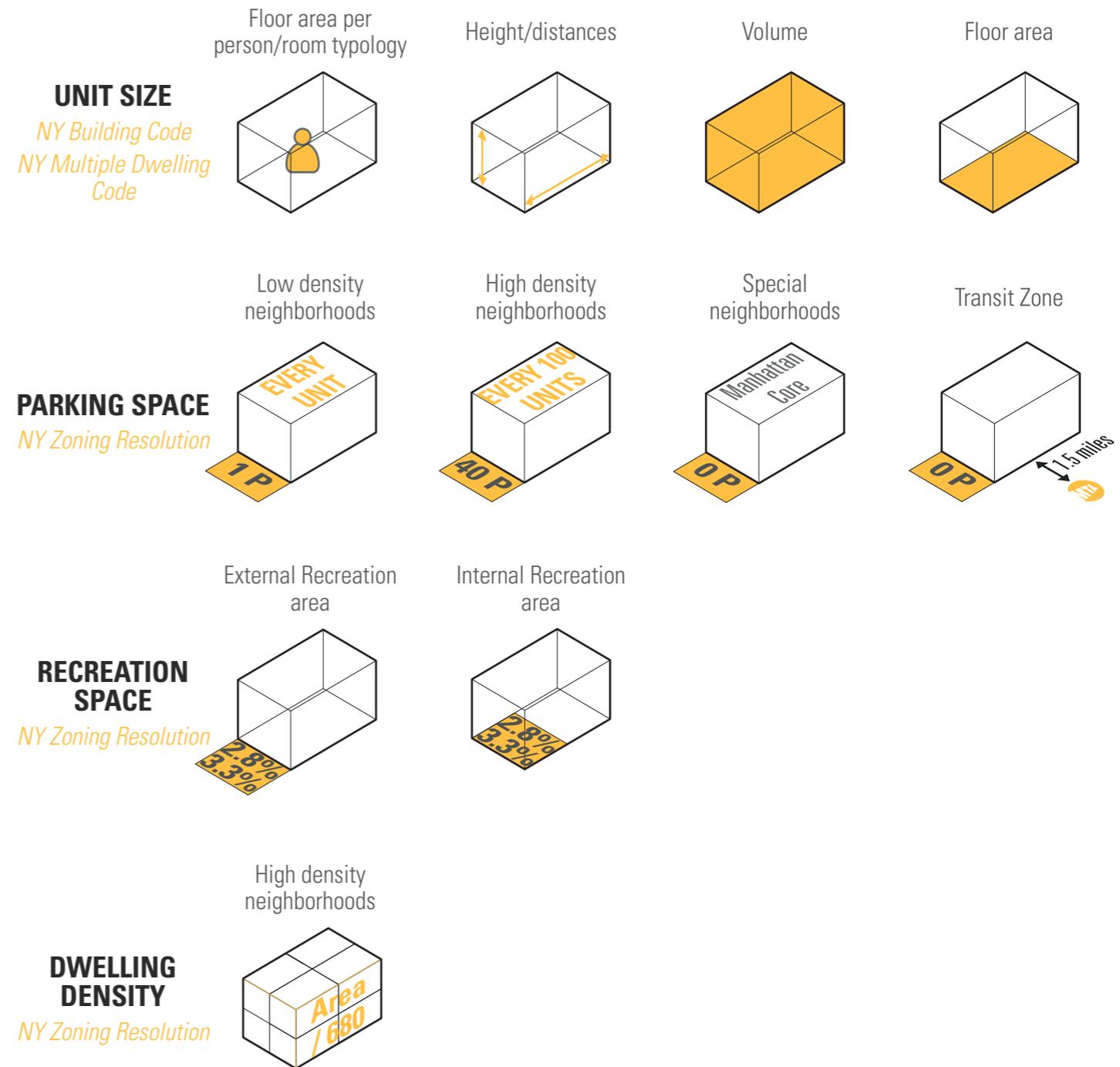
A second obstacle is the requirement for parking spaces for a given number of units, depending on the density zone which the building is located in. The Zoning Resolution, which rules this aspect, requires at least one off-street parking space for every newly built dwelling unit in low density districts, while it asks for 40 up to 85 parking spaces every 100 units in high and mid density districts. (City of New York, 2020 : art. 25.22-25.23) A notable exception is the Manhattan Core, an area south of 110th Street on the West Side and south of 96th Street on the East Side where off-street parking have a cap on the maximum permitted parking number. The Manhattan Core exemption has been introduced in 1982

for air quality issues. The parking requirements are an obstacle for micro-units because the construction of parking spaces, both off-street and on-street, is expensive, and in the end the extra costs reflect on the final users; moreover, this extra cost could be a further risk because typical users of micro-units are people owning no car¹, thus it would be inconvenient for them to pay for something they do not use. (City of New York, 2020 : art. 25.22-25.23) In 2016 the Zoning for Quality and Affordability text amendment waived the requirement for parking spaces also in special areas, far no more than one-half mile (approximately 650 meters) from a subway station, defined "Transit Zone". (City Planning Commission, 2016)

A third obstacle lays in the need of providing a percentage of the total floor area developed as Recreation Space; in New York case it can be both indoor or outdoor, without any preference. The space must be at least 3.3% of floor area in the mid dense districts, and 2.8% in highly dense districts. (City of New York, 2020 : art. 28.20) If the requirement of providing a percentage of developed floor area to other uses could reduce the potential number of units developable, it is meant for reducing the number of buildable dwelling units, affecting the cost per square meter of the units

An additional obstacle is the limit in the maximum number of dwelling units on a lot, which is not only determined by simultaneously limiting buildable floor area and minimum unit size, but shall respect also a number calculated by dividing the maximum residential floor area permitted for a given factor, as indicated in the Article 23.22 of the Zoning Resolution. The most dense zoning districts have a factor of 680, which means that for every 680 square foot (63.17 m²) of developable floor area, only a unit could be built, a ratio that, even considering the area occupied by distribution, services and technical spaces, is still far from the sizes of the micro-units. (City of New York, 2020 : art. 23.22)

Waiving or overcoming all these obstacles normally require a long and complex path, which could be not convenient to follow for private developers, and has neither a granted success.



¹ Who micro-units users are and what characteristics they have are explained in detail in the 2.1.3 - "Target of Users"

* on the opposite page: rules obstacles still effective in New York regulations. Personal drawing.

3 | CONSTRAINTS

Other than laws not keeping the changing society, there are other issues hindering non-traditional solutions, like micro-units, developments.

The first is the uneasiness, for developers, to be properly financed by banks because of the projects' risk-level. Indeed, the lack of comparable projects and the character of innovation, cannot make safely predict the success of the project and this represents a deterrence for financing institutions in supporting the project. The hesitancy is generated also by the thought of an over-appraisal of the phenomenon in these years, that risks not to last enough for recovering the investment. Furthermore, sometimes the absence of parking in the projects worry lenders, which are accustomed to projects dedicated to other targets of users still considering the car an unavoidable good, even in cities like the one analyzed. Financing institutions could specifically ask to designers and developers to add parking spaces to the buildings, with the resulting problems already described. (Furman Center for Real Estate Policy, 2014; Infranca, 2014)

Other obstacles are the oppositions by neighborhood's residents to these dwelling typologies. The protests are moved by the fear of a neighborhood gentrification or, on the opposite, of the arrival, in the area, of transitional "sketchy" people. (Furman Center for Real Estate Policy, 2014) The MyMicro NY example discussed in the previous part is not a lone voice in those situations. The unfounded fear is widespread and very often it is generated by the association of newly built micro-units with old SROs and boarding houses of the first half on Twentieth Century, dwelling typologies that hosted people by sharing services like kitchen and bathroom. (Thompson, 2012; Velsey, 2013)

Another fear contrasting micro-unit developments is given by the price of them. In fact, the shrinkage of the floor area reduces costs (and consequently prices) in absolute terms, but the final price per square meter is often higher than traditional units. This consequence is related both to the nature of construction costs, not always directly linked to

dimensions, and to duplication of certain elements that must be provided for every unit, like the plumbing for each private kitchen and bathroom, which, in the end, will be more than in a traditional-unit building. (Clinton, 2019; Infranca, 2014; Whitlow et al., 2014)

There are surely many other obstacles to the micro-units construction, sometimes hindering worldwide cases, place-related limits, or even developing-site related. Here have been presented the three major general obstacles which could be pointed out by the MyMicro NY process history and by the codes and regulations analysis carried on.

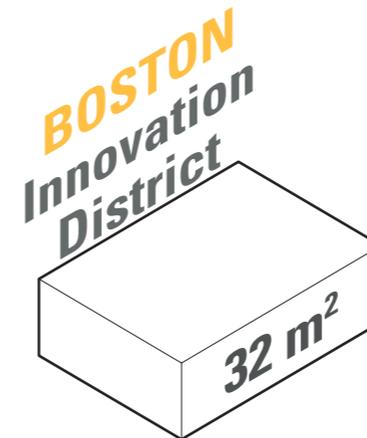
Living MICRO the ANSWERS

1 | POLICIES ATTEMPTS

The awareness of housing problems led many municipalities to study potential solutions. Some of them already tested the micro-unit instrument at a broader scale than New York.

Then-Mayor Thomas M. Menino promoted in Boston relaxing the 42 m² size limit up to 32 m² in the city's Innovation District, on the Boston Waterfront. The area was chosen for the rich presence of services which could actively be used by micro-units residents. The operation was meant to meet needs and desires of students and single professionals. (Lau & Wei, 2018; Ross, 2013) Later on, in 2018, the idea has been pushed further, launching the Compact Living Pilot policy, which allows developments without any minimum limit in floor area (but it must be compliant with Building Code) as long as it provides a rate of communal shared space for each unit in the building. This time, the typology is not restricted to any specific neighborhood, and it is though for young professionals and graduate students, retirees, young growing families and people in search for more affordable options. (City of Boston, 2018)

In San Francisco the building code has been changed in 2012, allowing 220 ft² (20 m²) sized units, including bathroom and kitchen, as long as them are subsidized units and not market-rate units. The initiative,



however is limited for 375 units, which is the maximum number of developable micro-units in the early phase of the regulation's change; after the cap is reached, the planning department of the city should draw up an evaluation to decide whether increase the number of allowable units and if it is viable to further reduce the minimum permitted size. (City and County of San Francisco, 2012; Gabbe, 2015)

Paris is an early leader of the strategy, since already in 2002¹ it has been fixed the minimum size of floor area to 9 m², as long as the total volume of the apartment is 20 m³ or more (a volume smaller than 20 m³ is accepted as long as the height of the ceiling is at least 2.2 m). (République Française, 2002; 2020) The earlier initiative is strongly related to the history of housing in the French capital and the housing stock at its disposal; in fact, the characteristic Mansard roof of the Haussmannian Paris hosted the so-called *chambres des bonnes*². These spaces, abandoned when the health standards improved, have been rediscovered, restored and reused in the last decades facing the urbanization problems. Now, they have been mostly subdivided into studios to decreasing absolute monthly rents and they are mainly occupied by university students, temporary residents, and young workers. (O'Sullivan, 2020)

Hong Kong unknowingly promoted the micro-unit phenomenon, and today it has a well-known and complex problem with micro-unit houses. The city never introduced a minimum standard for the houses' size and this drove developers to squeeze the apartments, together with

the scarcity of land and the high selling price of it, the demand and offer ratio, the life's cost, and the tax system adopted by Hong Kong government, which is based mostly on taking revenues from the housing. These factors brought the Special Administrative Region of China to see a non-stopping increase of newly built micro-sized flats. It seems that developers, driven by profits, challenge each other in who build the smallest unit, generating a speculative process on this typology. (Saiidi, 2017) The situation led Government, in 2017, to warn about the intention of introducing a limit if the trend continues, but as of today nothing has still been done. Moreover, in the City there is also a diffuse problem known as "cage-units", subdivided apartments, often unsafe, in which equipped (but not too well) bunk-beds are stuck into apartments for hosting a greater number of people. (Ho, 2015; Hong Kong Housing Authority, 2020)

Tokyo reality has underlying reasons similar to Hong Kong's ones, but the outcome is different. Japanese codes, in fact, does not require minimum standards, and while searching for a house in the city is easy to stumble into looking for micro-units apartments, which are quite common. However, this is not felt as a problem neither by people or by authorities. The culture and the habits, in this case, play a dominant role in accepting the dwelling typology. (Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT), n.d.)

¹ The ordinance determining these conditions is the *Décret n°2002-120*, which establish which characteristic a house should have to be considered "decent".

² *Chambre des bonnes* are dwellings hosted directly under the roof, usually served by secondary stairs and with no elevator reaching the *chambres'* level. These apartments were used, between 19th and 20th century, by maids and servants, and were often overcrowded and unsafe. They have already been cited in 2.1.1 – History, although the name was not reported. (O'Sullivan, 2020)



2 | A DEFINITION

After all the considerations previously carried on, it is clear that the current phenomenon this research is focusing on is something that is not comparable to what has already been in past experiences.

However, although the phenomenon is already spreading worldwide, the ways of dealing with it are still early attempts. As it is evident from the multiple programs cities around the world are introducing for ruling the phenomenon, micro-units are conceived in various ways and with different characteristics. Some studies are already making an effort in dealing with micro-units, understanding and describing this complex phenomenon, especially in the relationships between dwelling typologies and regulations, (Gabbe, 2015; Iglesias, 2014; Infranca, 2014) in researching if they could be a viable solution to the housing affordability issue, (Greenspan, 2016; Riggs et al., 2020) or also in tracing down an overview of the state of the art of the micro-units phenomenon. (Harris and Nowicki, 2020)

The contemporaneity of the phenomenon makes also impossible to trace down a shared definition of what a micro-unit is by literature. Several are, indeed, the changes to the variables considered by different sources, which list various measures and various included services.

Hereafter are reported three definitions of micro-units given by authors of diverse natures. One is a non-profit research center specialized in use of land; the second one is an educational and information web-channel specialized in the construction world; the last one is a company specialized in property management and in the development of software for the property management.

For the Urban Land Institute, a nonprofit research organization, it is *"a small studio apartment, typically less than 350 square feet, with a fully functioning and accessibility compliant kitchen and bathroom", excluding "160-square-foot single-room-occupancy (SRO) unit that relies upon communal kitchen or bathroom facilities"*. (Whitlow et al., 2014)

The B1M, a construction-related educational and information channel, instead, states micro-units "typically range from 400 square feet down to as little as 200 square feet in size (that's between 37 and 19 metres square). They typically consist of just one room and usually include space for sleeping and sitting, together with a kitchenette, a bathroom and a limited amount of storage" (Ravenscroft, 2017)

Buildium, a property management organization, defines micro-units as "smaller-than-average studios intended for a single resident." Which design "packs a kitchen, bathroom, and other necessities into a unit of 200 to 400 square feet [...]. Many micro-unit buildings provide common areas [...]. With the building as their living room and the city as their backyard, residents often only return to their rooms when it's time to go to bed" (Young, 2019)

With no diffused conventions a personal definition of what a micro-unit is and what is not has been traced down. The definition is not meant to be a universal definition, to be accepted everywhere and by anyone, but a working definition for properly selecting cases to analyze and for reducing the wide field of potential cases' candidates. In this research work a dwelling is considered a micro-unit when:

- Its size is at least 50% smaller than the average apartment size of the city in which it is located, avoiding to set a specific measure that could be considered large or small depending on the cultural background of the place;
- It is provided with all the equipment and spaces for, potentially, carried on basic vital actions (i.e. sleeping, eating, standing, using the bathroom), even through basic tools (e.g. a small fridge and a microwave are considered enough to not suffering the hunger, although they can not be the tools for preparing elaborate meals);
- Could share additional amenities or more complete home appliances with other units, as long as they are not the ones granting basic survival tools cited before.

- It is located within the city's boundaries and is not meant for being transported or moved, avoiding to consider natural-surrounded units and movable homes.

With these listed considerations, a possible definition that is adopted in this research to select and compare cases could be written down:

"A micro-unit is a self-contained city-dwelling, smaller than 50% or more of the city's average apartment size, capable of granting, through its characteristics, all the basic vital actions for a human being"

the
CASES **3**

the CASES the METHOD

1 | BUILDING A METHODOLOGY

In previous chapters, it has been found that the phenomenon is spreading across the world and that solution of shrinking units' size for reacting to cities' densification is adopted by many urban areas' municipalities.

For better understanding the phenomenon a worldwide analysis of selected cases has been carried on. The way through which investigate these cases, however, starts from the NY sperimental example: the MyMicro NY process and project, deeply analyzed in the first part of this work, is the starting point of the research method. Lessons learned, evidences and key points have been taken as guidelines through which question the case studies and build up a comparative analysis. The study of the New York case highlighted also the relevance of the processes issues in these kind of architectural developments, aspects that has been choose to consider in analyzing micro-units worldwide.

The understanding of the interests that led to the development of MyMicro NY, and of the contexts and framework of the general phenomenon, has also contributed to where and what type of examples could be more adapt for the comparative analysis.

he methodological approach is described in the following pages, answering to the questions:

What is the object of the study and which characteristics it should have?

Why it is important to study the phenomenon on a global scale?

Where to search the comparable cases and which main features the places should have?

When the cases should be built for being considered comparables?

How the cases are investigated? Which are the fields and scales considered and which questions addressed to them?

2 | OBJECTS AND REASONS

What

As previously reported, there is not a definition of what a micro-unit is that is universally shared and accepted, even if the phenomenon is already globally diffused.

The analysis search for a comparison among cases distributed across the world, so a common shared definition of what a micro-unit is or is not must be considered in order to set a common base for the comparability.

The object of the analysis is, then, micro-units as they have been defined in the previous part. Thus, for the analysis, *“ a micro-unit is a self-contained city-dwelling, smaller than 50% or more of the city’s average apartment size, capable of granting, through its characteristics, all the basic vital actions for a human being”*.

The stated definition thus selects the essential characteristics micro-units must have to be considered as part of this phenomenon.

- It is at least 50% smaller in size than the average apartment size of the city in which it is located;
- It offers all the equipment and spaces for, potentially, carrying on basic vital actions, even through basic equipment;
- It could share additional amenities or spaces with other units;
- It is placed within the city and is meant as permanent dwelling.

Why

Despite the phenomenon is spreading worldwide, and even though the general idea of shrinking units' size is shared, the outcomes are very different, and this is related to many reasons.

The first one concerns the fact that a building and its construction are strongly related to the site in which are collocated and the surrounding; for example, if MyMicro has been built with prefab modules, other sites with too small adjacent streets cannot host prefab buildings because of the difficulty in properly moving the modules, forcing designers to think to other technologies.

A second field that differentiates the outcomes is related to the cultural sphere of the place. The traditional habits of living in small or bigger houses influence the grade of shrinkage people are willing to accept; for example, an Australian, used to live in a country where houses are generally detached, composed of many rooms and with gardens, would be less inclined than a Japanese, where average houses are already small since decades, to accept an extreme shrinkage of floor area. Furthermore, this willingness of reducing size is determined also by the habits of people in living their lives outside the house. Where the everyday life is spent most of the time outside, using the whole city as a living room, it is easier for people to accept that the house where they will spend time only for sleeping are reduced.

The third factor for diversities is related to the laws and regulations of the site, which could be more strict than somewhere else. In this field it could be considered even the ease of carrying on the process and obtaining possible overrides, or the developers' ability in finding and getting into regulatory gaps for getting around certain imposed limits.

For these reasons, an ideal micro-unit does not exist, but multiple options are possible. It has been considered useful, though, to have a look at other built examples located in various socio-cultural and physical contexts. This wider investigation allows to present a more comprehensive understanding of the phenomenon and to highlights

how it can be a very local phenomenon while it is a global one. The cases are selected and questioned by setting up a comparative methodology with defined limits and with specific questions to address them.

The carried-on investigation principal aim is to generate a discussion on this phenomenon, especially with any other scholar, student, architect, or field-involved person interested in the theme, but the work could be potentially be addressed to other categories which could benefit, in different ways, of the findings that will be pointed out. Municipalities and promoters could benefit from already undergone initiative suggestions for implementing their regulations and plans by considering micro-units as viable alternatives; particularly, other than wide-scale aspects like the position of the development within the city and the level of services in the area, the process and uses aspects are relevant for them, understanding which have been the relationship with regulations, if other uses are provided, and which stakeholders have taken part into it. Developers, other than the issues interesting also for municipalities and sponsors, could detect from the analysis also the management points and the design strategies, finding which are the recurring typologies, the dimensions, and the aspects to be careful to. Users and potential residents could also detect aspects to be careful to, but, of course, by their point of view, focusing not on the potential investment return or the attractiveness of the units on the market, but paying attention to the psychological perception of the space, on the functionality of it, and on the characteristics the surrounding area should have for not suffering any missing basic service or difficulties to reach it.

3 | METHODS AND TOOLS

Where

As highlighted in the definition, selected micro-units are placed within the city boundaries. However, since the analysis is carried on worldwide, how these cities have been selected is an important issue in order to ensure a comparability of the cases. The selection of these cities has been carried on considering three main factors.

They all are mega cities or large cities¹, or are part of the metropolitan area of these ones. In this sense, all the selected cities present a certain number of people living in it and a certain level of density. The cases of cities in metropolitan areas are represented by the Arcade Providence and Yokohama Apartments cases. The first one is located in Providence, Rhode Island's capital, a relatively small city and not too densely populated. However, the distance between Providence and Boston, the center of a great metropolitan area, is 80 kilometers, a distance that is commutable daily by train in 30 minutes or by car in approximately one hour, commuting times considered acceptable by megacities inhabitants. The second case is located in Yokohama, the second-largest city of Japan by population, which is embedded in Greater Tokyo, the most populated megacity of the world. Yokohama is home to numerous Tokyo commuting workers, and the nearly 40 kilometers are viable in 20 minutes by train or 40 minutes by car. While both the precedent exceptions are, in the end, part of a bigger metropolitan area, or in close proximity to it, Keret House is located in no one of these cases. It is located in Krakow, a seven-hundred-thousand people city not too dense, but it has been chosen to consider it anyway because of its peculiarity and originality in proposing certain solutions, which could represent good strategies to face the stratified urban fabrics of many historical European cities.

All the selected cities are the stage for skyrocketing prices in the real estate market. In those cities the housing markets offers only two viable options: paying extremely high rents in central or semi-central areas

¹ The terms megacities and large cities are used as meant by United Nations (2019)

for extremely small spaces, or accepting long commuting distances in choosing peripheral areas of the city. Many are the causes underlying these rising trends of the markets, but it is not purpose of this research to discuss about it; however, these trends are, de facto, as described. High rents, housing shortages, and an high demand make these markets a mined field for who is searching for a house in these cities.

When

It has been previously discussed why and how the contemporary phenomenon is different from precedent events that went towards a downsizing of dwellings. For this reason all the cases selected for the analysis have been chosen pointing a turning point, a reference year that distinguished today's micro-units from past micro-units. By doing so, the comparability of the cases is not undermined by different causes and outcomes that characterized other historical periods.

The year chosen is the turning of the millennium, the year 2000, which is the year Zygmunt Bauman¹ published the book *Liquid Modernity*, theorizing the social dynamics that distinguish the contemporary society, characterized by the absence of solid reference points and the ability of easily adapting to the situation they face to. (Baumann, 2000) No case before the turning point has been considered, even if they could have presented the characteristics of micro-units.

Bauman has not been the only one to analyze and theorize social changes², however the need of a single date has fallen on the probably most known of them, coinciding also with a symbolic year.

Of course, the choice of a specific year as a turning point has its weakness in reducing the change of a phenomenon, which is a long and complex problem, to a single moment, but all the historical classifications and group selections present this issue. There could surely be cases precedent to the selected year, cases which were forerunners of times or simply early protagonists of the phenomenon. However, even if their importance is recognized, they will not be considered in the analysis.

¹ Zygmunt Bauman (1925-2017) has been a Polish sociologist and philosopher. He researched on sociology of work, before concentrating, and obtaining worldwide success and recognition for it, on post-modernity and the related ethic issues. (Treccani, n.d.)

² Hartmut Rosa's social acceleration and Anthony Giddens' separation of space from place are two examples. (Giddens, 1994; Rosa, 2015)

How

The adopted methodology provides for comparative analysis of the worldwide distributed case studies.

The method has been built thanks to the experience gained by studying the history, process, and features of MyMicro NY. The first part of the research has indeed helped to identify some of the crucial points in the development of a micro-units building, and these points have become the questions to address the cases to.

The way of questioning all the selected cases with the same set of issues guarantees the comparability of the investigation's results, and it allows a transversal reading of the cases on single questions.

The questions, as illustrated in the opposite page, are related to two macro-categories, processes and spaces, which are subsequently split into six main fields of action: relations, uses, manage, urban, building, and unit. As it could be seen, the analysis of the cases covers a wide spectrum of information with different natures, and therefore was necessary to take out data not just from one source, but from many of them.

- Data related to the relations are collected from official documents and reports submitted to municipalities, press articles, and documented declarations, or by crossing a set of available information.
- Uses' data are gathered by crossing measures and calculations from plans with information on the uses inside the building.
- The ones concerning the management come from the same sources of the process ones but sometimes are integrated with statistical studies of trends in the city or with real estate agencies data.
- Space's data are mostly detected from technical drawings, photos, publications in specialized journals. If data requires numerical information or measures, these are measured on building plans.

PROCESSES

RELATIONS

Actors
Overrides
Conflicts

USES

Floor area developed
% destination uses

MANAGEMENT

Costs and ratios
Subsidizing programs

SPACE

URBAN

Walkability and services
Separation from the street
Parking
Permeability

BUILDING

Access
Distribution
Open areas
Services/Amenities
Use of connective spaces

UNIT

Number and dimensions of units
Unit/Average size
Unit/Law requirement size
Open areas
Offsetting solutions
Furniture

The walkability issue is worthy of specific consideration since it represents a wicked problem¹. For dealing with it the WalkScore® index has been used as a tool. The index is provided by the private company WalkScore®, and it grades the walkability of an address considering, at the same time, the closeness of services, road metrics, and pedestrian friendliness, and assigning a point in a scale that goes from 0 up to 100. As stated in the WalkScore website, the resulting score defines the address with the subsequent scale (Walk Score, n.d.):

- 90–100 is defined as **Walker's Paradise**, which means that daily errands do not require a car
- 70–89 is defined as **Very Walkable**, which means that most errands can be accomplished on foot
- 50–69 is defined as **Somewhat Walkable**, which means that some errands can be accomplished on foot
- 25–49 is defined as **Car-Dependent**, which means that most errands require a car
- 0–24 is defined as **Car-Dependent**, which means that almost all errands require a car

The WalkScore® index is a patented system and the entire algorithm for the calculation is not freely available. However, Carr, Dunsiger, & Marcus (2010) conducted a study in which they compared the WalkScore® results with more traditional and diffused way of evaluating the walkability, and they defined it a reliable tool for estimating the overall walkability of a place since it showed similar results to traditional methods.

Going thoroughly in the questions addressed to the cases, they could be wrote down one by one, divided in their fields, so that every information in the case studies could be read for what it is, the answer of specific questions.

- The relations field reports which are the main actors that took part in the process, explains if any override to regulations has been taken for allowing such small spaces been classified as dwelling

units, and indicates if any protest, conflict or resistances happened during the process.

- The uses field reports if other uses rather than residential one are provided into the building and, in case, which and in what proportions, and indicates how much of the plot is covered by the building and how much floor area is developed.
- The management field tells which is the type of occupation of units by users, reports what is the rent/cost for a unit and the ratios with average prices in the city, and explains if any programs have been adopted for granting lower units costs or for helping with the construction costs.
- The urban field tells how many services there are in the proximity and what is the walkability level, represents how the building is separated from the public street, if there is any space designated as parking for vehicles, and if there are spaces in the building left accessible to non-residents.
- The building field reports what type of distribution is used in the building, if the connective space is used also for stationary activities, what kind of connection with the public street is adopted, what open areas with exclusive access for building users are provided, and what kind of accessory, communal and shared spaces are located into the building.
- The unit field explores the relationships of the units dimensions with the starting case (MyMicro NY), with the average size of a house in the city, and with the minimum size for dwellings permitted by local codes. It furthermore reports what private open areas are provided, what kind of compensating strategies are adopted for making the space appear larger than what it is, and if the unit presents built-in or convertible furniture.

the CASES how to USE

1 | **READING THE CARDS**

In the following pages, 1+11 cases are analyzed one by one. Every analysis is composed of 8 pages, each regarding one aspect:

- A presentation of the case from literature and designers
- A map for localizing the case in the urbanistic context, with the walkability results
- The group of data regarding the processes
- A representation of the block, with the relevant characteristic analyzed
- A representation of the building, with the relevant characteristic analyzed
- A representation of the single unit, with the relevant characteristic analyzed
- A set of photos showing the case
- A comment of the cases written by the research's author

The different analyses have multiple layers of readings; they could be read entirely, for knowing in the deep the single case for what concerns the aspects considered in this work, or could be read in a transversal way, concentrating the attention on a single scale of analysis for each case, or on a single question queried for each case. These type of readings are made it possible not only by the rigid structure of the cards, that use the same order of analysis, but also by the adoption of a set of icons that are very similar and recognizable for each answer, even though they adapt themselves to the case analyzed.

The analysis could also be read backward, starting from the final toolkit with the interested solutions, and, thanks to the project icon, search directly for the cited project that resulted of interest for the reader.

the CASES objects of STUDIES

1 | ANALYZED PROJECTS

Hereafter is presented the list of the 1+11 cases analyzed in this part of the research. The order for the cases is geography-based.

MyMicro NY, New York City, *United States of America*

Life Edited 1, New York City, *United States of America*

Life Edited 2, New York City, *United States of America*

The Arcade Providence, Providence, *United States of America*

388 Fulton, San Francisco, *United States of America*

Cityspace 38 Harriet, San Francisco, *United States of America*

The Collective Old Oak, London, *United Kingdom*

Keret House, Warsaw, *Poland*

Songpa Micro Housing, Seoul, *South Korea*

Ququri, Tokyo, *Japan*

Yokohama Apartments, Yokohama, *Japan*

T-Plus, Hong Kong, *China*



SAN FRANCISCO
388 Fulton
Cityspace 38 Harriet

PROVIDENCE
Arcade Providence

NEW YORK
MyMicro NY
Life Edited 1
Life Edited 2

LONDON
The Collective Old Oak

WARSAW
Keret House

HONG KONG
T-Plus

SEOUL
Songpa Micro Housing

TOKYO YOKOHAMA
Ququri Yokohama Apartment



MyMicro NY

nArchitects

New York, United States of America

2012-2016

MyMicro NY is the first micro-unit development in the City of New York. Result of a competition promoted by the city administration, it mixed residential, communal, and commercial spaces within a prefabricated building.

Located in the Kips Bay neighborhood, part of the East side of Manhattan Borough, it has been developed as a pilot project for introducing the micro-unit typology in the city. The collaboration with the city administration allowed to override several limits and the project received huge attention.

The building was meant as a way of dealing with the housing shortage, the changing society, and the affordability gap spread across the city. (Department of Housing Preservation and Development, 2012; Murphy et al., 2019)

Card's main sources

Murphy, Markarian, & Sivashankar. 2019. "Carmel Place. Innovative practices for Healthier Homes. A Case Study". *Healthy Materials Lab, Parsons School of Design*. New York.

nArchitects. n.d. "Carmel Place. Kips Bay, Manhattan, NY". nArchitects

NYC Department of Housing Preservation & Development. 2012. *Request For Proposals AdAPT NYC*. New York.

The New York City Council. 2016. *Zoning For Quality And Affordability (N160049ZRY)*. File # LU 0335-2016. New York.

City Planning Commission. 2013b. *Report C 130236 HAM. Calendar No. 10 September 11, 2013*. New York.



PROCESS

Monadnock Devel. - owner + developer
City of New York and HPD - promoters
nArchitects - designers

Main Actors

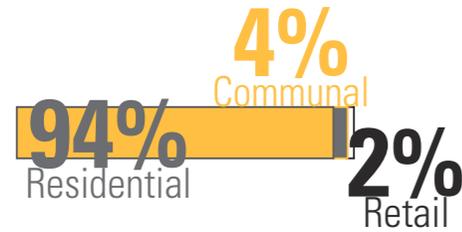
A number of waivers were approved, among which unit' size, number of unit, setbacks and more

Overrides

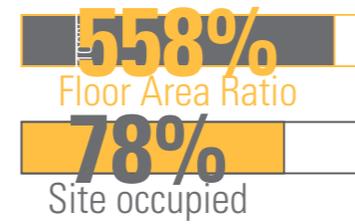
Some conflicts happened between developers and municipality and residents of the neighborhood

Conflicts

USES



The building offers 2406 m² of developed floor area as residential spaces, 110 m² as communal space, and 50 m² as retail



The building occupies 358 m² (78%) of the site, and offers a total of 2571 m² of floor area of the 2771 m² allowed, developing 558% of the site area instead of 602% allowed.

MANAGE

Rented and Lottery

Market-level units have been rented in 2016, while the subsidized units assignment process started in 2015, with a Lottery

2319 €/month
77 €/m² of Average Studio rent in the city
94%

Market-level units rents were up to 2'729 \$, equivalent to 2'319 €, 77 €/m², which is 94% of 2'900 \$, the average studio rent in the area

Section 8 and Affordable Programs

Different programs were adopted. Section 8 program dedicates 8 units to veterans, while 14 units were distributed to low-income people



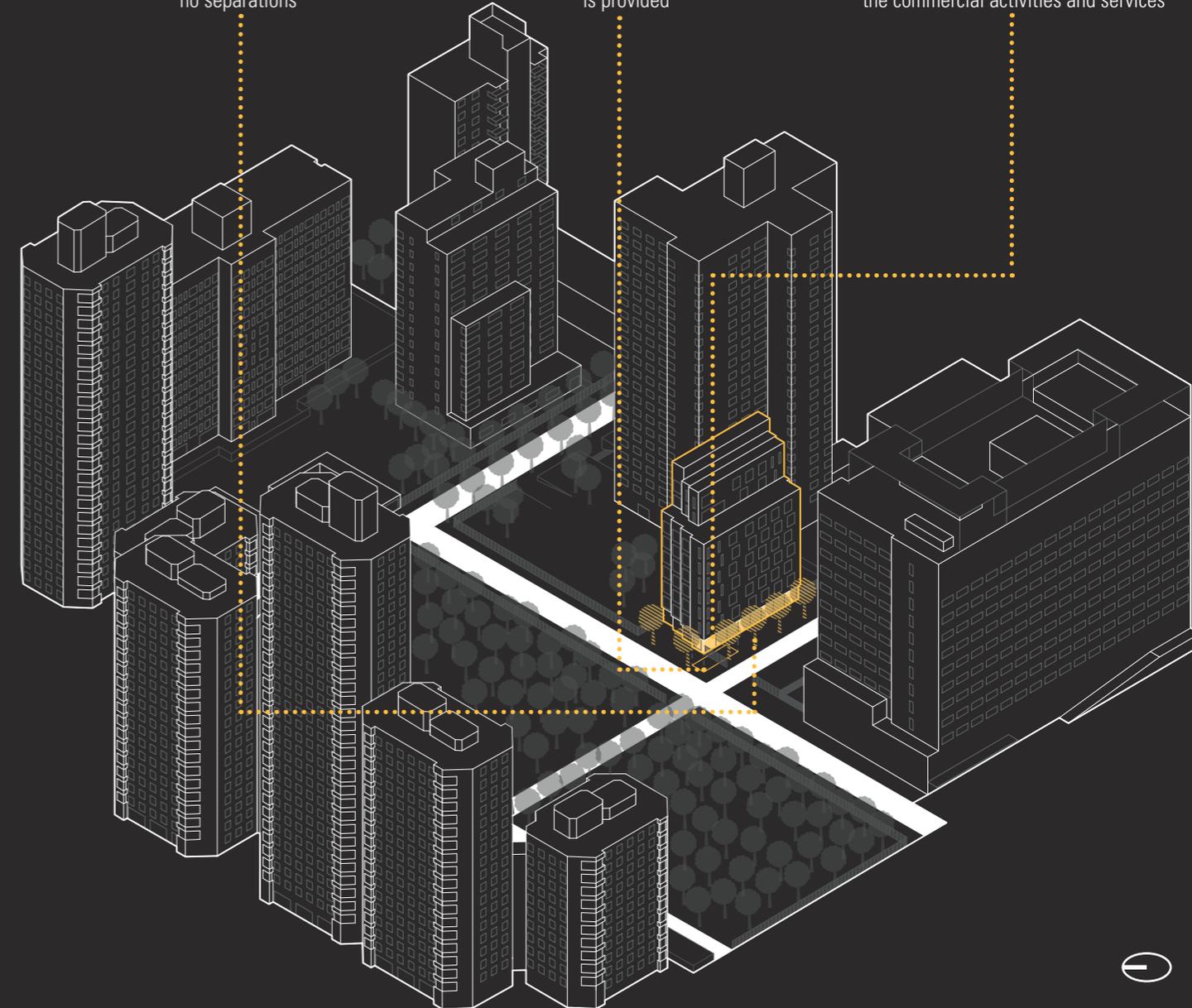
The lower floors are separated from the street by trees, while upper floors have no separations



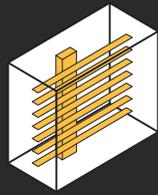
The building offers an underground covered bike parking, but no car parking is provided



The building is meant as accessible by not residents only at the ground floor in the commercial activities and services



DISTRIBUTION



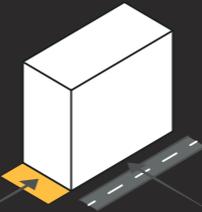
The distribution, due to structural issues too, is provided with a vertical core and long corridor for each floor

CONNECTIVE SPACE



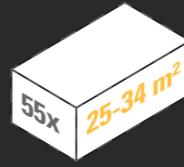
Connective space has only distributive purposes, except for the ground floor, with gathering and relax spaces

ACCESS



The main access faces directly the vehicular street, while entrances for retails are on the pedonal one

UNITS' QUANTITY AND SIZE



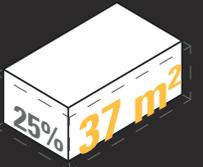
The building has 55 prefab units measuring between 25 and 34 m², according to the building envelope

UNIT/AVERAGE SIZE RATIO



The unit is 65% smaller than the average size of houses in the city, which stands at 80 m²

UNIT/LAW SIZE RATIO



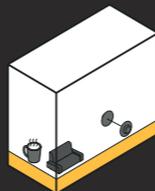
The unit is 25% smaller than the minimum size of 37 m² required by NYC codes for dwelling units

OPEN AREAS



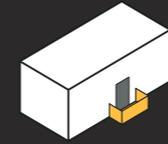
The building offers communal outdoor spaces both on the terraces and in the backyard

SERVICES / AMENITIES



The extra services are all located on the ground and underground floors, except for the terraces

OPEN AREAS



Some of the units have private outdoor terraces, while most of them have juliette balconies

OFFSETTING SOLUTIONS

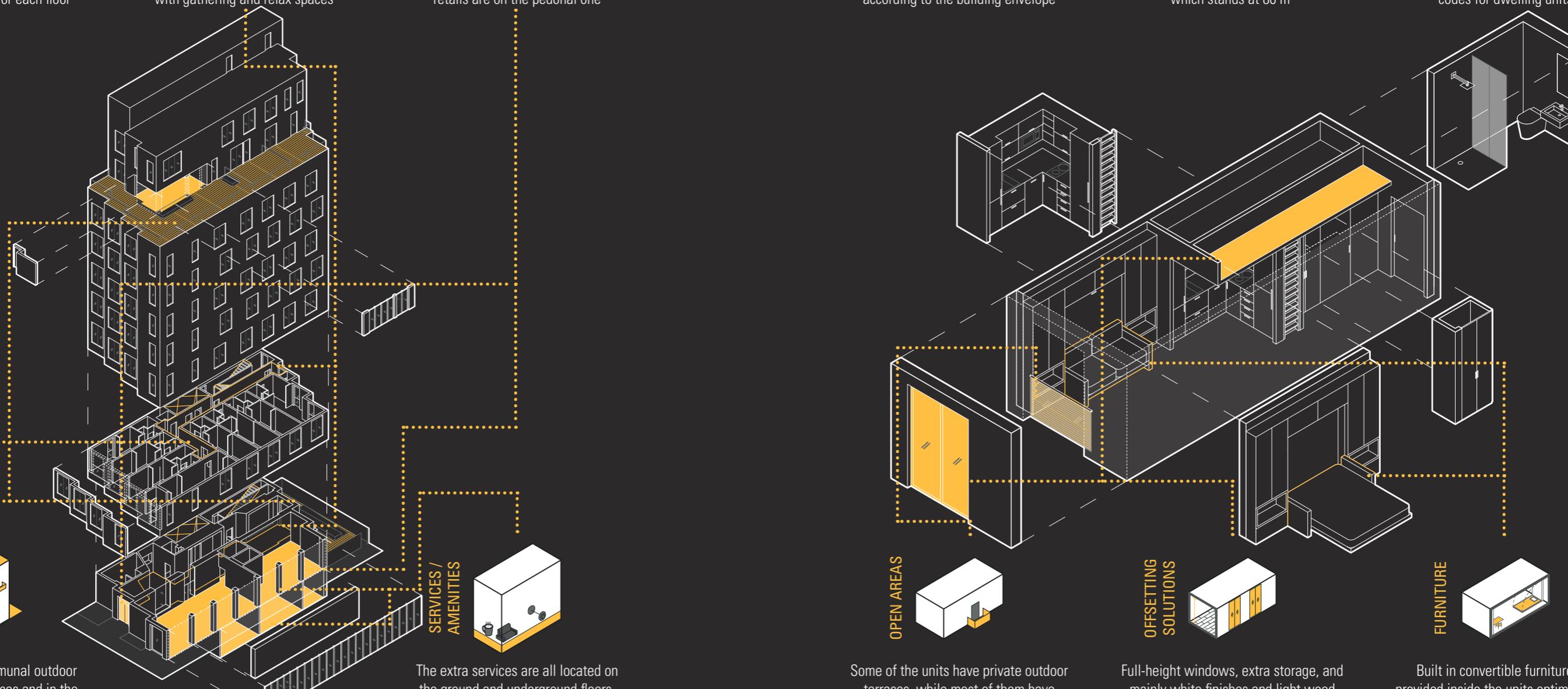


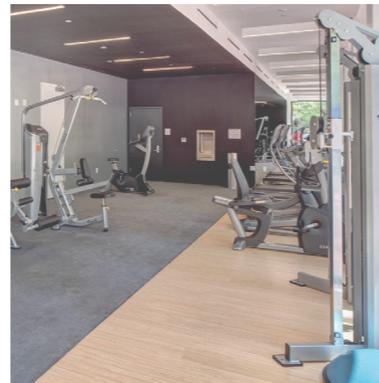
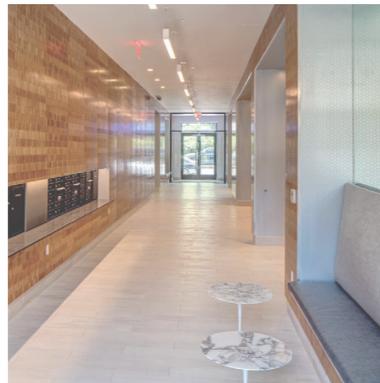
Full-height windows, extra storage, and mainly white finishes and light wood floors have been used

FURNITURE



Built in convertible furniture are provided inside the units optimizing the space





MyMicro NY case is the first analyzed case and the base for the overall analysis procedure. As already pointed out, it is an important project because of the huge process generated for its construction and the number of actors involved in it. The building is the result of a collaboration between the public municipality and the private developers.

The choice of the location is a good solution for access to all the services, which make the walkability level very high. However, the choice is also related to the property of the land, which, being owned by the municipality, allowed to waive regulations more easily.

As a public-private partnership, a percentage of the units are subsidized for low-income level households and have been assigned through a lottery.

The building has a modular structure, which should have brought down prices. However, rents are still high, even in the New York context. The modular construction is, however, a good strategy for the replicability of the project in other sites, since each module host a unit.

The presence of commercial spaces makes the building an attractor for the street level activity in the neighborhood, while the communal spaces inside the building try to set up a community rather than a group of tenants.

The unit makes a net distinction between the service spaces and the relax and lived spaces. The presence of a floor-ceiling window dominates the unit and, together with the Juliette balcony, it brings the external space inside the unit and vice-versa. Furthermore, the light from the window is reflected by mainly white finishing and light-wood floors.

In conclusion, the project is a pilot tentative, and so has to be treated. It suggested potentially good strategies to be re-proposed in other developments, like the private-public partnership and the construction system, or the units' solutions in the openings and light, and has also shown the limits of this kind of developments. Thus, the project has not only the consequence of the construction but also the effect of changing the Zoning Resolution of the city.

Photographs credit: *nARCHITECTS, Pablo Enriquez*



Life Edited 1

Guerin Glass Architects, Life Edited, Catalin Sandu

New York, United States of America

2010-2012 (1900 building)

Placed in a 1900 brick building in the neighborhood of SoHo, the apartment was wanted by Graham Hill for proving in concrete his philosophy: *"Happiness is not about stuff, it's about relationships and connection and time"*. (Senison, 2018) This philosophy was already evident in the brief of the international competition that led to the project, which brief required, among the other points, the space for a dinner of 12 people seated at a table and a guest room for staying over.

The winning proposal made the apartment being a transformable unit, with six different rooms packed into one single space, for a total of 102 m² of usable spaces (although just 39 m² at a time are usable).

Graham Hill defined Life Edited 1 apartment a house as well as a laboratory, and himself lived for a certain period in the unit before selling it, for understanding weaknesses and potentialities. (Alter, 2012; Green, 2012)

Card's main sources

Ginsberg & Beaumont. 2017. "Small Is Beautiful: Micro-Units Can Help Make NYC Housing Affordable". In Manhattan Institute for Policy Research, *Urban Policy Frontiers: New thinking about how to improve housing, transportation, child welfare, and policing*, 1-28

Green. 2012. "Selling the Pared-Down Life". *The New York Times*, May 26th, 2012. Section D p.1

Miller. 2020. "Elliman Report. Manhattan Q4 2019". Miller Samuel Real Estate Appraisal and Consulting Service.

NYC Department of Buildings. n.d. "Property Profile Overview". Building Information System.

Senison. 2018. "Tiny Home Pioneer Graham Hill Lists New SoHo Unit For \$750,000". *Forbes*.



PROCESS

Graham Hill/Life Edited - sponsors
Catalin Sandu - competition winner
Guerin Glass - architecture firm

Main Actors

No waivers were registered, since the project was filed in the Directive 14¹

Overrides

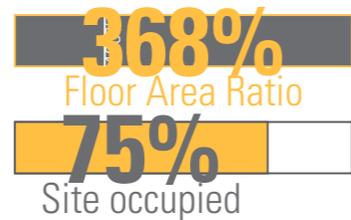
No conflicts were registered in the official *NYC Housing Preservation and Development's* archive

Conflicts

USES



The building offers 1'359 m² of residential spaces and 324 m² of commercial spaces



The building occupies 3'444 m² (75%) of the site, and offers a total of 1'683.73 m² of floor area, developing 368% of the site area

MANAGE

Sold
 in private negotiation

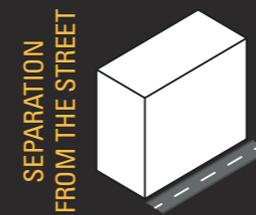
The units has been sold in 2014, since the original plan of developer was to place it again on the market



Unit has been sold for 790'000 \$, equivalent to 667'370 €, 17'112 €/m². Which is 107% of 737'000 \$, the average studio price in Manhattan

Crowdfunding
initiative

The apartment has been renovated thanks to a crowdfunding campaign in support of the idea of a "lifestyle test"



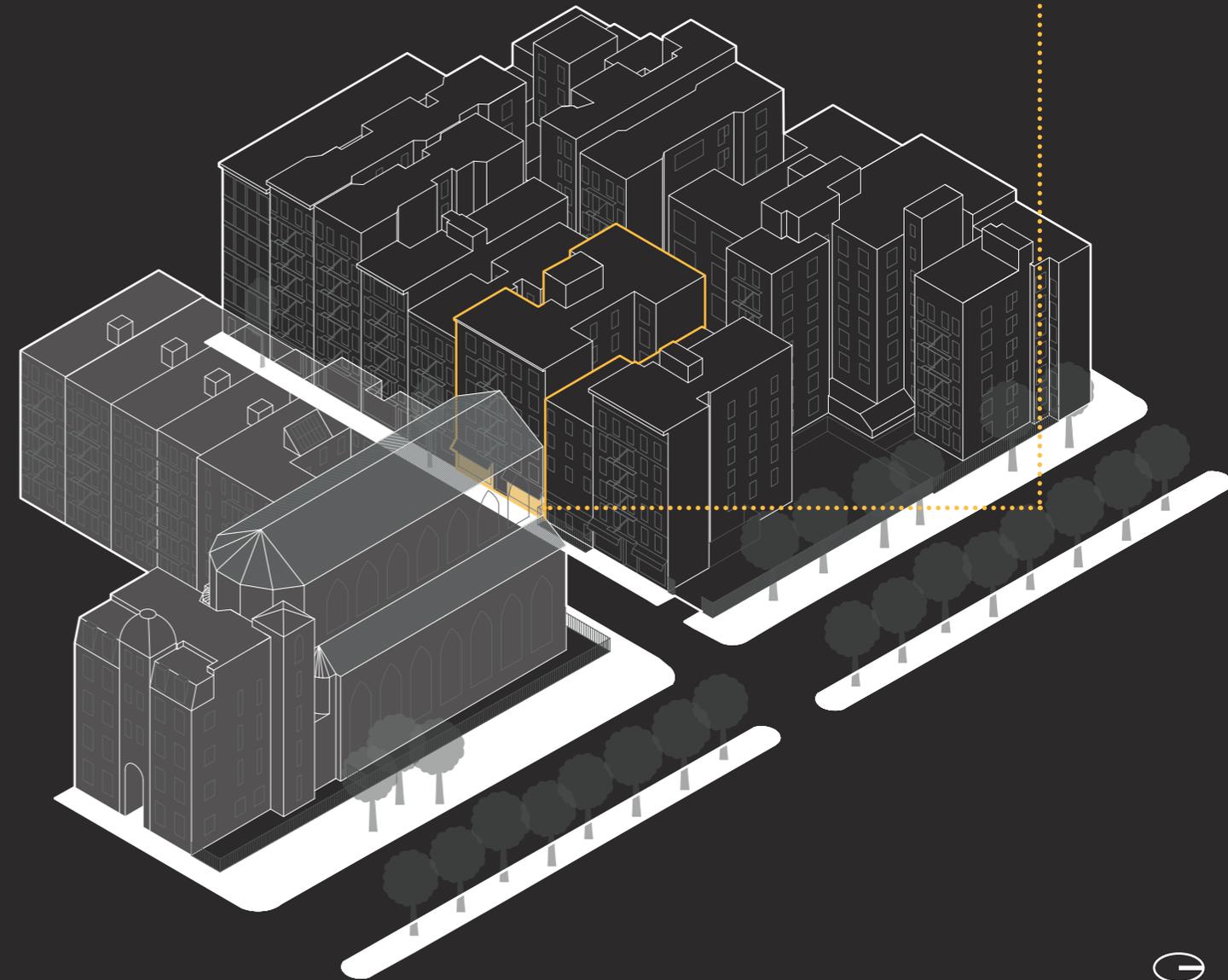
SEPARATION FROM THE STREET
 The building has no physical separation from the public street, which is car-transit's one



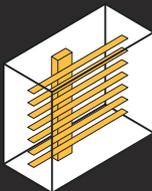
PARKING
 The building has no parking spaces dedicated to residents



ACCESSIBILITY
 The building is a fully residential building, allowing no residents to access only to ground floor retails



DISTRIBUTION



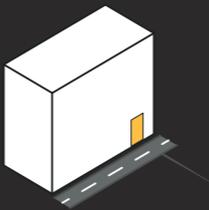
The distribution is organized around a vertical core and a corridor for each floor

CONNECTIVE SPACE



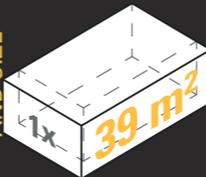
The connective space is not meant as usable for stationary activities, but only as a servant space

ACCESS



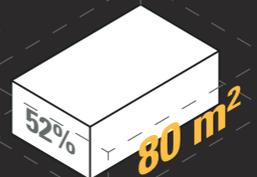
The access to the building happens directly from the street

UNITS' QUANTITY AND SIZE



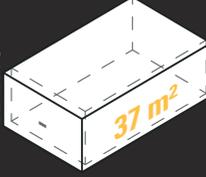
The apartment measures only 39 m², but its trasformable spaces make 102 m² fit into it

UNIT/AVERAGE SIZE RATIO



The unit is 52% smaller than the average size of the houses in the city, which stands at 80 m²

UNIT/LAW SIZE RATIO



NYC codes require a minimum size of 37 m² for dwelling units, which is slightly smaller than the apartment

OPEN AREAS



No proper open area in the building is granted, but the classic newyorkese emergency stairs could be used

SERVICES / AMENITIES



All the services and amenities (projector room, guest room, office and more) are placed inside the single unit

OPEN AREAS



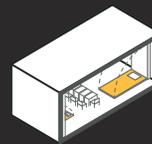
The unit's users could use the classic newyorkese emergency stairs as balcony, even if improperly

OFFSETTING SOLUTIONS

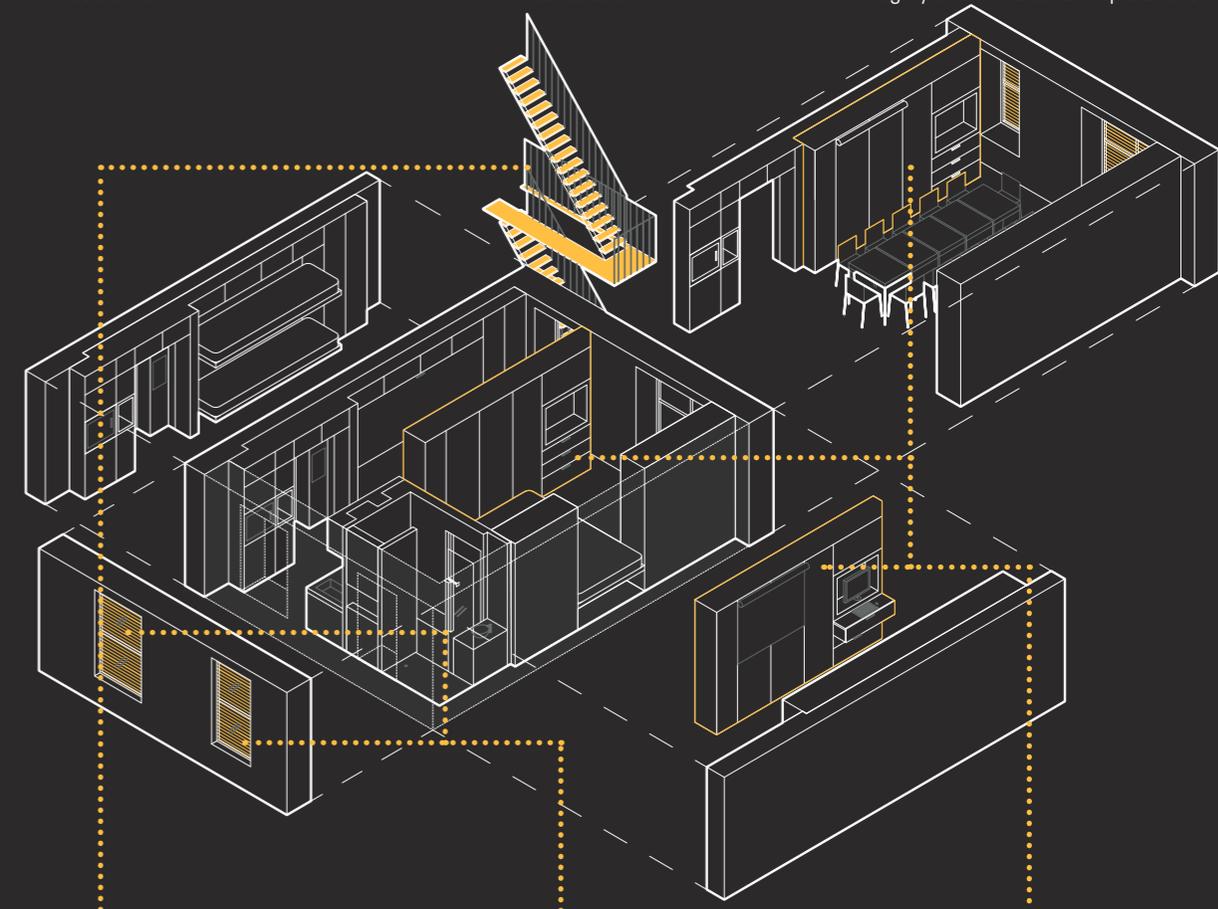
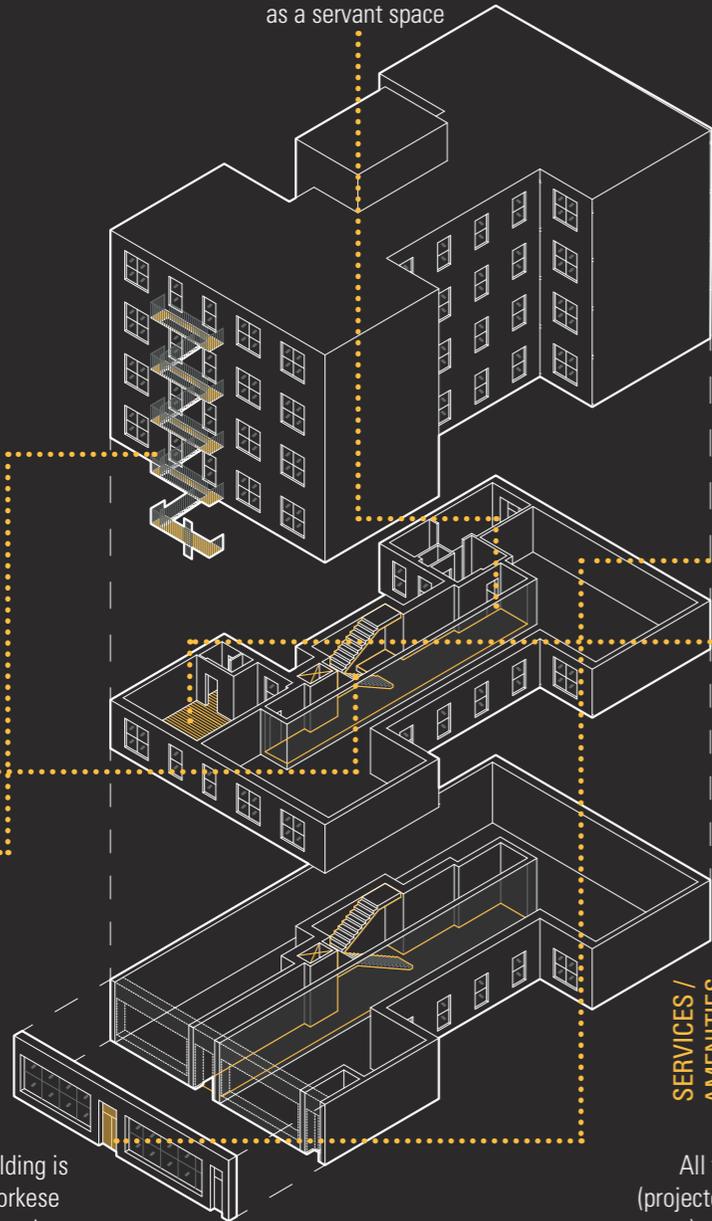


Although the small size of the unit, the apartment has 4 windows. Further, the unit uses light wood and white

FURNITURE



The unit is totally furnished with built-in, convertible furniture, and with a movable wall for dividing rooms





Photographs credit: *Matthew Williams*

The underlying reason for this renovation is the main actor willingness to prove that is possible to live well with less, a sustainable vision he promotes. The renovation of the apartment is an interesting tentative of how to make small spaces looks to users larger than they are. The use of a transformable furniture allows not only to have more specialized rooms, but also to divide the room in more areas. This choice is a winning solution both for uses the tenants could do of it and in its spaces, and for the marketing point of view, since it allowed to sell the apartment counting the total square meters produced by changing the configuration of the room instead of the effective area. On the other side, the decision of placing the sliding wall/furniture made the price increase considerably, since it is tailor-made built with wood and metal materials. This is in contrast with the idea of sustainability (which affects the economic sphere too) promoted by the client, and with the general idea of micro-units intended to be more affordable than average size apartments.

The strategy of making the unit looks larger than reality is adopted also in the choice of colors and materials; all the walls and standing furniture are pure white, and the floor covering is light wood, making natural light, which enter from 4 windows, reflect easily and spread all over the house.

Notable is the absence/presence of the balcony as private open areas: although the unit has not a properly defined balcony of its property, the tenants and guests could use the iconic New Yorker iron emergency stairs as an outdoor place. Introduced in the 1860, the use of them by tenants as a stationary place is not considered an illegal practice.

The dimension of the apartment slightly over the minimum size required by laws made no need of overrides, making the designing and construction process easier than what could have been, since it has been done before the City though to the possibility to waive these limits. However, despite the size, the unit is not compliant with the Americans with Disabilities Act. (Ginsberg & Beaumont, 2017)

In conclusion, the renovation, although had a lucky factor in the apartment being of the right size, successfully take advantage of materials enhancing lights, movable furniture and in using existing condition of the building.

¹ D14, or Directive 14, is a program which allows renovation projects not proposing "a change to use, egress, or occupancy or any other change that might affect the Certificate of Occupancy" to be self-certified by the applicants (Chandler, 2016)

* In the building drawing: Life Edited 1 and Life Edited 2 units are part of the same building. For representation reasons they are drawn both at the first level, but only Life Edited 1 actually is, while the other is at an upper floor.



Life Edited 2

Guerin Glass Architects

New York, United States of America

2015¹-2016 (1900 building)

As its brother Life Edited 1, this apartment is placed in the same 1900 brick building in SoHo and was promoted by the same client, Graham Hill. This time, the philosophy of “less stuff, more happiness” is pushed further, renovating an apartment of just 32 m², but keeping some of the same requirements of the competitions that led to the first project: the possibility to make a dinner of 12 seated people and the space for hosting visitors.

The adopted strategy is still providing a transformable space, but due to the form of the apartment, the transformations are given entirely by convertible furniture, instead of movable partitions, making again 6 different rooms fit the small-size apartment. Even in Life Edited 2, Graham Hill lived inside the apartment from its completion to its selling, for being sure the project worked as projected in the design phase. (Senison, 2018)

Card's main sources

Ginsberg & Beaumont. 2017. “Small Is Beautiful: Micro-Units Can Help Make NYC Housing Affordable”. In Manhattan Institute for Policy Research, *Urban Policy Frontiers: New thinking about how to improve housing, transportation, child welfare, and policing*, 1-28

Green. 2012. “Selling the Pared-Down Life”. *The New York Times*, May 26th, 2012. Section D p.1

Miller. 2020. “Elliman Report. Manhattan Q4 2019”. Miller Samuel Real Estate Appraisal and Consulting Service.

NYC Department of Buildings. n.d. “Property Profile Overview”. Building Information System.

Senison. 2018. “Tiny Home Pioneer Graham Hill Lists New SoHo Unit For \$750,000”. *Forbes*.



PROCESS

Graham Hill/Life Edited - sponsors
Guerin Glass - architecture firm

Main Actors

No waivers were registered, since the project was filed in the Directive 14²

Overrides

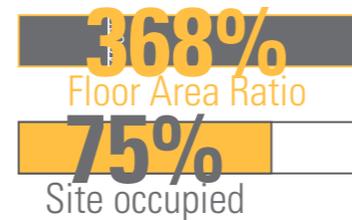
No conflicts were registered in the official *NYC Housing Preservation and Development's* archive

Conflicts

USES



The building offers 1'359 m² of residential spaces and 324 m² of commercial spaces



The building occupies 3444 m² (75%) of the site, and offers a total of 1'683.73 m² of floor area, developing 368% of the site area

MANAGE

Sold
in private negotiation

The unit has been sold in 2018, since the original plan of developer was to place it again on the market

636k € sold
20k €/m²
102% of average Studio price in the city

Unit has been sold for 750'000 \$, equivalent to 635'830 €, 19'870 €/m², which is 102% of 737'000 \$, the Median studio price in Manhattan

No programs in support of buyers or helping the construction process have been found



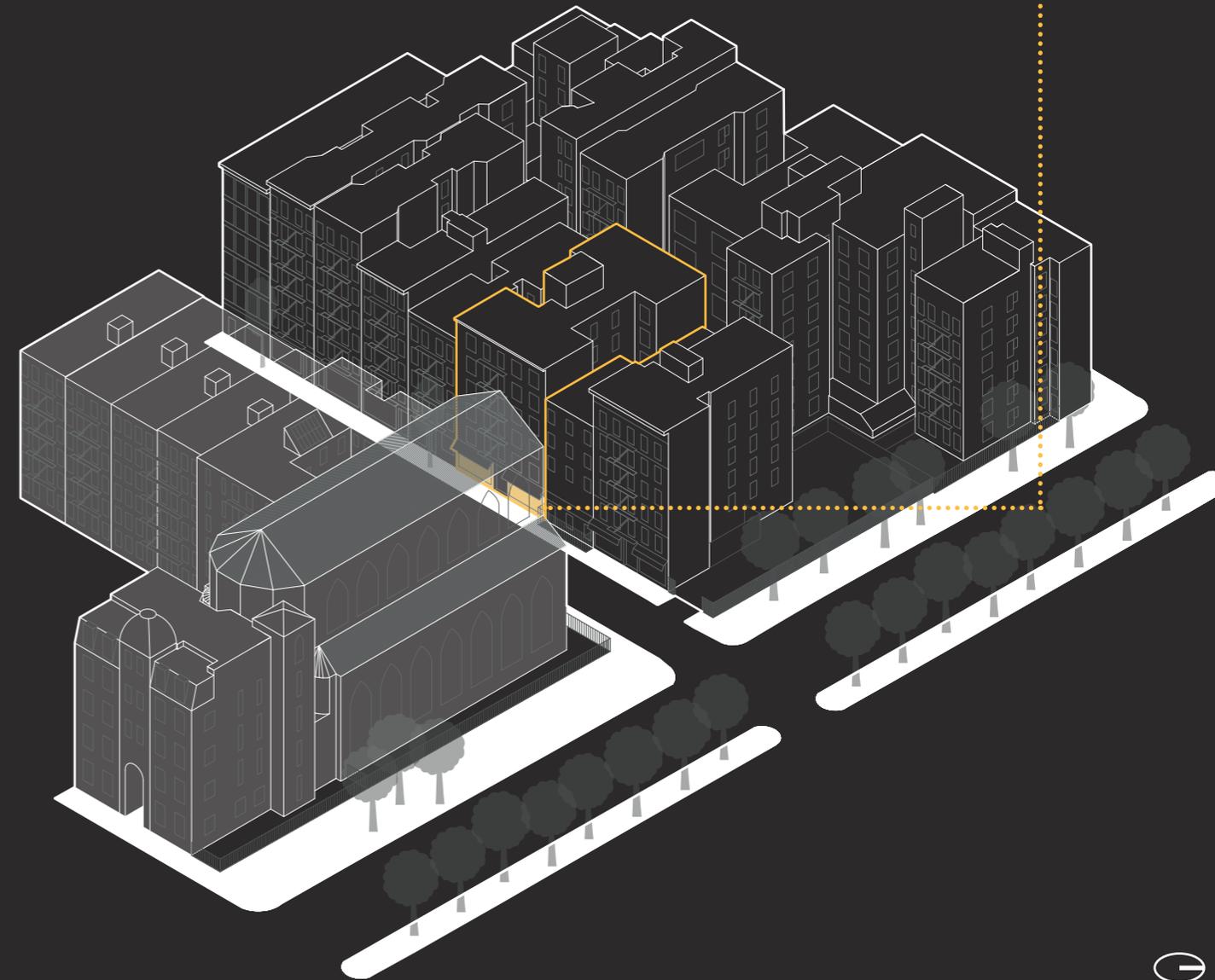
The building has no physical separation from the public street, which is car-transit's one



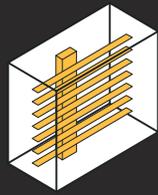
The building has no parking spaces dedicated to residents



The building is an entirely residential building, allowing no residents to access only to ground floor retails



DISTRIBUTION



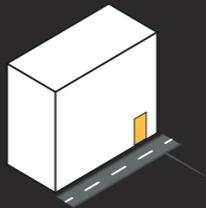
The distribution is organized around a vertical core and a corridor for each floor

CONNECTIVE SPACE



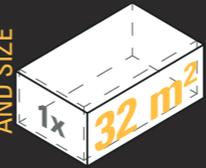
The connective space is not meant as usable for stationary activities, but only as a servant space

ACCESS



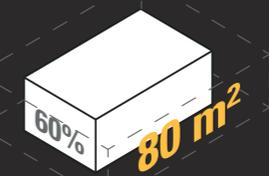
The access to the building happens directly from the street

UNITS' QUANTITY AND SIZE



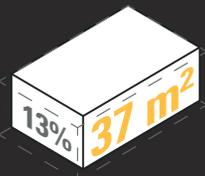
The apartment measures 32 m², but its trasformable spaces make more functions fit in it

UNIT/AVERAGE SIZE RATIO



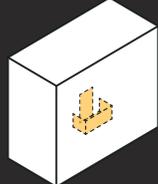
The unit is 60% smaller than the average size of the houses in the city, which stands at 80 m²

UNIT/LAW SIZE RATIO



The unit is 13% smaller than the minimum size of 37 m² required by NYC codes for dwelling units

OPEN AREAS



No proper open area in the building is granted, but the classic newyorkese emergency stairs could be used

SERVICES / AMENITIES



All the services and amenities (projector room, guest room, office and more) are placed inside the single unit

OPEN AREAS



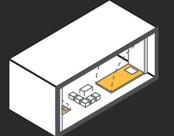
The unit's users could use the classic newyorkese emergency stairs as balcony, even if improperly

OFFSETTING SOLUTIONS

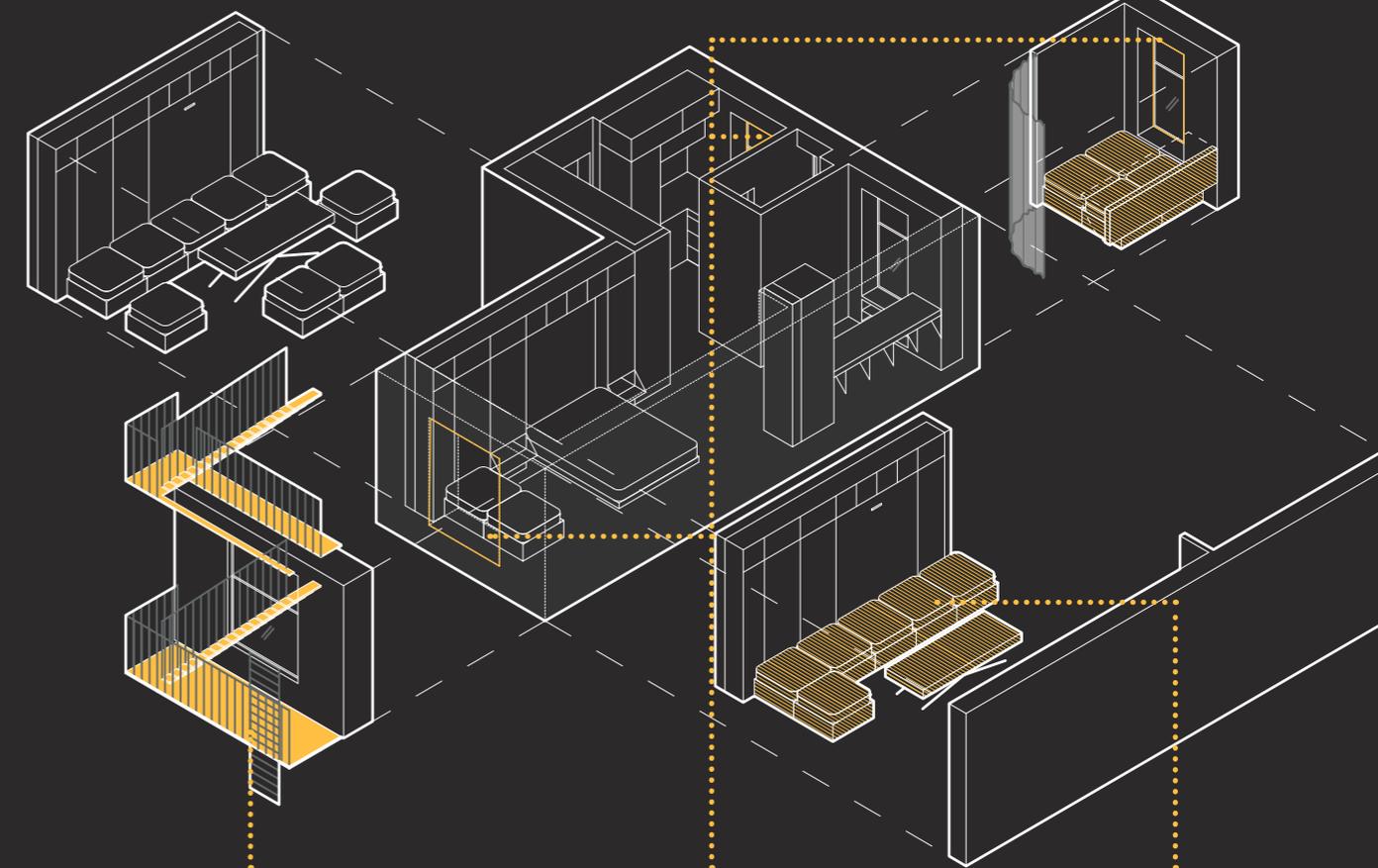


Although the small size of the unit, the apartment has 3 windows. Further, the unit uses mainly light wood and white

FURNITURE



The unit is totally furnished with built-in, convertible furniture, and with a movable curtain for dividing rooms





Photographs credit: Christopher Testani

The project, wanted by the same client, in the same building, with the same goal of Life Edited 1, could not be extremely different from the first version. Although this time dimensions are shrunk more and the L-shaped form is delicate to manage, the overall strategy is the same: providing different rooms with different uses all packed inside the small area, and making them usable alternatively and not together. The tools chosen for crafting the idea, this time, are multiple sofas with storage compartments underneath; the squared sofas are smaller than a regular one-piece sofa and easier to move for juxtaposing them and creating a big couch, a twin- to a queen-sized bed, some single couches or combinations of these solutions.

Instead of repeating the “white-ness” of Life Edited 1, this time an oak wood is used for the floor, and shades of grey are applied to parts of the furniture and of wall finishes. This choice dampens a bit the light entering from the 3 windows, even if the apartment still remains bright enough for the everyday life.

Materials used in the renovation are again premium-level ones, and this grew the price for the renovation and, consequently, for the selling of the apartment. Other than built-in, tailor-made furniture, the apartment is actually a smart house, equipped with solutions for the remote controls of aspects of the house. Hill himself said “I ended up really going overboard and overspending” (Senison, 2018), recognizing that he got carried away.

Again the iron emergency stairs compensate for the absence of a private outdoor space and could be used by tenants of the apartment as a balcony since the local laws allow the use of them as a stationary place.

In conclusion, the apartment successfully deals with the lack of floor area but only from a spatial point of view, since it assumes more the character of an exercise in style rather than a tentative for offering the right of choice where to live to middle-income people in skyrocketing markets. As the Life Edited 1 project, it seems that the economic side and affordable character of the micro-unit phenomenon are left and forgotten, designing an architecture for architects, rather than for people.

¹ The starting year is referred to the document submission to NYC Department of Buildings. It has been found no document stating when the overall process, early design stage included, started.

² D14, or Directive 14, is a program which allows renovation projects not proposing “a change to use, egress, or occupancy or any other change that might affect the Certificate of Occupancy” to be self-certified by the applicants (Chandler, 2016)

* In the building drawing: Life Edited 1 and Life Edited 2 units are part of the same building. For representation reasons they are drawn both at the first level, but only Life Edited 1 actually is, while the other is at an upper floor.



Arcade Providence
 Northeast Collaborative Architects
 Providence, United States of America
 2008-2012 (1828 building)

The Arcade Providence is the America's oldest shopping mall has been turned, in 2012, into a building hosting 48 micro-unit apartments. Although the historic relevance of the building that makes it be designated as a National Historic Landmark in 1976, it was left vacant. Furthermore, as could be seen in historical pictures, the upper floors have never been a great success for retails. The renovation thus transformed those floors into micro-units.

The development is located in the Providence Downtown and is meant as a Neighborhood within a Neighborhood by offering small retail shops at the ground floor and dwellings on the upper ones. (Congress for the New Urbanism, n.d.; Northeast Collaborative Architects, n.d.)

Card's main sources

Congress for the New Urbanism. n.d. "Micro Lofts at the Arcade Providence". CNU
 Northeast Collaborative Architects. n.d. "Micro Lofts at The Arcade Providence". NCA - Northeast Collaborative Architects
 Dirksen. 2015. "Oldest US mall blends old/modern with 225-sq-ft micro lofts". Fair Companies
 Lopez. 2016. "America's Oldest Shopping Mall has been Transformed into Micro-Units". *ArchDaily*.
 The Arcade Providence. n.d. "Microliving in the heart of downtown Providence". The Arcade Providence. A Historic Revival
 Whitlow, Hewlett, Ruiz, & Witten. 2014. *The macro-view on micro-units*. Washington D.C.



PROCESS

130 Westminster St Assoc LLC - owner
Northeast Collaborative Arch. - designers

Main Actors

Registered as "rooming houses" for building units up to 7.5 m² as long as no cooking equipment is provided

Overrides

No registered compliants were found, nor conflicts were reported in the news

Conflicts

USES



The building offers 2'373 m² of developed floor area as residential spaces, 2980 m² as retail space, and 177 m² as communal spaces



The building occupies 1'600 m² (100%) of the site, and offers a total of 5'523 m² of floor area, developing 345% of the site area

MANAGE

Long-term Rents



The units are rented for long term periods without any restriction to applicants

Units are rented for 550 \$/month, equivalent to 470 €/month, 21 €/m², which is 57% of 972 \$, the average studio rent in the city

No subsidizing nor financing programs have been adopted



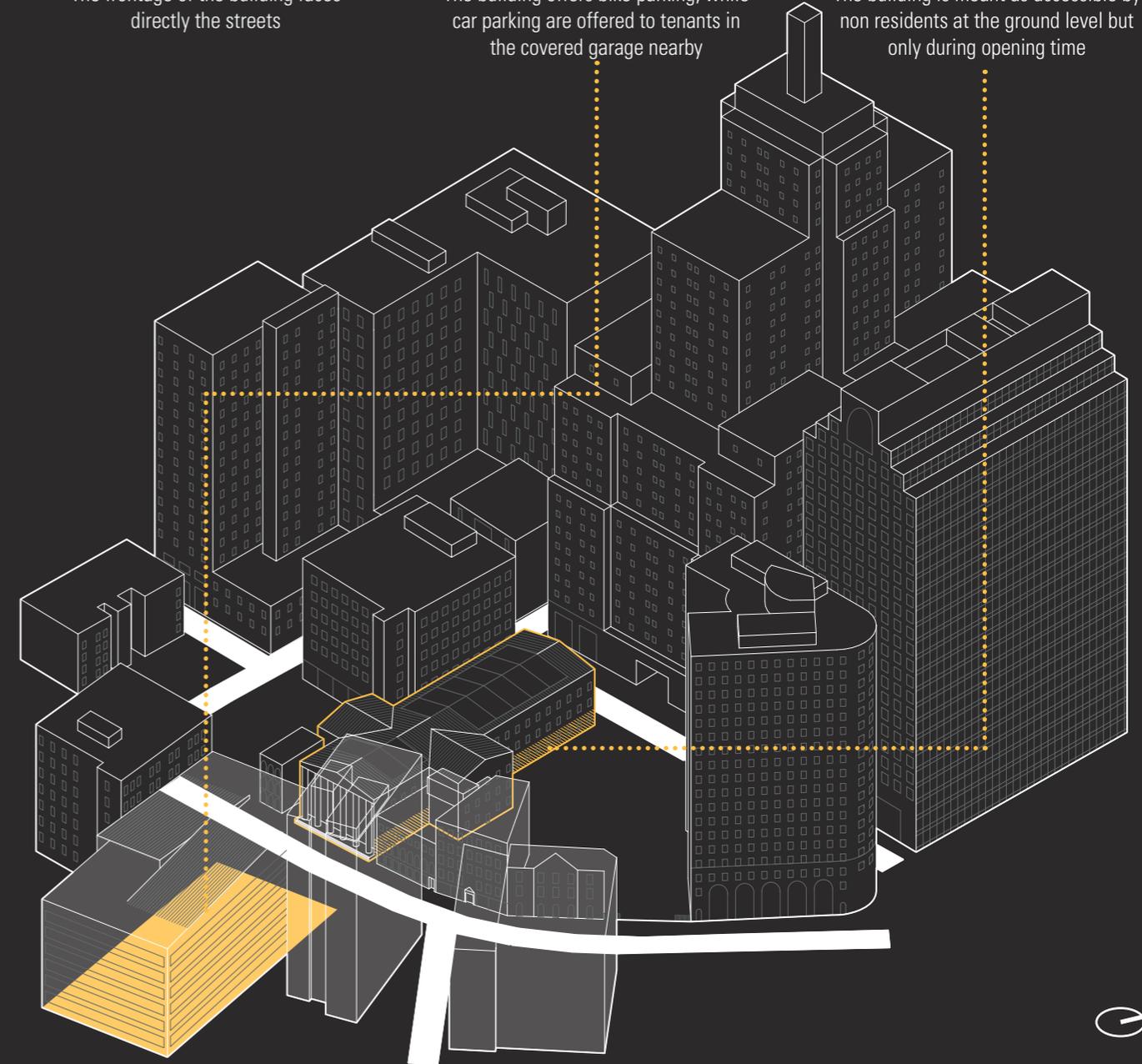
SEPARATION FROM THE STREET
The frontage of the building faces directly the streets



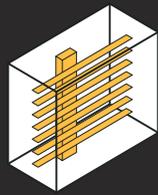
PARKING
The building offers bike parking, while car parking are offered to tenants in the covered garage nearby



ACCESSIBILITY
The building is meant as accessible by non residents at the ground level but only during opening time

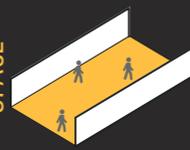


DISTRIBUTION



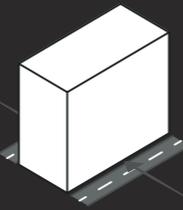
The building has multiple distribution, but all of vertical core with corridors type

CONNECTIVE SPACE



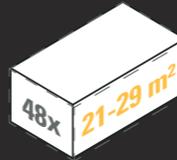
The connective space in the building has only distributive purpose and it is not meant for stationary activities

ACCESS



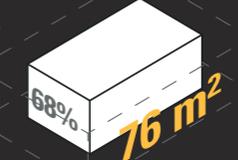
The main accesses to the building are placed on the two main facades

UNITS' QUANTITY AND SIZE



The building offers 48 micro-units ranging in size between 21 and 29 m²

UNIT/AVERAGE SIZE RATIO

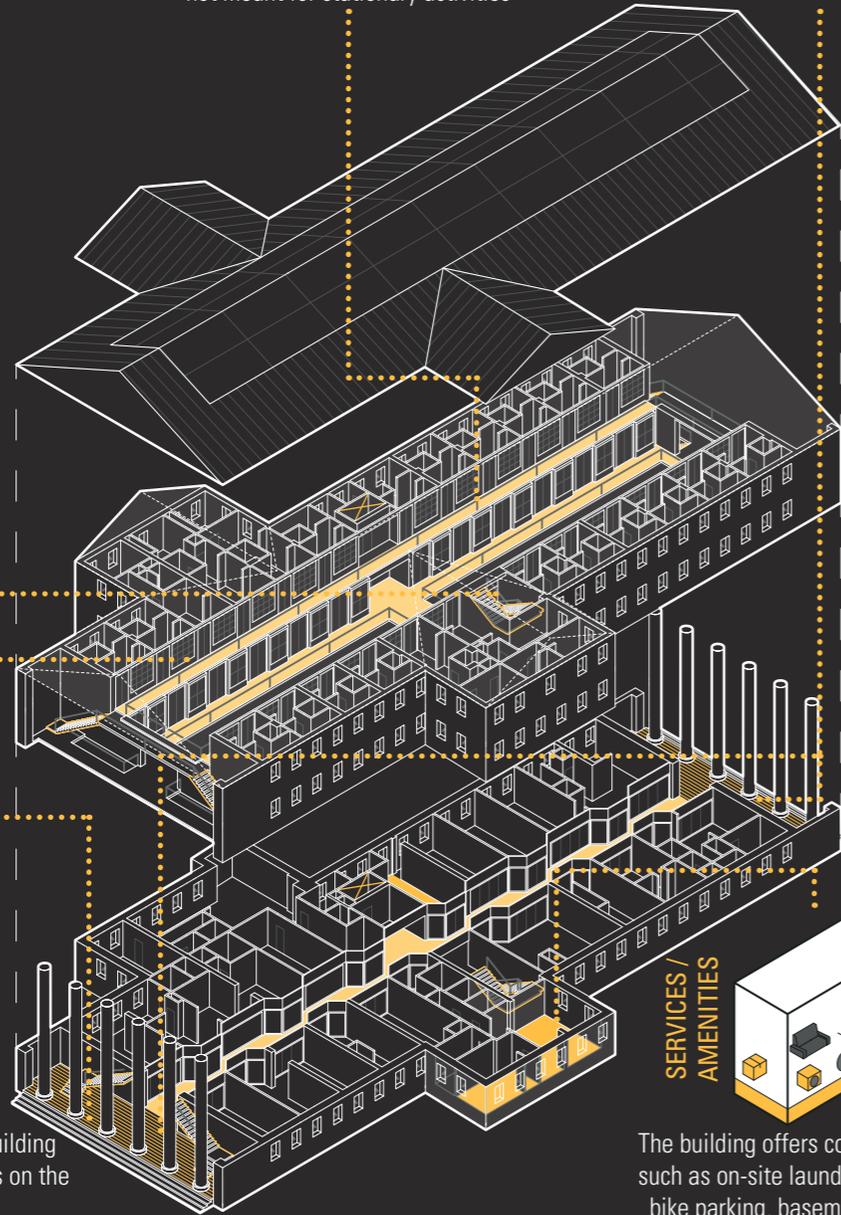


The unit is 68% smaller than the average size of the houses in the city, which stands at 76 m²

UNIT/LAW SIZE RATIO



The unit is bigger than the minimum size required by local code, which is 14 m² for first tenant and 12 m² for others

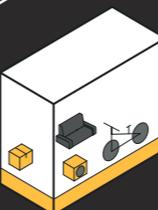


OPEN AREAS



The only outdoor spaces the building has are the two covered porches on the entrances

SERVICES / AMENITIES



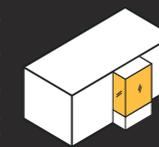
The building offers communal spaces such as on-site laundry, relax spaces, bike parking, basement storages,...

OPEN AREAS



Units does not provide any exclusive open areas

OFFSETTING SOLUTIONS

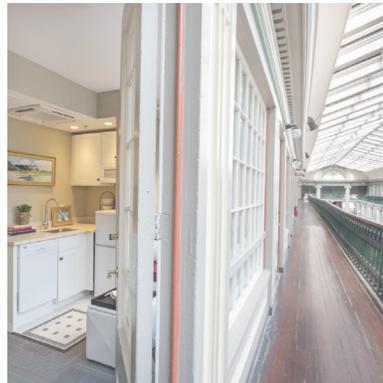
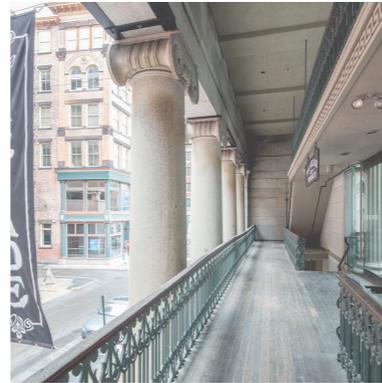


Units compensate the lack of space with a big bow-window for enhancing the natural light

FURNITURE



In some units murphy-beds are provided as convertible furniture



The Arcade Providence is a wise project of renovation. It dealt with a vacant building and changed the uses for better addressing the demand of the area. Indeed, the upper floors of the building never had great success, and shops opened and closed continuously. However, Providence is part of the great urban area of Boston, and only 80 kilometers divide central Providence from Central. Thus, the choice of providing micro-units at reasonable prices in an urban area like this has provided great demands from tenants, with more than 300 applications, other than great interests.

The change of use had although to deal with limits of the law. For shrinking the size of the apartments the units had to be registered as rooming houses. By doing this way, however, the law forbids to place in the unit any cooking appliances like oven or stoves, so the only allowed ones that have been placed are a microwave and a fridge, allowing to cook basic meals. However, the central position of the building and the presence of numerous retail spaces allow for different alternatives.

To renters is offered also a parking space in a nearby garage, however few of them are interested in it since most of them are young professionals working nearby or moving by trains.

Units vary in size, according to the layout of the building envelope and the structure, however they range between 20 and 27 m². Some of them also offer twin murphy beds for guests, transforming the unit.

The units have big windows facing the interior side of the building. If this strategy allows to always have indirect light from the skylight on the roof of the Arcade, it generates a problem of privacy, with the most exposed part facing the distributive gallery and having the opposite unit not so much distant.

In conclusion, the Arcade is an example of conversion that efficiently took advantage of the opportunities its location offers by choosing a proper new use to fill in and well considering the conditions from which it was surrounded. Keeping rents low also helped in the success of the project, which became an attractive solution for different kinds of users.

Photographs credit: Ben Jacobsen



388 Fulton

David Backer Architects

San Francisco, United States of America

2013¹-2016

Placed in the vibrant SoMa district, the building in Fulton street continues the operation of filling the urban voids generated by the Central Freeway's removal. Its position and the building on the other side of the street determined the form: a curve envelope on the crossroad so that the City Hall dome is framed. The project moves the main entrance to the secure backyard and leaves the frontage on the ground floor for retail spaces. The choice of positioning the outdoor green space for entrance and relax on the back of the building is determined also by the study of the heat and solar radiation, which shaped the shading system.

The City's policies contributed to determine the building's program: nearly 40% of the apartments are two-bedroom for allowing families to live in new developments, and 8 units are subsidized in the Below Market Rate Program. (David Baker Architects, s.d.)

Card's main sources

City and County of San Francisco. 2012. *Planning Code Amendment. Ordinance No. 242-12*. San Francisco

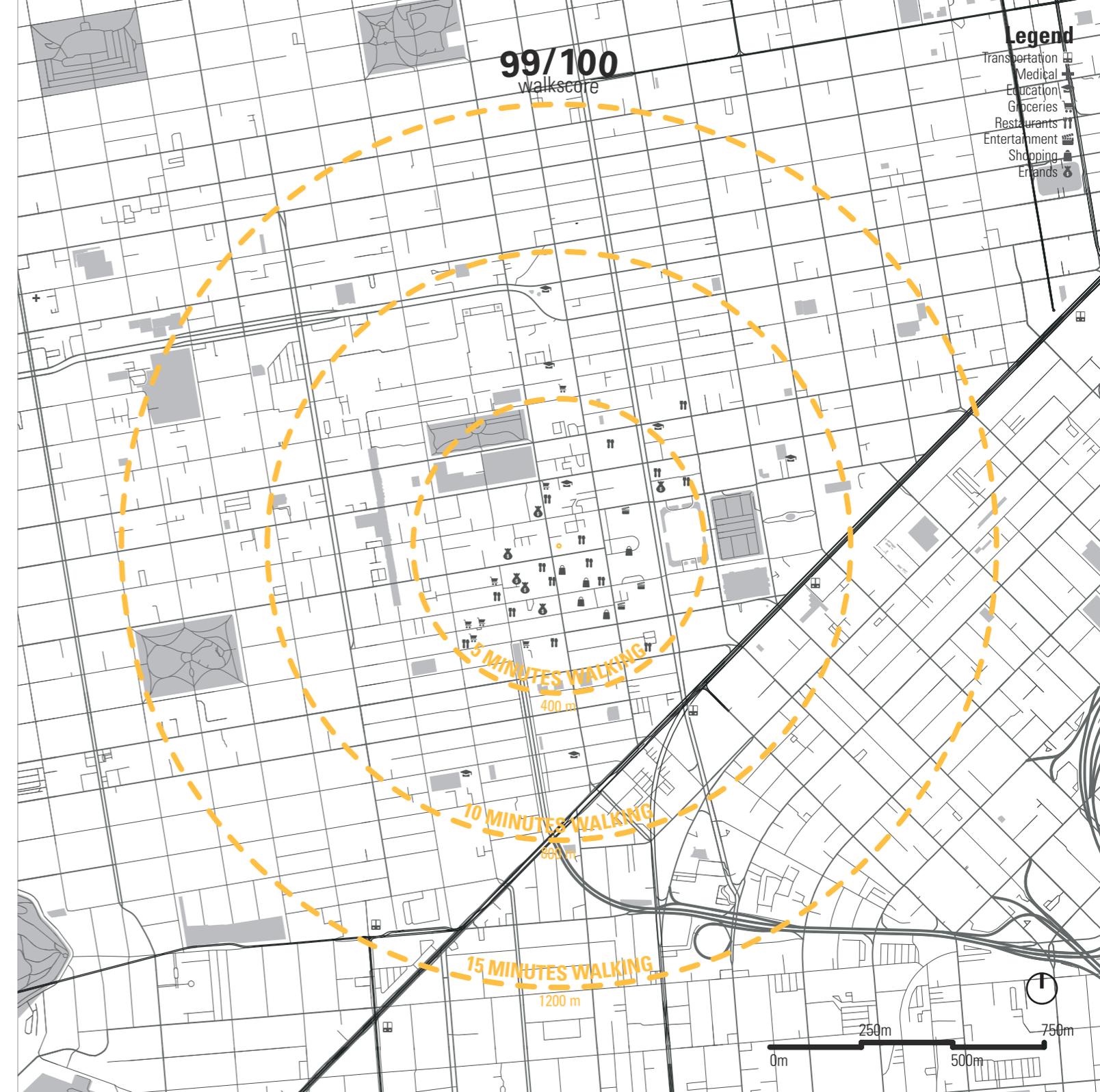
City and County of San Francisco. 2018. *Inclusionary Affordable Housing Program. Monitoring and Procedures Manual*. San Francisco

David Baker Architects. n.d. "388 Fulton". David Baker Architects

Gabbe. 2015. "Looking through the lens of size: Land Use Regulations and Micro-apartments in San Francisco". *Cityscape: A Journal of Policy Development and Research*, 17(2), 223-237.

San Francisco Government. 2016. "BMR Ownership Units: 388 Fulton Street". San Francisco Mayor's Office of Housing and Community Development

Zillow Group. n.d. *Zillow*.



PROCESS

7x7 Development - developer
Walk SF, SF Bicycle Coalition - sponsors
David Baker Architects - designer

Main Actors

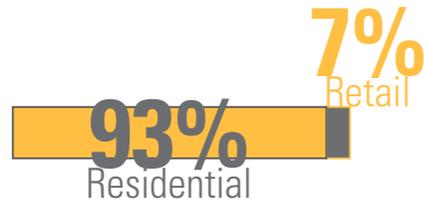
No overrides were registered since San Francisco's government already took the size limit to 20 m² in 2012

Overrides

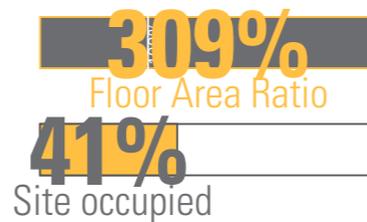
No conflicts were registered in the official SF Department of Building Inspection's archive

Conflicts

USES



The building offers 4'365 m² of residential spaces, comprehensive of common spaces, and 350m² of retail and commercial spaces



The building occupies 630 m² (41%) of the site, and offers a total of 4'715 m² of floor area, developing 309% of the site area

MANAGE

Sold
in private negotiation

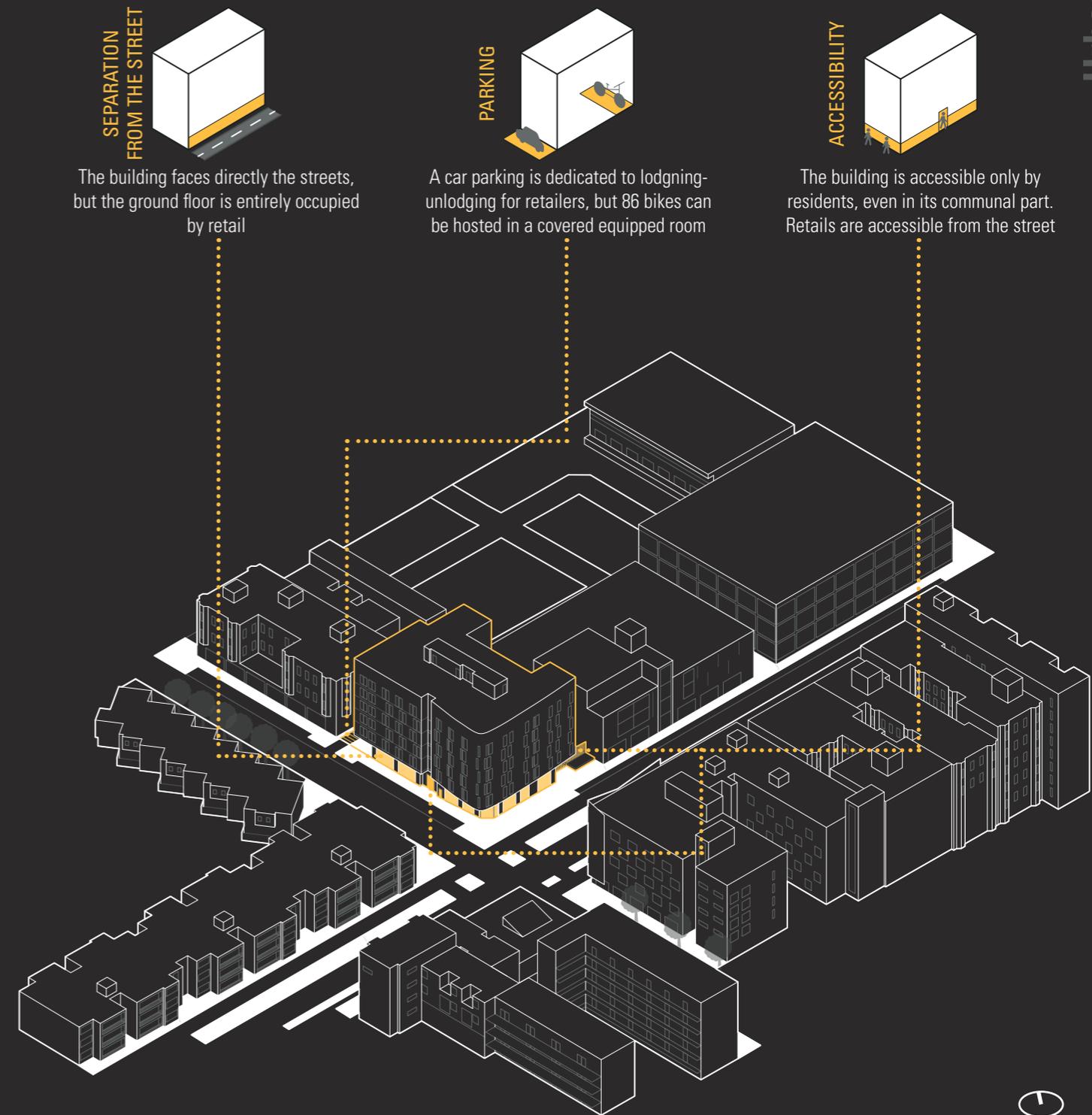
The units has been sold from 2017 on, partly in private negotiations and partly at reduced prices

425k € sold
14k €/m²
83% of Average Studio price in the city

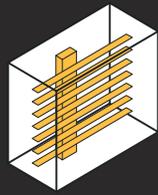
Studios have been sold for 500'000 \$, equivalent to 424'700 €, 14'160 €/m² which is 83% of 600'000\$, the average studio price in the city

Inclusionary Housing
BMR

8 units (of which 4 micro-units) were listed by San Francisco's MOHCD² in the Inclusionary Housing Below Market Rate Program



DISTRIBUTION



The distribution is organized around two vertical cores that bring to one C-shaped corridor for each floor

CONNECTIVE SPACE



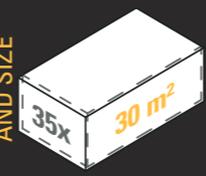
The connective space in the building is not designed for being used also for stationary activities

ACCESS



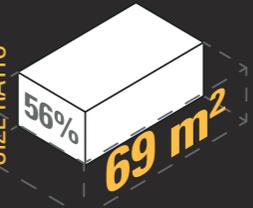
The main access to the building is moved to the backyard, although small entrance facing the street is kept

UNITS' QUANTITY AND SIZE



The building has 69 units, 35 of them are 30 m² micro-units, while the others are larger for complying city's policies

UNIT/AVERAGE SIZE/RATIO



The units are 56% smaller than the average size of the houses in the city, which stands at 69 m²

UNIT/LAW SIZE RATIO



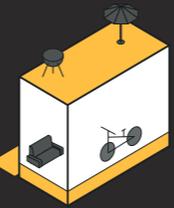
The units are compliant with local codes asking for at least a 20 m² sized unit with 7 m² for kitchen and bathroom

OPEN AREAS



The building offers more than 500 m² of open areas, 11% of the total, between the courtyard and the terrace

SERVICES/AMENITIES



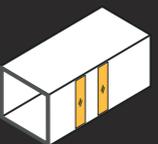
BBQ equipped terrace, lounge area, relax courtyard and bikes parking equipped for maintenance are present

OPEN AREAS



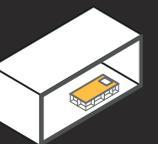
Units have no outdoor private space, devolving this service to communal spaces

OFFSETTING SOLUTIONS

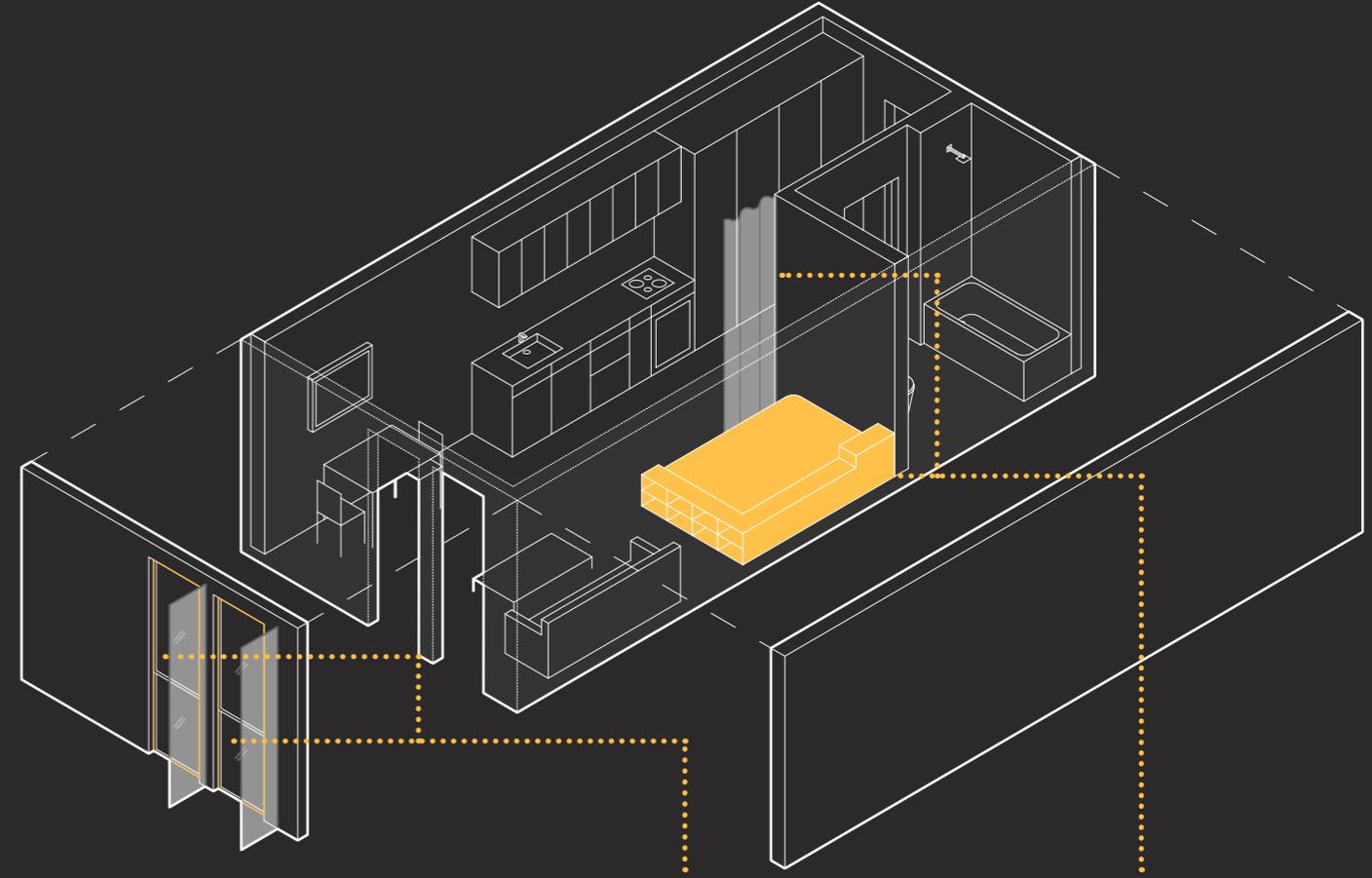
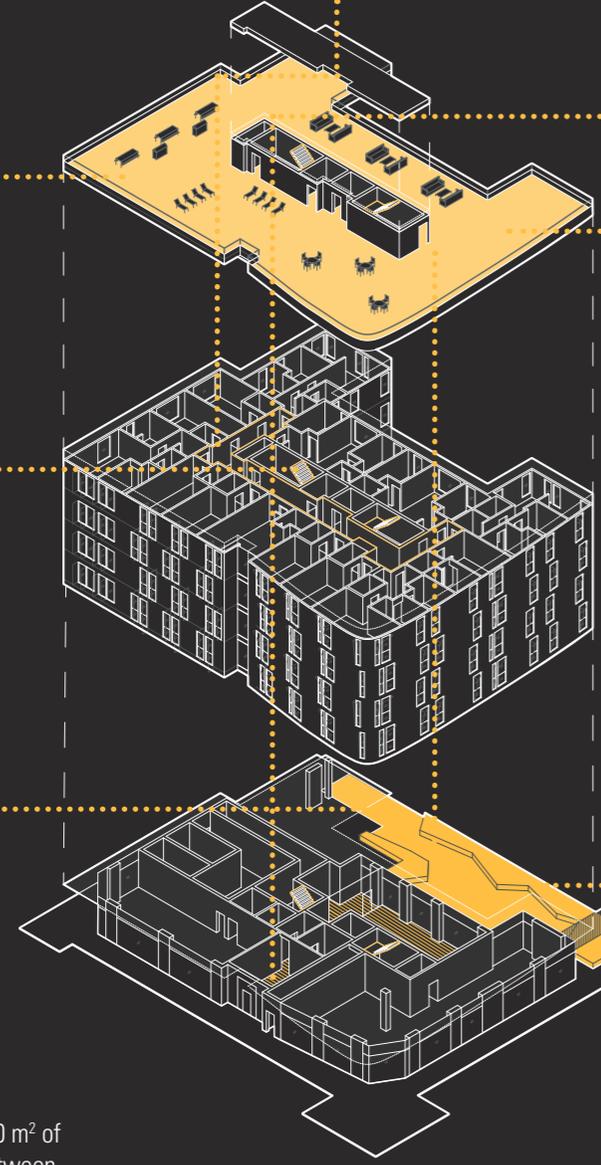


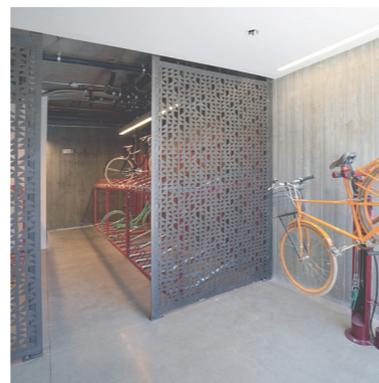
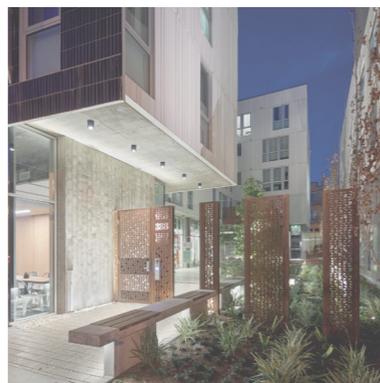
Each unit provides two high windows for compensating the size, making the units light-filled

FURNITURE



The units have built-in furniture mixing different uses (bed and storage), while they use a curtain as separation





Divided into two different volumes, one straight and white and the other curved and grey, the building is a medium scale development in the core of San Francisco, which allows the building to be well connected to almost all the basic services for the daily life with just a short walk, willing to attract young tech-workforce. The proximity of services avoids the need for a car, and in fact the building does not provide any car parking for residents, while it offers a covered bike parking equipped for maintenance with a 1:1 bike-tenant ratio. A small car parking is provided for retail spaces on the ground floor, in particular for facilitating the loading and unloading.

Like the bike parking, the other communal spaces and services inside the building are quite basic but enjoyable services: the backyard where the main entrance is located provides a shaded garden space where relaxing, while the panoramic terrace offers benches, sofas, and BBQ equipment. These areas are usable by residents without extra costs.

The single units are not very innovative, with mostly regular furniture and layouts; however, the choice of providing all units with at least two full-height windows and the predominance of the white color make the units filled with natural light, even in the furthest points. Furthermore, the attention to the shading system, designed with the help of computer analysis, protect from the strong Californian sunrays and increases the level of comfort of the inhabitants.

The designation of 8 units as part of the Below Market Rate Inclusionary Housing Program is determined by the City's policies³. It is interesting that there is no difference between the units designated for the BMR Program and the ones dedicated to the market, neither in size, position or services offered to users.

In conclusion, the project provides some interesting insights, especially in the approach to the conditions of the site, researching calm in the entrance moved on the back or in the attention to the local climate conditions. It could be said that the building does it works, offering a good number of unit in a central area, without filling it too much with unnecessary services and premium materials that have the only result of increasing prices.

¹ The starting year reported refers to the building permit submission. It has been found no document stating when the overall process, early design stage included, started.

² MOHCD is the abbreviation for Mayor's Office of Housing and Community Development

³ The Inclusionary Housing Program requires developers that build market-rate housing to provide affordable housing by paying a fee or dedicating a percentage of the units built as affordable housing in municipal programs. (City and County of San Francisco, 2018)

Photographs credit: Bruce Damonte



Cityspace 38 Harriet

Lowney Architecture
San Francisco, United States of America
2013

Cityspace 38 Harriet is the first of a series of micro-units building designed and developed by Panoramic Interests, which research is concentrated on this typology. It is located in the SoMa neighborhood and it is composed of prefab modules which made it possible to erect the building on-site in only four days.

The building offers 23 micro-units, each of them with a bow-window (characteristic element of San Francisco's housing), a covered bike parking for users, and an outdoor space in the backyard with greeneries and benches for relaxing.

The City's policies determined the designation of 5 units as affordable in the Inclusionary Affordable Housing Program, and they were listed in the DAHLIA Portal with subsidized rent for the lottery selection among the applicants. (Panoramic Interests, n.d.; San Francisco Government, n.d.)

Card's main sources

- City and County of San Francisco. 2012. *Planning Code Amendment. Ordinance No. 242-12*. San Francisco
- City and County of San Francisco. 2018. *Inclusionary Affordable Housing Program. Monitoring and Procedures Manual*. San Francisco
- Gabbe. 2015. "Looking through the lens of size: Land Use Regulations and Micro-apartments in San Francisco". *Cityscape: A Journal of Policy Development and Research*, 17(2), 223-237.
- Panoramic Interests. n.d. "Cityspace® 38 Harriet". Panoramic Interests
- San Francisco Government. n.d. "38 Harriet Street". DAHLIA San Francisco Housing Portal.
- Zillow Group. n.d. *Zillow*.



PROCESS

Panoramic Interests - developer + designer
CCA¹ - client/first lessee
SF Dep. of Building Inspection - public actor

Main Actors

Registered as Student Housing, the destination of use has been changed in Apartments (SRO) in 2018

Overrides

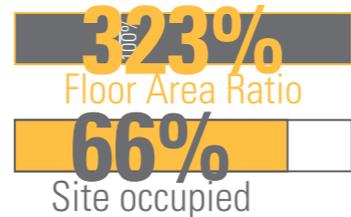
Complaints were raised only regarding the noise produced by the construction works

Conflicts

USES



The building offers all its 1'067 m² of developed floor area as residential spaces



The building occupies 267 m² (81%) of the site, and offers a total of 1'067 m² of floor area, developing 323% of the site area

MANAGE

Rented

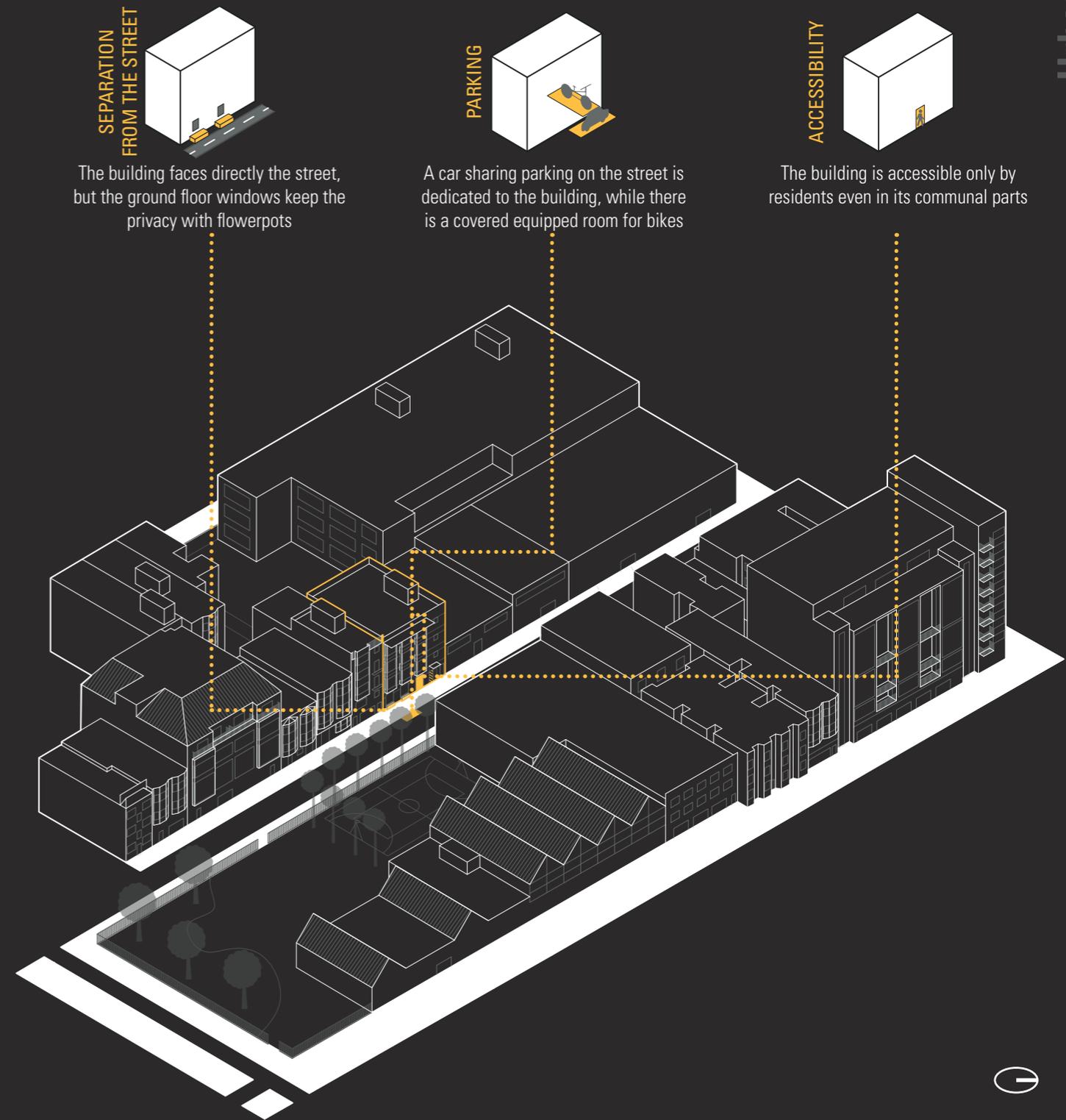
The units are rented both at market rate prices and at affordable prices due to subsidizing programs



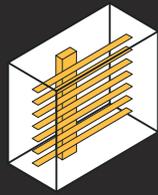
Studios' rents are 1'600 \$/month, equivalent to 1'353 €/month, 50 €/m², which is 77% of 2'075 \$, the average studio rent in San Francisco

Inclusionary Affordable Housing Program

A total of 5 units were listed by the city of San Francisco in the Inclusionary Affordable Housing Program



DISTRIBUTION



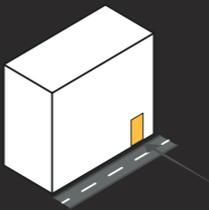
The distribution is organized around two vertical cores that bring to one corridor for each floor

CONNECTIVE SPACE



The connective space in the building is not designed for being used also for stationary activities

ACCESS



The entrances are differentiated for pedestrians and bikes

UNITS' QUANTITY AND SIZE



The building has 23 units of 27 m² distributed along its four floors

UNIT/AVERAGE SIZE RATIO

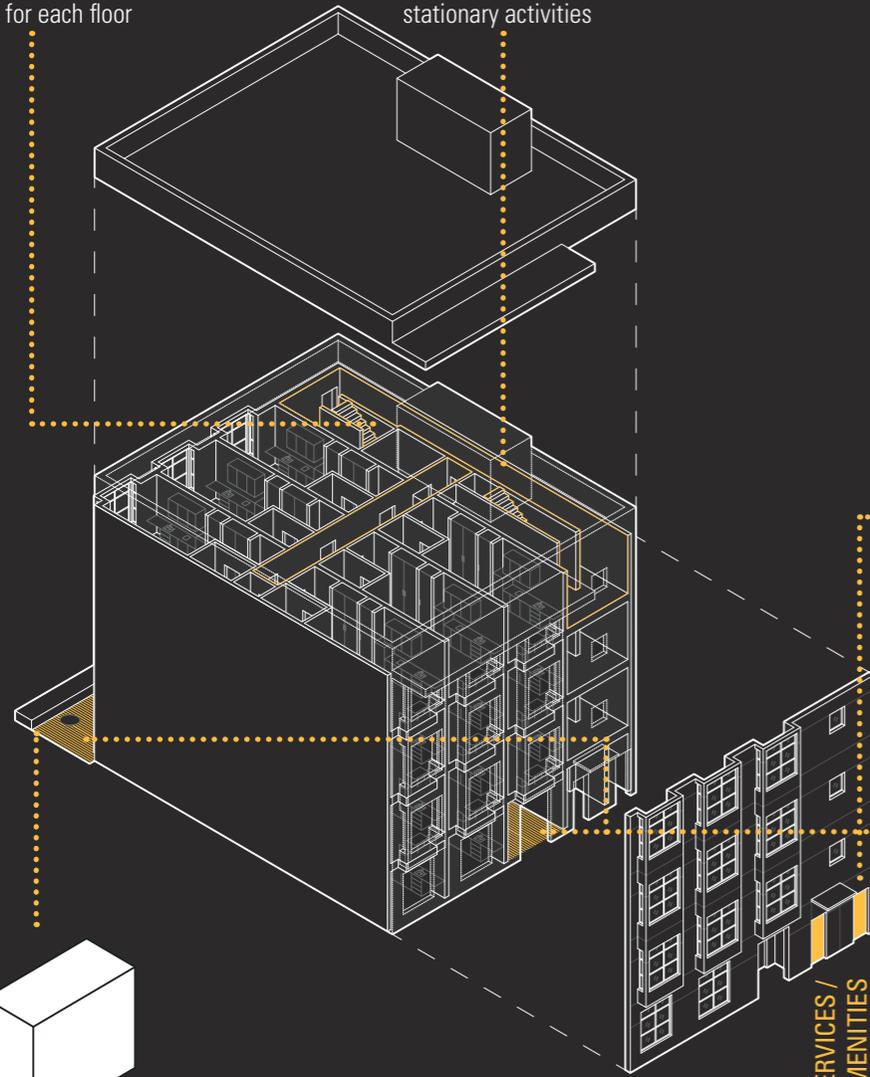


The unit is 60% smaller than the average size of the houses in the city, which stands at 69 m²

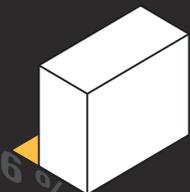
UNIT/LAW SIZE RATIO



The unit is larger than the minimum size of 20 m² requested by local codes, which is already a small size

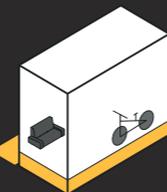


OPEN AREAS



The building provides ___m² of open areas, the ___% of the total, all located in the backyard

SERVICES / AMENITIES



The building offers, as communal spaces, only a relax space in the backyard and a covered bike parking

OPEN AREAS



The unit does not offer private outdoor space, devolving it to the communal spaces

OFFSETTING SOLUTIONS

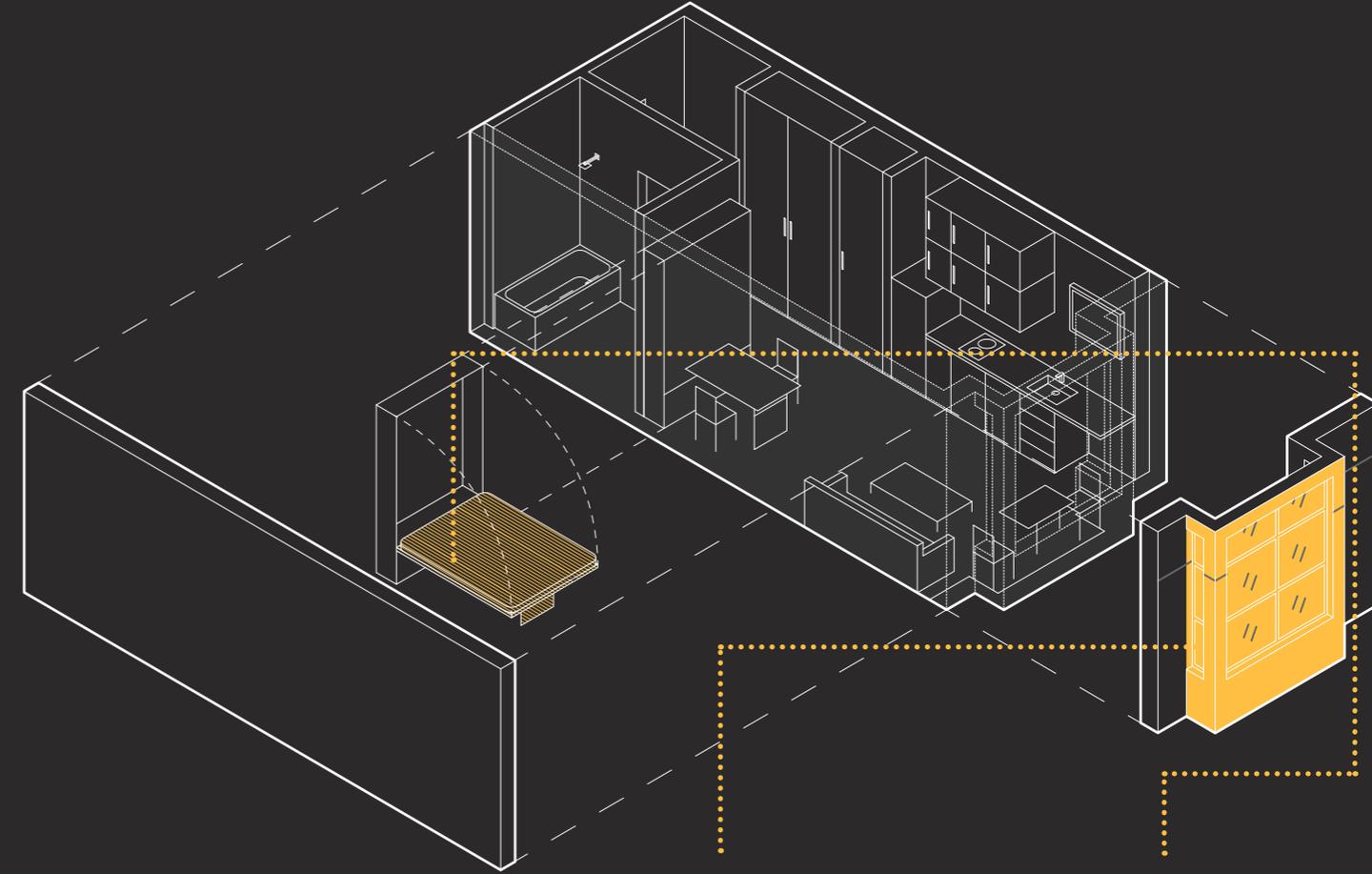


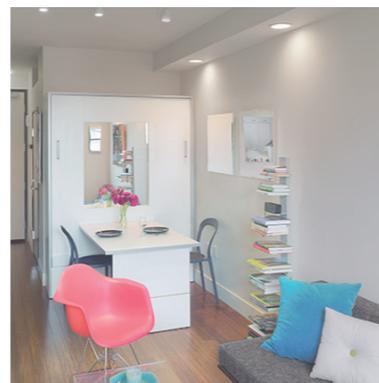
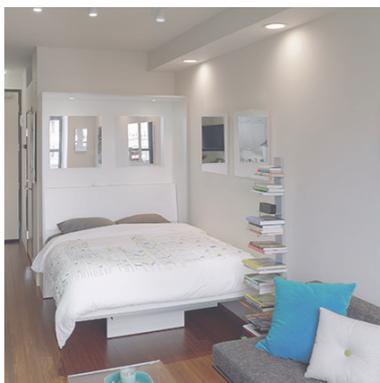
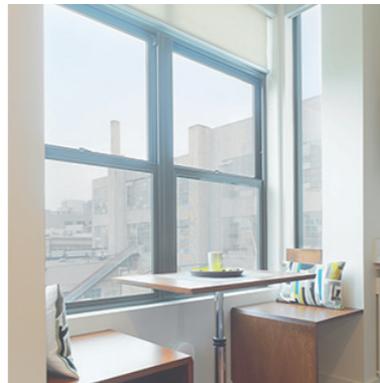
An almost full-height bow window provides natural light fill the unit

FURNITURE



The unit has built-in furniture, some of which convertible for optimizing space





The project in Harriet Street could seem an anonymous building with its simple geometry and envelope, with its basic distribution, and with the absence of any extra space; instead, the technology of the building really worked with its intentions, making the building fast to be erected and cheaper. The choice brought down costs of the rents too, which are more than 20% lower than the average rents for a classic studio.

Keeping costs and rents low is probably the cause for the choice of using standard furniture inside the single units, where, even with the presence of a murphy bed, the different elements are not linked or integrated one to the other. The repetition of the table, the sofa not part of the murphy bed, and the full-size kitchen steal precious floor area to other missing elements or to simple movement space. This does not mean the unit does not work, but probably it could be designed better for gaining the most from every (few) square meter.

A whole module is dedicated to the covered secure bike parking, with direct access from the street, which is the only parking usable by tenants. A car parking on the street is dedicated to the building but is reserved for car-sharing services, so no personal cars have a parking space.

The other side of the modular technology adopted are the constraints in the layout, which made vertical distribution occupying more space than what could be used, with the long corridor for each floor siding the double stairs that has connection utility at the ground floor, but then it is repeated without a fundamental role.

The building was firstly designed for the California College of Arts as students' dorm, and few years later converted in ordinary residence after asking a change of use conversion to the Department of Building Inspection.

In conclusion, the project successfully reached its goals, being an efficient building for users with difficulties in renting a house on their own but eager of living alone where they want. The choice of betting on the building technology rather than on the appearance has worked, and in fact, developers already designed and built several other versions of Cityspace in various points of the city.

Photographs credit: *Lowney Architecture*

¹ California College of Arts



The Collective at Old Oak

PLP Architecture

London, United Kingdom

2013-2015

Located in North-West London, The Collective Old Oak is the biggest co-living in the world, wanted and built by The Collective Partners LLP. The Company aims to make it easier, for people who arrive in an expensive city, to find a place where to live, to have a workplace, and to know other people and socialize, creating a community, especially for short periods.

The building is composed of two massive volumes shifted, one of them overhanging on the main entrance in front of the river. The volumes contain 550 units and are connected by a services' core. The building hosts retail and commercial spaces too, becoming a city inside a building that the user does not need to get out of. There are two units' types: *twodios*, bedrooms sharing a small kitchenette, and the studios with a private kitchenette inside. (Fondazione Housing Sociale. 2020.)

Card's main sources

Department for Communities and Local Government. 2015. *Technical housing standards – nationally described space standard*. London

Fondazione Housing Sociale. 2020. NUB: New Urban Body - Esperienze di generazione urbana. Torino.

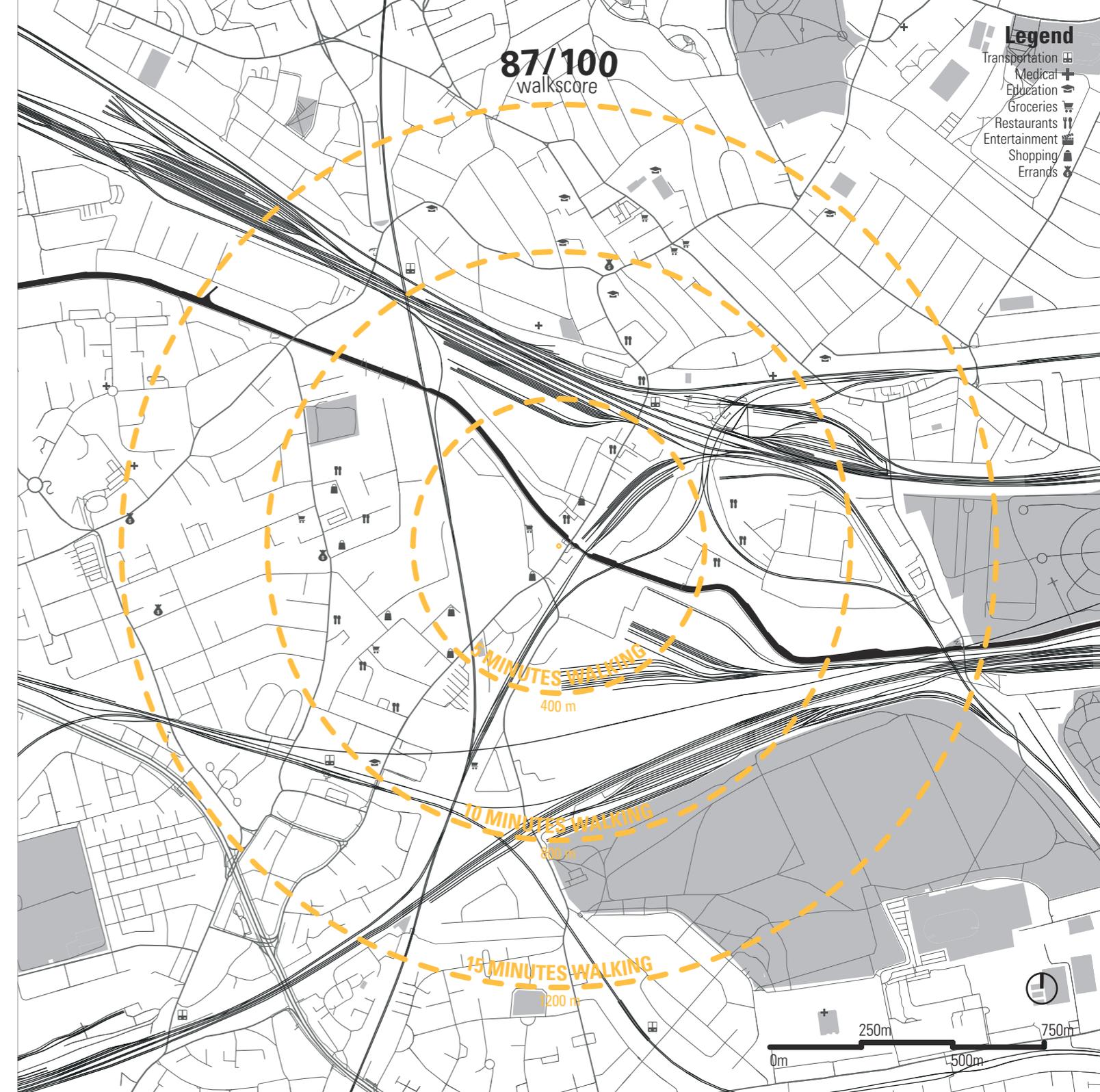
Ealing Council. 2015. *Notice of Planning Decision, P/2014/5775*. London

OnTheMarket plc. n.d. *On The Market*.

PLP Architecture. n.d. "The Collective Old Oak". PLP Architecture

Taylor. 2020. About the size of a London flat. *Office for National Statistics*.

The Collective. n.d. "The Collective Old Oak". *The Collective*.



PROCESS

The Collective - owner/sponsor
PLP Architecture - designer
Ealing Council - public actor

Main Actors

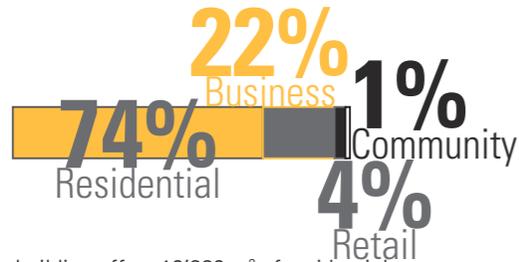
It is registered as student housing, so overrides were needed for allowing young workers to live in it

Overrides

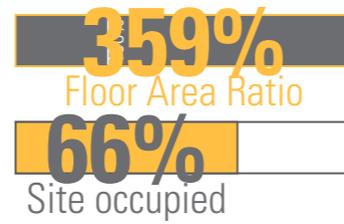
No complaints were registered in the official archives, nor conflicts were reported in the news

Conflicts

USES



The building offers 10'220 m² of residential spaces, 2'953 m² of business spaces, 462 m² of retail and 190 m² of community spaces



The building occupies 2531 m² (66%) of the site, and offers a total of 13'825 m² of floor area, developing 359% of the site area

MANAGE

Rented
 for a minimum
 4-months stay

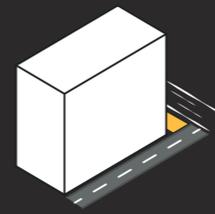
The units are rented for a minimum of 4-months stay. Shorter period could be accepted in an hotel-use formula

1440 €/month
144 €/m²
103% of Average Studio rent in the city

Studios rents are 1'300 £/month, equivalent to 1'440 €/month, 144 €/m², which is 103% of 1'270 €, the average studio rent in the area

Apart from promotions set by the company, no programs in support of buyers or helping the construction process have been found

SEPARATION FROM THE STREET



The building faces the street on one side and the river and a pedestrian plaza on the short side

PARKING

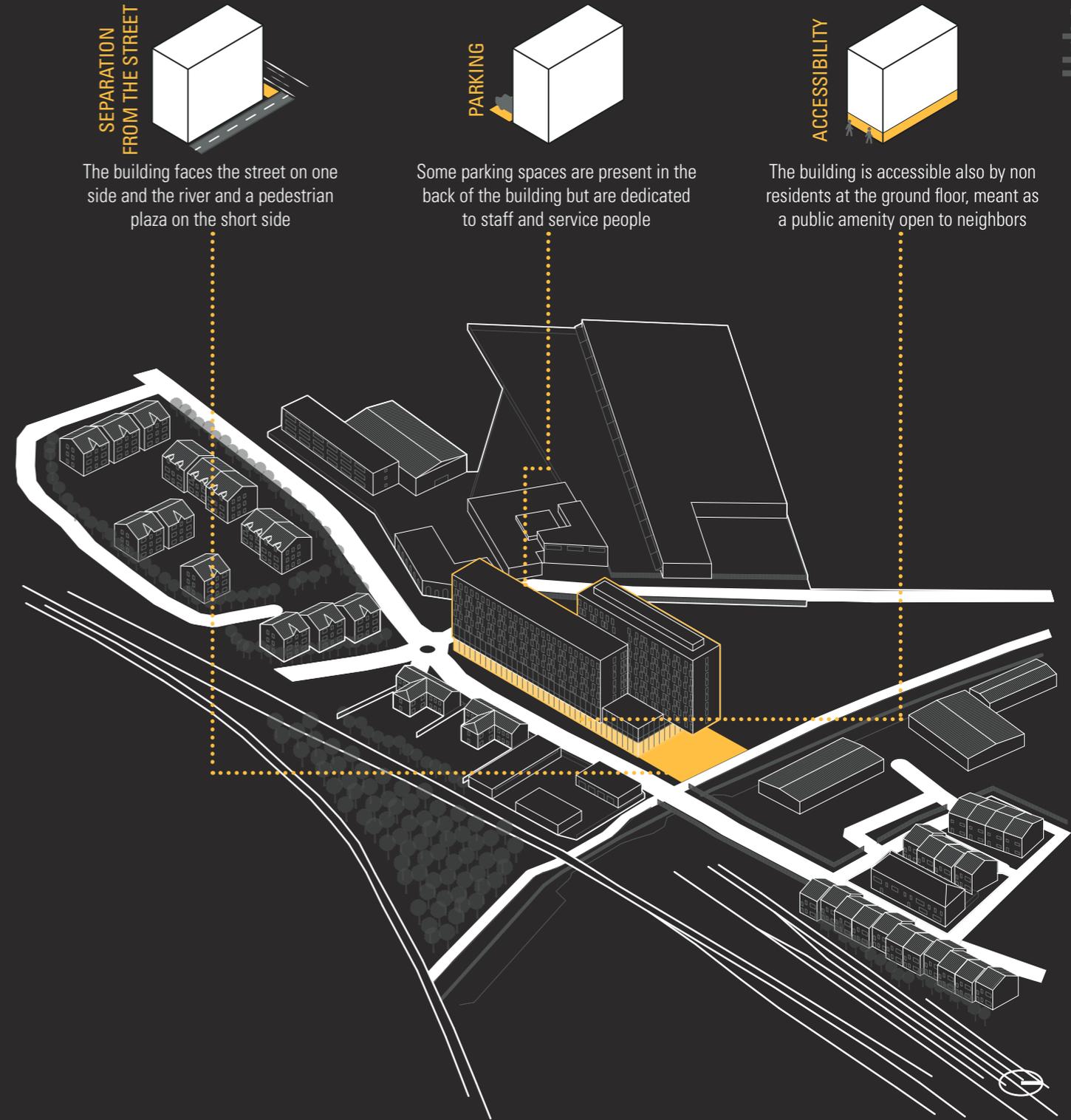


Some parking spaces are present in the back of the building but are dedicated to staff and service people

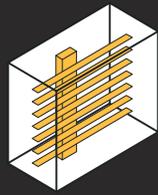
ACCESSIBILITY



The building is accessible also by non residents at the ground floor, meant as a public amenity open to neighbors



DISTRIBUTION



The building distribution is organized in two vertical cores (one for each volume) and long corridors.

CONNECTIVE SPACE



The connective space in the building is not designed for being used also for stationary activities

ACCESS



The main acces is on the pedestrian plaza side, but another secondary access is set on the street side

UNITS' QUANTITY AND SIZE



The building has 550 units, divided between individual units of 10 m² and "twodios" units of 15 m²

UNIT/AVERAGE SIZE RATIO

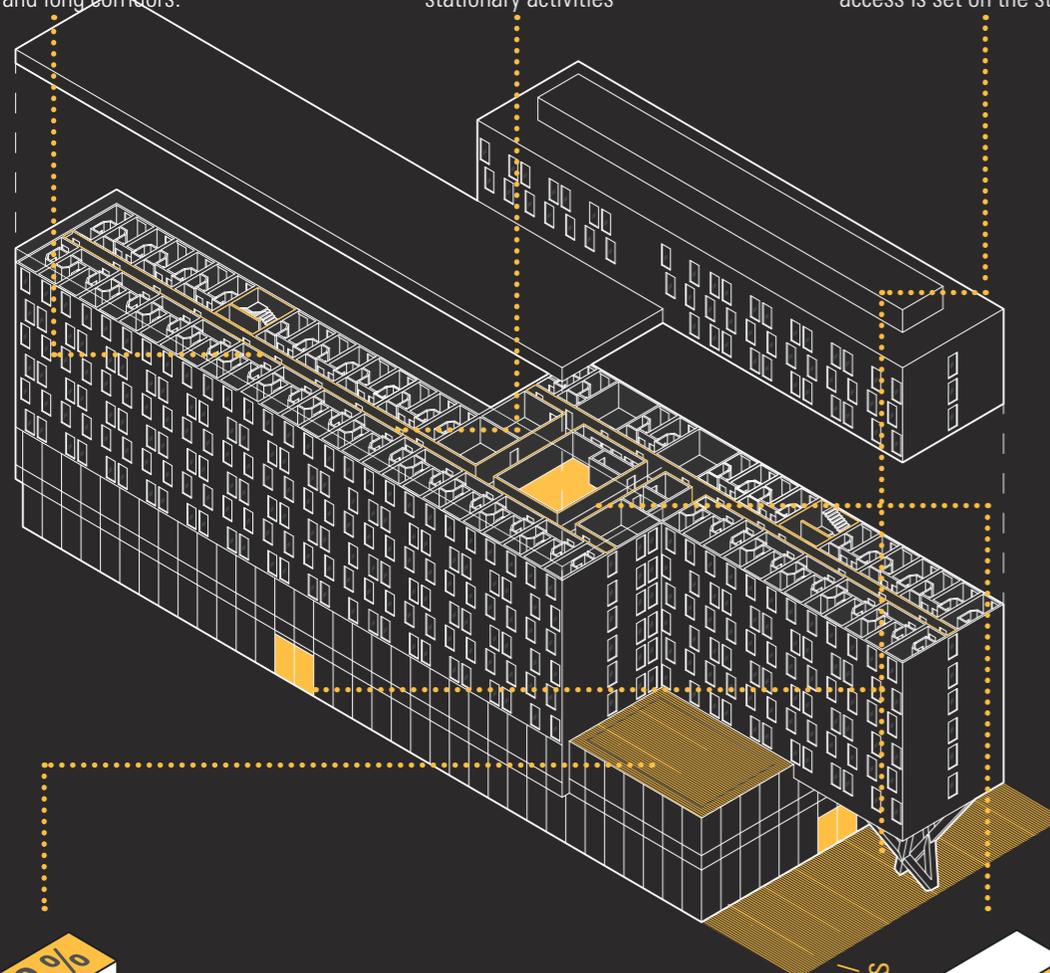


The unit is 86% smaller than the average size of the houses in the city, which stands at 72 m²

UNIT/LAW SIZE RATIO



The unit is 73% smaller than the minimum size of 37 m² requested by local codes

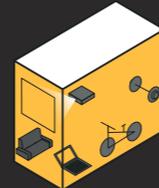


OPEN AREAS



The building offers outdoor communal space in a terrace and in the plaza in front of the building

SERVICES / AMENITIES



The building offers many extra communal spaces distributed in the whole building

OPEN AREAS



Units have no outdoor private space, devolving this service to communal spaces

OFFSETTING SOLUTIONS

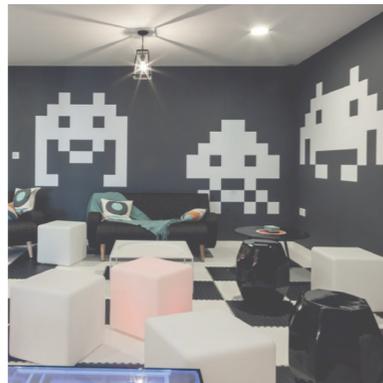
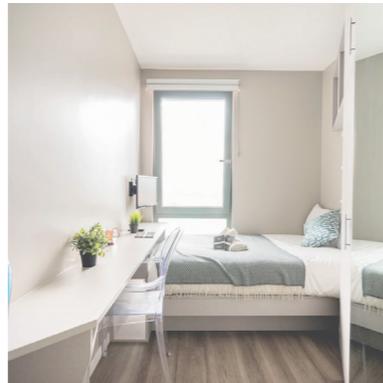


Units have a full height window, even if part is covered by the bed in the given furniture layout

FURNITURE



The furniture is built-in, but no convertible or innovative solution are provided



The Collective Old Oak dealt with the shortage of housing and working and is the world biggest co-living/co-working. The choice of placing the services in the middle of the two volumes, connecting them, is symbolic from this point of view, making them the core of the building, and moving the central attention of the project in the experiences the users can do by living in it and using the communal services, and in the human relationships and work collaborations that can born inside its spaces.

The location suffers a bit the absence of external service, which is however compensated, in part, by the internal services. The only service that is impossible to substitute is the transportation system, with the closest train station out of the 5-minutes-walk radius.

The cost of the units reflects the presence of a high number of services: the monthly cost, that is in line with the average rent for a studio in London, makes the price per square meter increase, but the floor area considered does not count all the extra space usable.

The willingness of building a co-living of these proportions made more complex the bureaucratic process because, since the co-living typology was still not considered in the London regulations, it was necessary to register the building for student use and to require special overrides in the planning permission for allowing other categories to be residents.

Units present a quite simple layout, with built-in furniture and floor-ceiling window which, unfortunately is placed behind the bed.

In conclusion, The Collective Old Oak is very close to what could be a hotel rather than an apartment building. This could be an obstacle for users in search of stays longer than some months since at a certain point it is reasonable that people stop using some services in the building and start living the city. The strength of the project, which attract a lot of attention and already went further by building other two similar developments, is the marketing of the project, sold as an innovative way of living never done before (but Le Corbusier already brought the city inside a building¹), and pushing on the changing society's behavior that looks for experiences.

Photographs credit: *Amandine Alessandra*

¹With the Unité d'Habitation



Keret House

Jakub Szczesny
Warsaw, Poland
2009-2012

Keret House is a provocative example. It stands in the middle between the housing world and the art one. Placed in the Wola neighborhood, in the heart of Warsaw, it is infilled in a residual space of just 122 centimeters at its widest point between two buildings of different historical periods, gaining the title of the world's narrowest house.

Resulted from a competition promoted by the Polish Modern Art Foundation and financed also with the help of the City of Warsaw, it serves now both as temporary housing and working space for artists. The Artist in Residence program allows only artists to occupy the house, and it requires a strict procedure in order to apply.

Covered with a translucent envelope, the house remains filled with natural light even if squeezed between two bigger buildings. (Centrala, n.d.; Rosenfield, 2012)

Card's main sources

- Centrala designers' task force. n.d. "Dom Kereta / Keret House - the narrowest house". *Centrala*.
- Frearson. 2012. "World's narrowest house by Jakub Szczesny". *Dezeen*.
- Rosenfield. 2012. "Inside The Keret House - the World's Skinniest House - by Jakub Szczesny". *ArchDaily*.
- Dom Kereta. n.d. "Artist in Residence". *Keret House*
- Dom Kereta. n.d. "Miniature means possible. Architect Jakub Szczesny on the project". *Keret House*
- Sas. 2020. "Average rental prices in selected cities in Poland in September 2020, by apartment size* (in zloty)". *Statista*.



PROCESS

Polish Modern Art Foundation - sponsor
Centrala - designer
Warsaw city - public actor/financer

Main Actors

The house is classified as an art installation, since it does not match the standards required by codes

Overrides

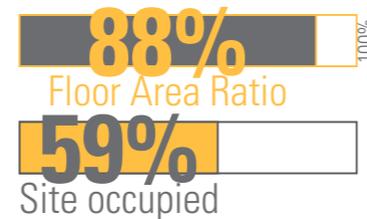
No registered complaints were found, nor conflicts were reported in the news

Conflicts

USES



The building offers all its 14 m² of developed floor area as residential spaces



The building occupies 9 m² (59%) of the site, and offers a total of 14 m² of floor area, developing 88% of the site area

MANAGE

Short-period
Rents
for artistic experiences

The unit is rented for very short periods (10 days) exclusively to artists

7.5k* € / month
536 € / m²
1.6k% of Average Studio rent in the city

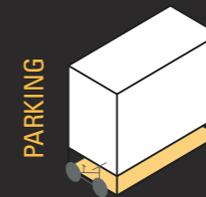
Rent is 2.500 € / 10 days, equivalent to 7.500 € / month, 536 € / m². This value is 1637% of 458 €, the average rent for a studio in Warsaw

Public
Financing

The building has been constructed thanks to several partners, among which Warsaw municipality has been the main financer



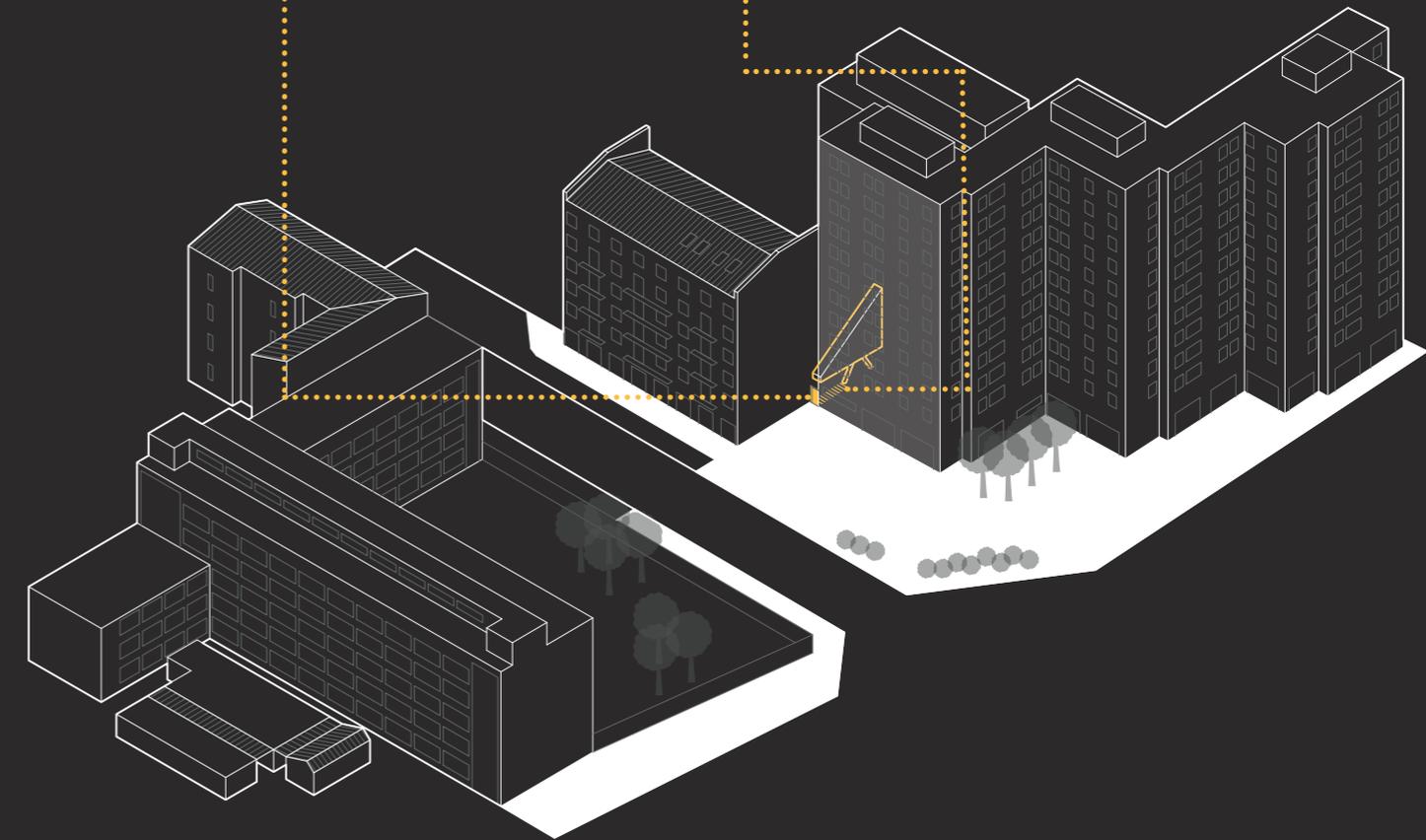
The building faces directly to the street, and it is separated from it by an openable fence



No car parking are provided. The covered ground floor could be used as bike parking, even if not specifically meant for it.



The house is meant for private use, but Polish Modern Art Foundation organizes visiting tours in selected dates

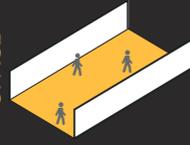


DISTRIBUTION



The distribution of the building is made through a single stairs' ramp and a vertical ladder, for recovering space

CONNECTIVE SPACE



Connective space is not designed for stationary activities, since extreme solutions, like a ladder, are used

ACCESS



The entrance to the building is positioned on the bottom side of the volume

UNITS' QUANTITY AND SIZE



The apartment is 14 m², only 92 cm wide in its narrowest point, being the world's narrowest building

UNIT/AVERAGE SIZE RATIO



The unit is 83% smaller than the average size of the houses in the city, which stands at 84 m²

UNIT/LAW SIZE RATIO



The unit is 13% smaller than the minimum size requested by local code, which stands at 16 m²

OPEN AREAS



The only small open area provided is the covered one at the ground floor, under the building

SERVICES / AMENITIES



No extra-services or amenities are provided, due to the extremely small size too

OPEN AREAS



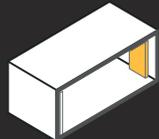
The private outdoor space is the one under the building, used only as access to the house

OFFSETTING SOLUTIONS

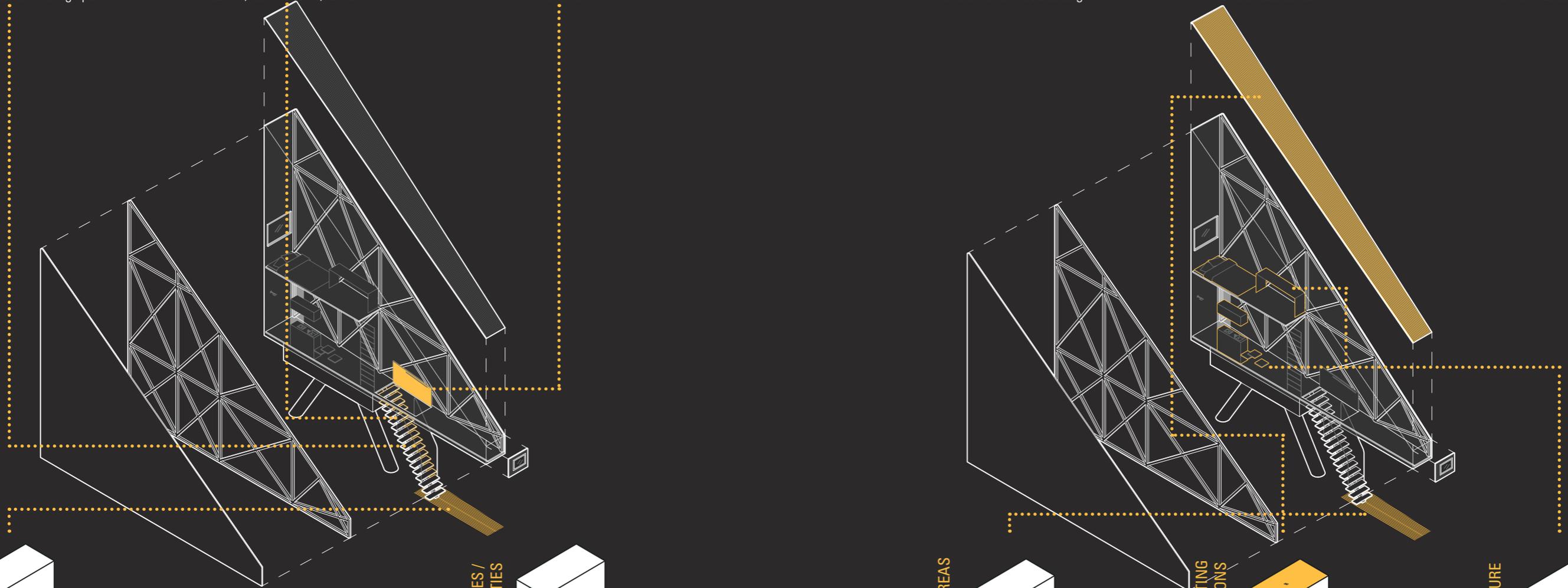


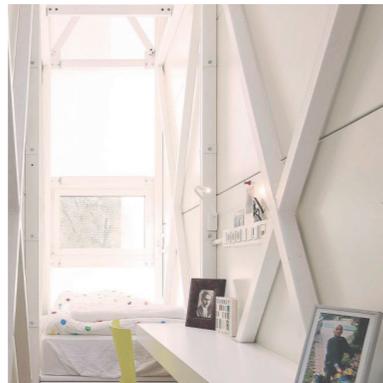
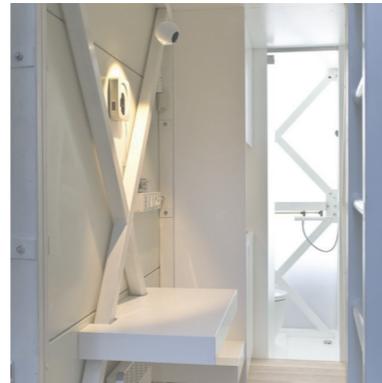
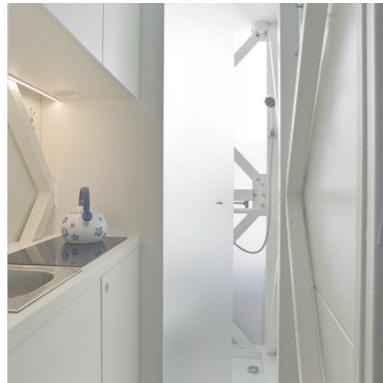
The natural light mainly fills the space through translucent walls, and light wood and white are dominant colors

FURNITURE



Built-in furniture is provided due to the extremely small spaces offered





The Keret House lays between the artistic provocation and the architectural product. Despite it has limits and conditions for applying to reside in the house, it fully respects the character provided in the micro-units definition. However, its character of artistic residence makes it expensive to inhabit, valuing the experience more than the necessities of a house. The house could be seen as an early technological innovation, that it is extremely expensive at the beginning but it opens the street for further cheaper developments. Keret House is, thus, a demonstration of what is possible, especially in historical cities, whose additions, overlaps, and juxtapositions left many irregular residual spaces.

The presence of actors like an art foundation and a city administration made easier the construction of such an experimental building. The house is, indeed, classified as an art installation and not as a residence, allowing the development to not be compliant with the dwelling rules.

The size is shrunk at its most, being smaller than 80% of the average unit size in the city, but it provides all the basic necessities for living, with a kitchen, bed, bathroom, table and a relax space in the lowest part. For placing all the necessary spaces a mezzanine has been placed, taking advantage also of the triangular shape of the building.

A very smart idea for the building regards the choice of the envelope. Since the tight form of the building, placing big windows for providing natural lights was surely not a valid idea. By covering the whole building with a translucent envelope, the natural light infilling is ensured, and at the same time, it provides also a certain level of privacy, not being transparent as the glass is. However, small windows are still provided for ventilation and are placed on opposite sides of the building for obtaining a passing air movement.

In conclusion, the house could be a valid idea for filling all the residual spaces left in historical (and non-historical) cities. The shape could obviously change, adapting to the site, but general ideas like providing light through the envelope or using a mezzanine for gaining space could be taken, as well as developing them together with public actors. On the other hand, prices must be revised for becoming houses for all and not cool experiences.

Photographs credit: *Bartek Warzecha*



Songpa Micro Housing

SsD Architecture + Urbanism
Seoul, South Korea
2014

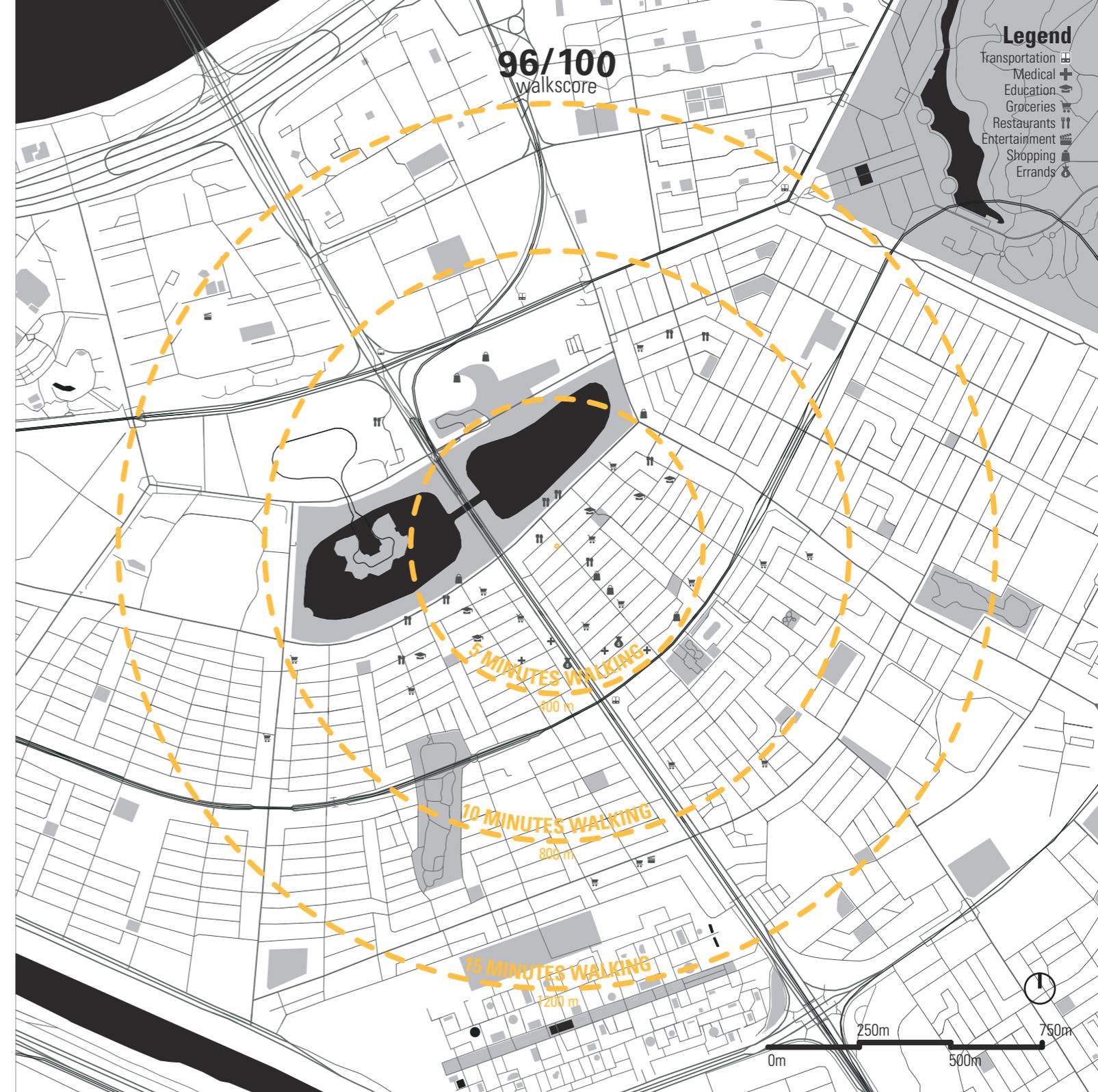
Located in the Songpa District, the center of 1988's Seoul Olympics, the project fills a small scale plot giving back to pedestrians a level of publicness of the space. The building make public, semi-public, semi-private and private spaces coexisting within such a relatively small building, changing the usual limits of the house.

The building offers fourteen blocks of 11 m² that can be easily re-arranged for hosting bigger households, or for converting them in other functions. The aim of designers was to prove that "space" and "dimensions" are different, not completely mutually dependent notions.

Designers describe this project as "Tapioca space," which keep together the dualities of interior and exterior, public and private, alone and in group with others. (Jacobson, 2014; Ssd Architecture, 2015)

Card's main sources

- Jacobson. 2014. "Songpa Micro Housing". *Architectural Records*.
- Schulz. 2014. "Songpa Micro-Housing: An Apartment That Adjusts to Your Relationship Status". *6sqft*, November 7, 2014.
- SsD Architecture + Urbanism. n.d.. Songpa Micro-Housing.
- SsD Architecture + Urbanism. 2015. "Songpa Micro-Housing". Interview by J. Hill. *World Architects*.
- Ssd Architecture. 2017. "Songpa Micro-Housing". *Area 151*: 40-47



PROCESS

Channill Lee - private client/owner
 Kiro Construction - developer
 SsD Architecture + Urbanism - designer

Main Actors

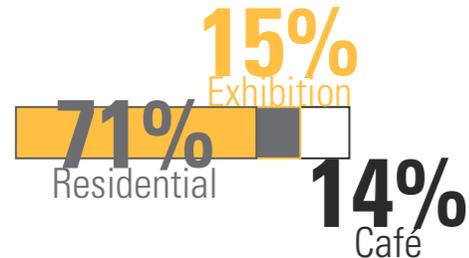
No waivers were registered, since the project played well with local codes, without overriding them

Overrides

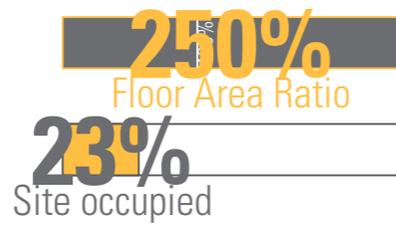
The project underwent some changes determined by different desires of the client and designer

Conflicts

USES



The building offers 365 m² of residential spaces, 77m² of exhibition, and 69 m² of café



The building occupies 204 m² (23%) of the site, and offers a total of 510.97 m² of floor area, developing 250% of the site area

MANAGE

Rented
without limits

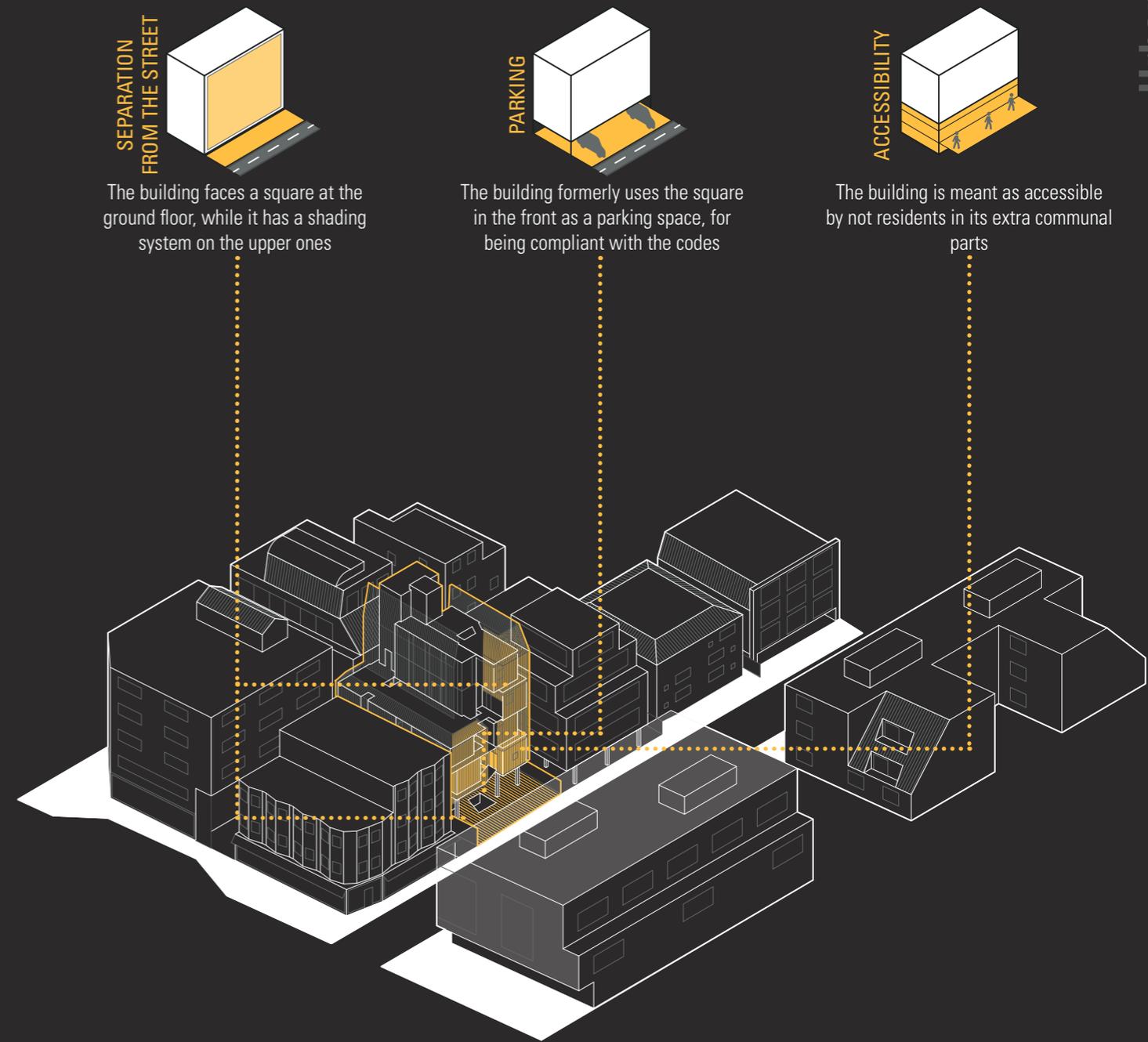
The units are rented on the market without any limits of staying period. They are meant as one-person units

--- €/month
 --- €/m²
 of Average Studio rent in the city

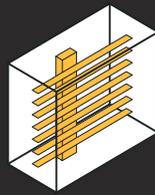
The prices of the units have not been found. The average rent for a studio in Seoul is 500 €, but it has been no possible to calculate the ratio

low-interests
Loans
doshihyung saenghwal jutek

The project took advantage of *doshihyung saenghwal jutek*, low-interests construction loans for one-/two-person households



DISTRIBUTION



The distribution is organized around a vertical core that brings to one corridor for each floor

CONNECTIVE SPACE



The connective space is usable by inhabitants also as space for gathering and activities

ACCESS



The access faces the street, the only unoccupied side of the lot. However it is separated from it by a square

UNITS' QUANTITY AND SIZE



The building has 8 units, measuring 11 or 22 m² thanks to modularity, which host one or two households each

UNIT/AVERAGE SIZE RATIO



The unit is incredibly 90% smaller than the average size of the houses in the city, which reach almost 114 m²

UNIT/LAW SIZE RATIO



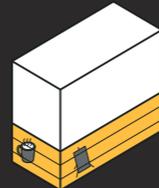
Korean codes require a minimum size of 11 m² for each dwelling unit, which is exactly the size of the smallest unit

OPEN AREAS



The building provides 275 m² of open areas, the 35% of the total, split in two terraces, front square and balconies

SERVICES / AMENITIES



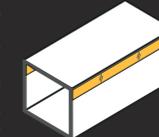
At the underground and first floor the building offers a café space and an art gallery, opened to non-residents too

OPEN AREAS



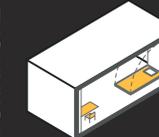
Some units have small balconies for private use or sharing it with another unit

OFFSETTING SOLUTIONS

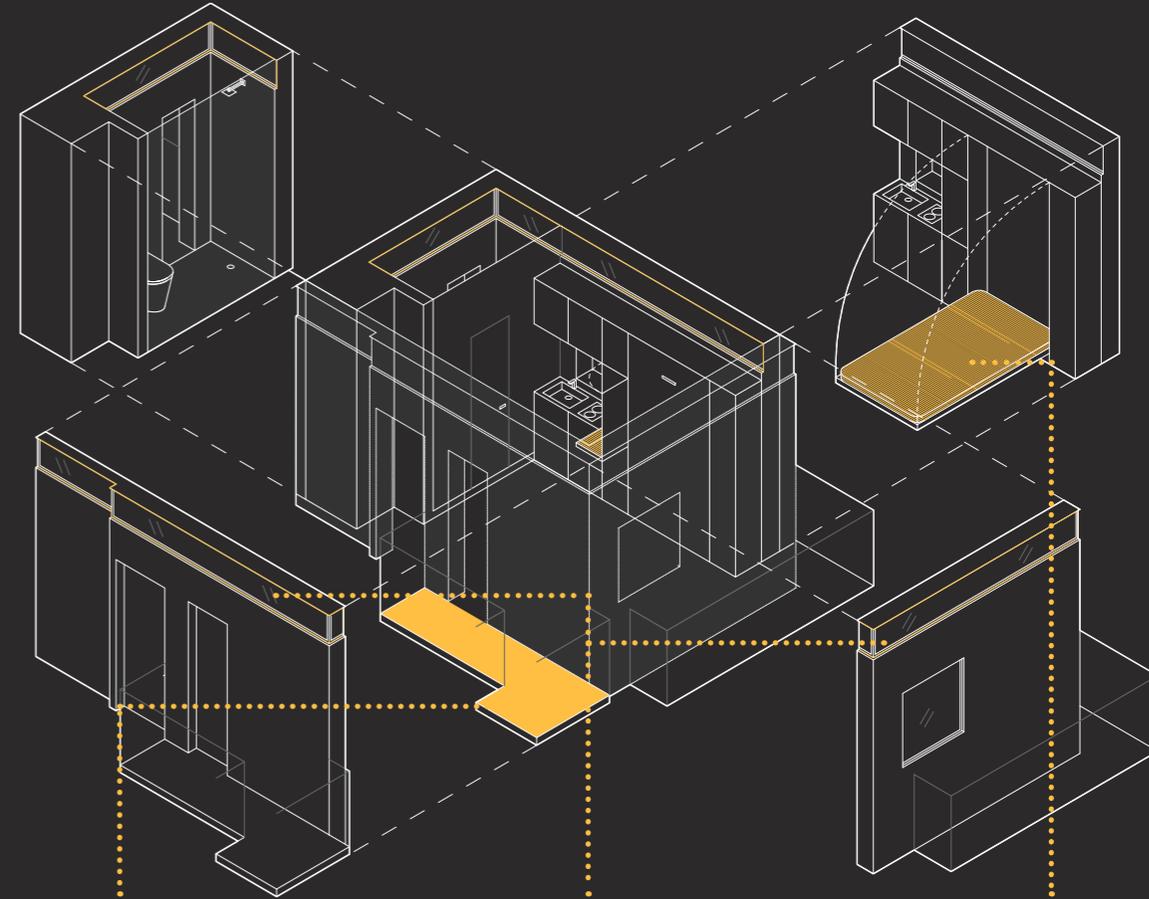
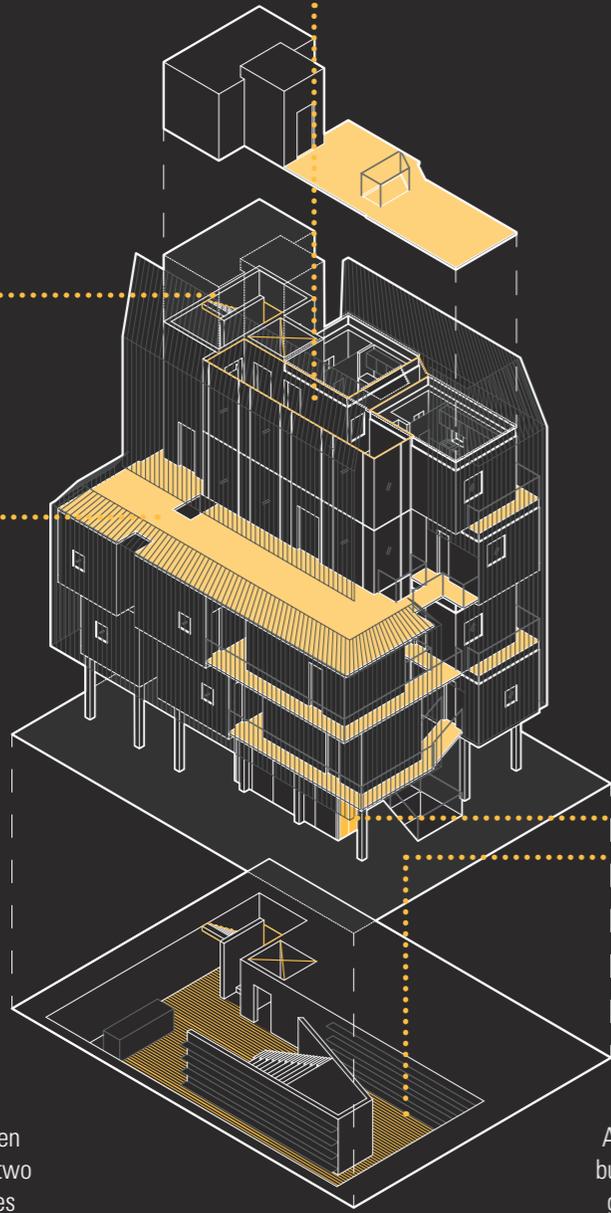


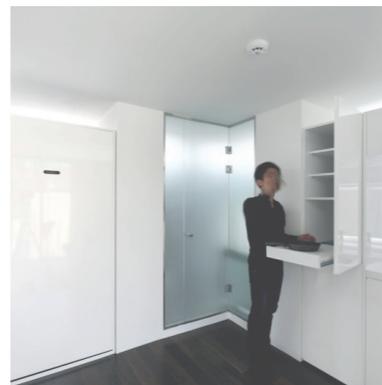
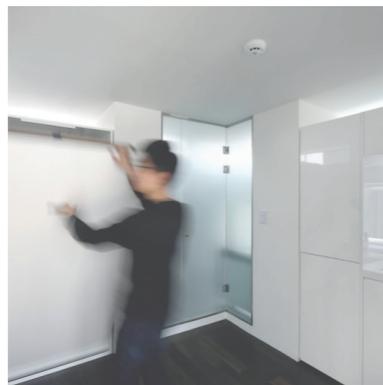
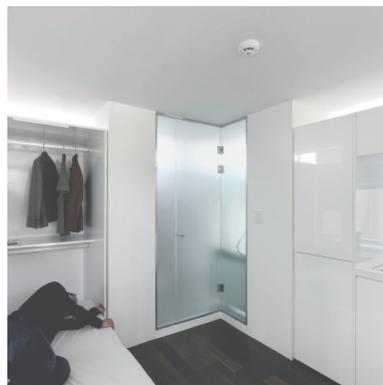
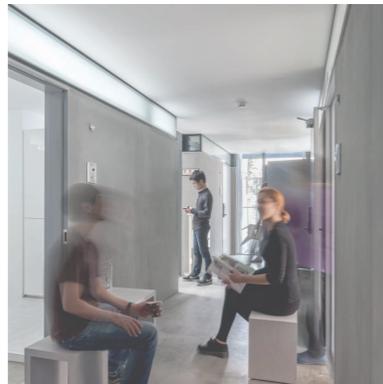
Clerestory windows in the upper part of the walls run along all the perimeter of the units providing extra light

FURNITURE



The single unit is totally furnished with built-in furniture, some of which convertible, like the bed and the table





The tradition of small housing types in Korea, like the goshiwon¹, goshitel², and officetel³ facilitated the designing and construction of the Songpa Micro-Housing project, which has been positively accepted by the client and the city. The building stands at the border of codes restrictions in various aspects: the dimension of the apartments is the same of the minimum required size, and both the Floor Area Ratio and the Maximum Zoning Envelopes are utilized at most; furthermore, the project uses the formerly parking dedicated space at the ground floor as a pedestrian square that receives and invites users and pedestrians to enter in the building.

The social character of the building does not end with the front plaza, but it is kept in the generous dimensions of the corridor, which make them usable also as communal living rooms or the sharing of balconies between units, no more completely private outdoor space. The sociality aspect is clear if it is noted that the percentage dedicated to shared spaces occupied by shared space overcome the 50% of the total, and the 35% is of outdoor areas.

Transformability is the other keyword of the project. The possibility and easiness of merging different small units between them, at the changing of the condition of households or at the changing of destination of the building, is one of the more interesting features of the building. This concept made it possible, for the client, to discuss and change some points of the project without overturning the work.

The attention to users and tenants comfort are highlighted not only from the choice to give them many square meters of outdoor spaces for compensating the small size of the unit, but also the choice to fill the units with natural light by providing clerestory windows that run along the perimeter of the units.

In conclusion, the building well plays with the micro-unit dimension and would have been interesting to see it as originally conceived, before the changes determined by the clients, which reduced the number of micro-units but demonstrated that the project actually works.

¹ Short-term one-room sleep and study spaces for students

² Longer-term rental apartments

³ Buildings that combine studio apartments with workspaces

* In the building drawing: since no collection of measures and no plans of the underground floor were found, it is supposed starting from pictures and upper floors' plans

Photographs credit: SsD Architecture + Urbanism



Ququri*
Spylitus Co.*
Tokyo, Japan
2016

Ququri is the name of a series of buildings designed by Spylitus Co. having similar characteristics. The purpose of the buildings is to provide affordable small quality apartments for young workers in Tokyo. The company obtained also a patent for the system for avoiding emulations from other companies.

The downsizing of the dwellings is accompanied by an increase of the height, in a way that a mezzanine could be used for hosting the bed or other functions. The increased height implies, according to the law, also a different structure from what is the standard in the Japanese building industry for wooden-made houses. (Martin, 2019; Spylitus, n.d.)

Card's main sources

- Martin. 2019. "Downsized Dwellings: Inside Tokyo's Tiny Living Spaces". *The Japan Times*. April 20th, 2019.
- Murru. 2020. Direct visit during a year abroad in the Academic Year 2019-2020.
- REI (Japan). 2019. "Average size of condominium units in Tokyo's 23 wards from 2009 to 2018". *Japanese Real Estate Statistics* 42.
- Spylitus. n.d. "Ququri". Spylitus



PROCESS

*Spylitus Co.** - designer
Residence Tokyo - rental agency

No overrides were registered nor been found

The unit dealt with the height limit related to the standard dimension of structural elements in the industry

Main Actors

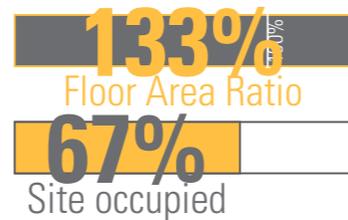
Overrides

Conflicts

USES



The building offers 181 m² of developed floor area as residential spaces, the 100% of the total



The building occupies 91 m² (67%) of the site, and offers a total of 181 m² of floor area, developing 133% of the site area.

MANAGE

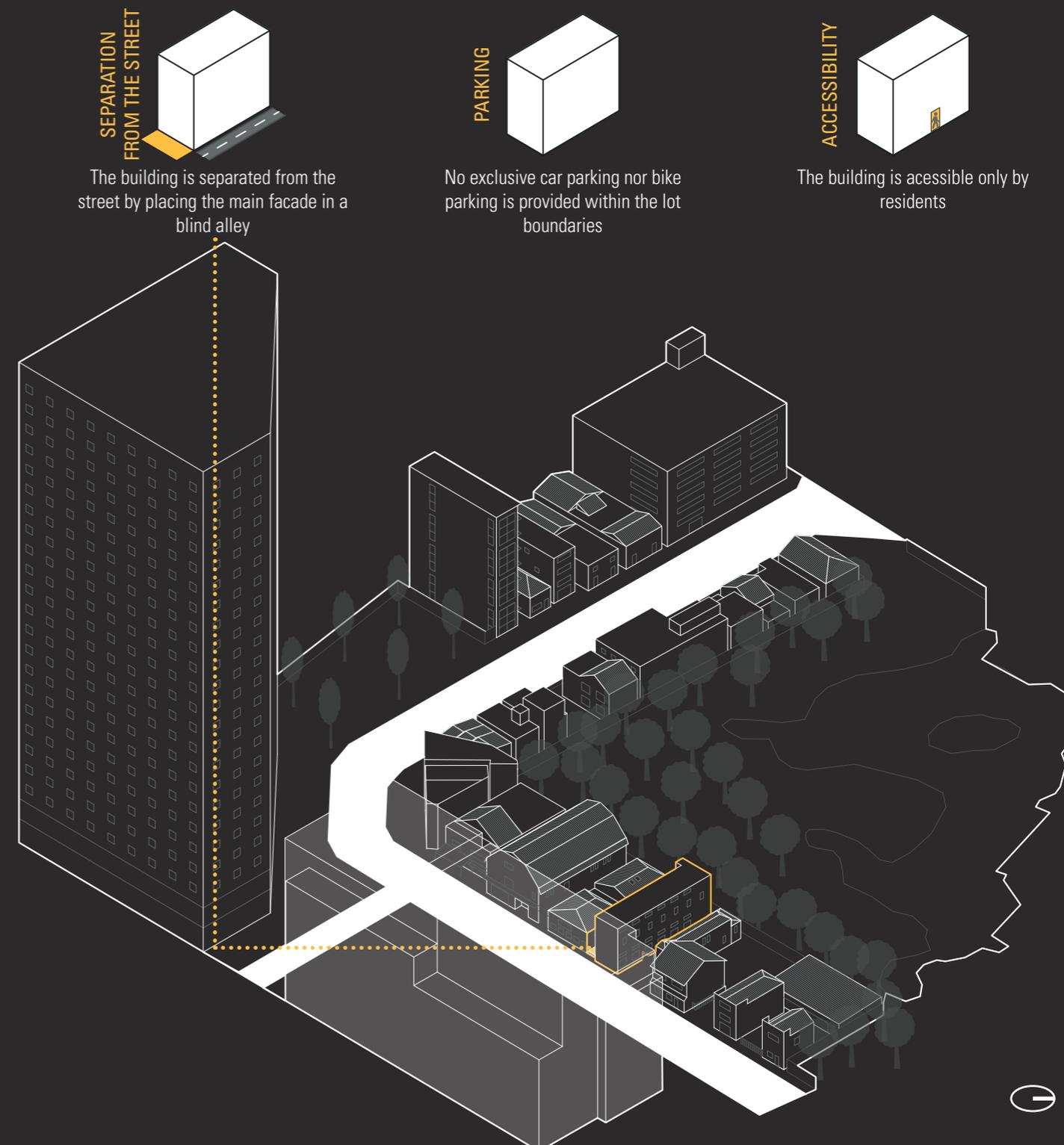
Rented



Units are regularly rented in the market for agreed periods. Units are rented both for short-term and for long-term stays

Rents are 99'000 ¥/month, equivalent to 850 €/month, 65 €/m². Rents are 109% of the average 90'600 ¥/month studio rent in the city

No subsidizing programs are provided



DISTRIBUTION



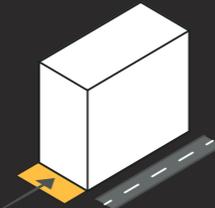
The distribution is independent for every unit

CONNECTIVE SPACE



The connective space is meant only for distributive purposes and not for stationary activities

ACCESS



The accesses are placed on the blind alley and are separated for each unit

UNITS' QUANTITY AND SIZE



The building offers 14 units ranging between 11 and 17 m²

UNIT/AVERAGE SIZE RATIO

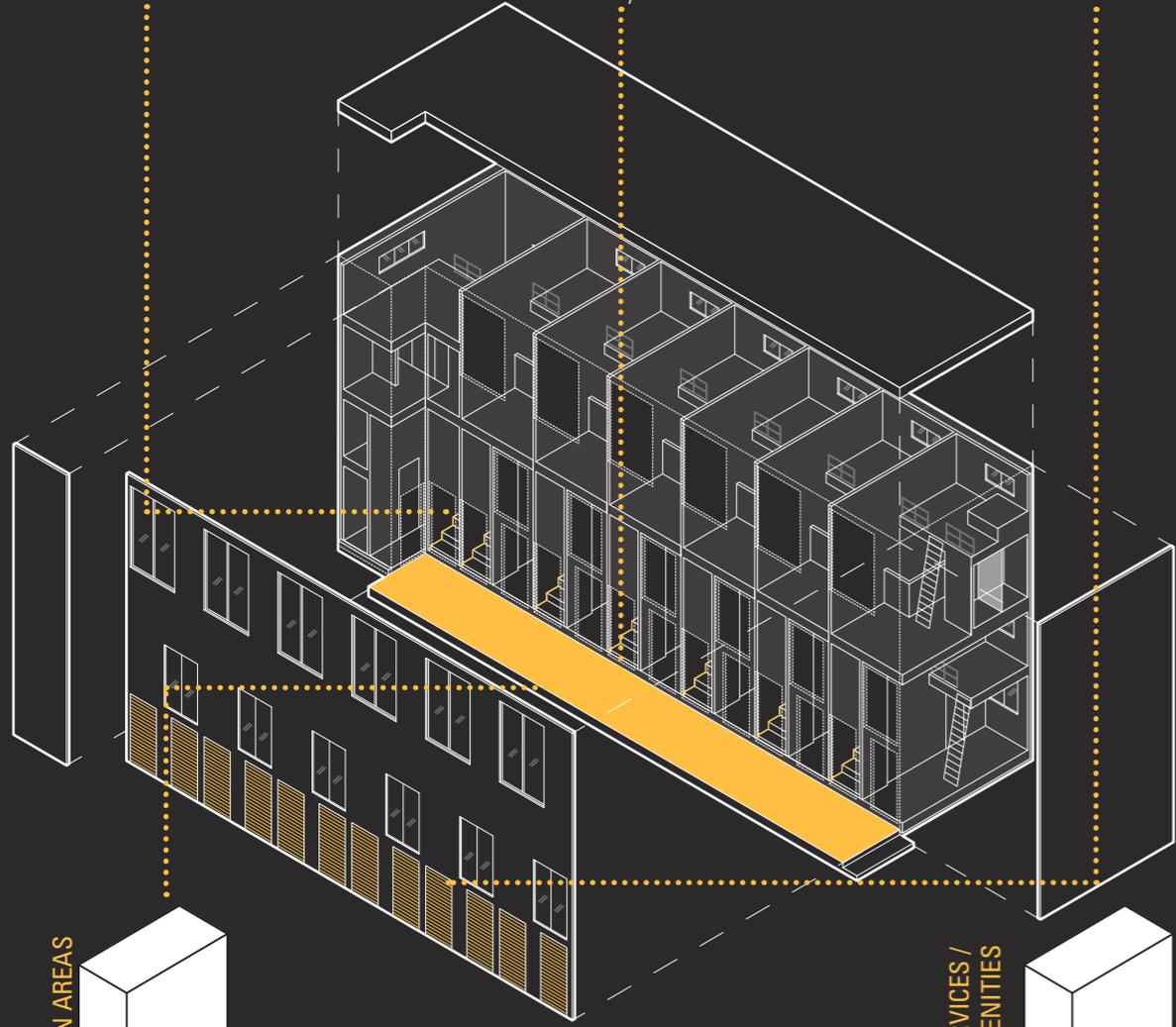


The unit is 77% smaller that the average size of the apartments in the city

UNIT/LAW SIZE RATIO



Japanese codes does not ask minimum sizes for units, although they suggest an optimum size of 25 m² for person

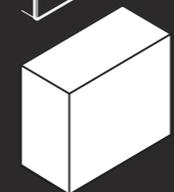


OPEN AREAS



The only open area of the building is the blind alley, but it has no other purpose than distribution

SERVICES / AMENITIES



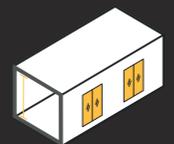
The building has not extra services or amenities

OPEN AREAS



The unit does not provide any open areas

OFFSETTING SOLUTIONS

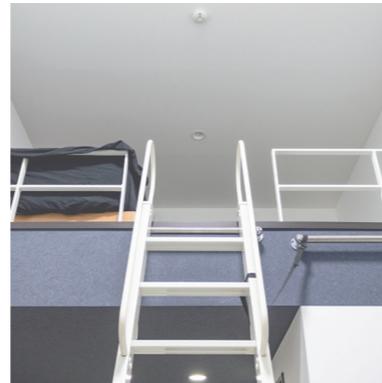
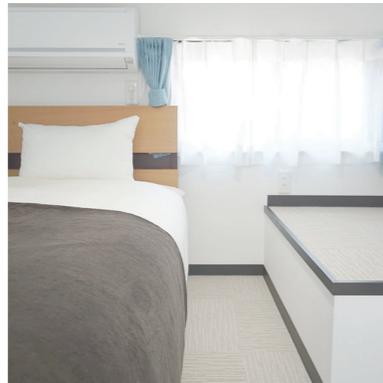
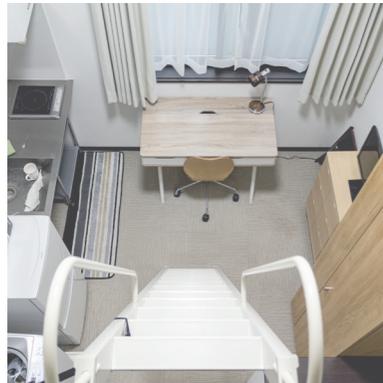
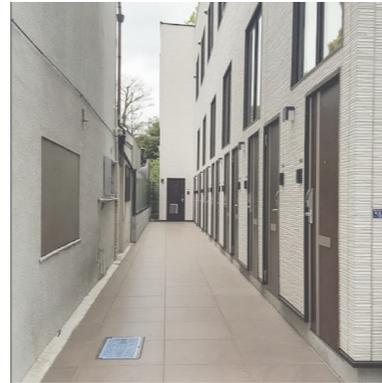
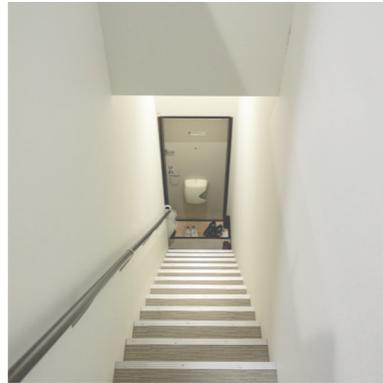


Units compensates the size with an higher ceilings, a mezzanine and big windows

FURNITURE



Units does not have any built-in or convertible furniture for saving space



Ququri, as part of a series of buildings, is already a diffused solution in the Japanese Capital. In the world's most crowded urban area, the housing offer is characterized by extremely high prices and high construction density. The smallness of the apartments in the city is certainly not new. However, Ququri is addressed specifically to young workers target.

The building is placed in a mostly residential area, next to different transportation options and with great choices for groceries and restaurants. The location allows to not provide car parking, even due to the presence of a covered garage on the other side of the street. However, neither bike parking is provided, and this represents a problem since, in Tokyo, bikes must be left in registered parking as well as cars.

The building interlocks units as a Lego construction, but it leaves all the access on the ground floor. This solution forces to have an only-distributive space for all the upper units, making users pay for that space without really using it other than moving from the entrance.

The rents are higher than average, but the policies of rental agreements are very flexible and provide no agency fee or extra non-refundable fees, which are usually to be considered when renting a house in Tokyo.

Units vary in size from 11 to 17 m², which are reached thanks to the mezzanine too. The higher ceilings, indeed, allow users not only to perceive the space as bigger than it really is but to have a small mezzanine where it is possible to stay sitting.

Interior finishes are predominantly white, reflecting in all the unit the huge amount of natural light entering from the three windows. The openings are disposed on both sides of the units along a south-north axis, and the one toward the south direction has big dimensions.

The position of the accesses in a dead-end separated and raised from the main street is a good way to give a perception of a separate space, even if no fences or physical separations are provided. However, this space has no other purpose than the distributive one, while it could have been a good opportunity to designing it as a place for outdoor activities.

* The name, as well as the firm, has been hypotized by crossing information from Martin (2019), Spilytus (n.d.) and the characteristics of the units, but no direct reference has been found neither information by renting agency has been given

Photographs credit: *Lorenzo Murru; Residence Tokyo*



Yokohama Apartments

ON Design Partners

Yokohama, Japan

2008-2009

The building is located in a small-scale neighborhood of Yokohama, the second largest city of Japan by population, today completely incorporated in the Greater Tokyo, the most crowded conurbation in the world.

The project resumes the Modernist ground floor on stilts, generating a covered common space that is opened to the street and invite to the entrance who passes by. The willingness of the architects is to provide a space of meeting between residents of the building and of the neighborhood, although the success depend on the choose of users to test the experiment.

The four individual units, on the upper floor, work independently and have minimal space, with only a sink and a counter as kitchen, pushing the users to shift to the larger common space at the ground floor. (Hildner, 2014)

Card's main sources

Cost Off Living. n.d. "Cost Of Living in Yokohama, Japan".

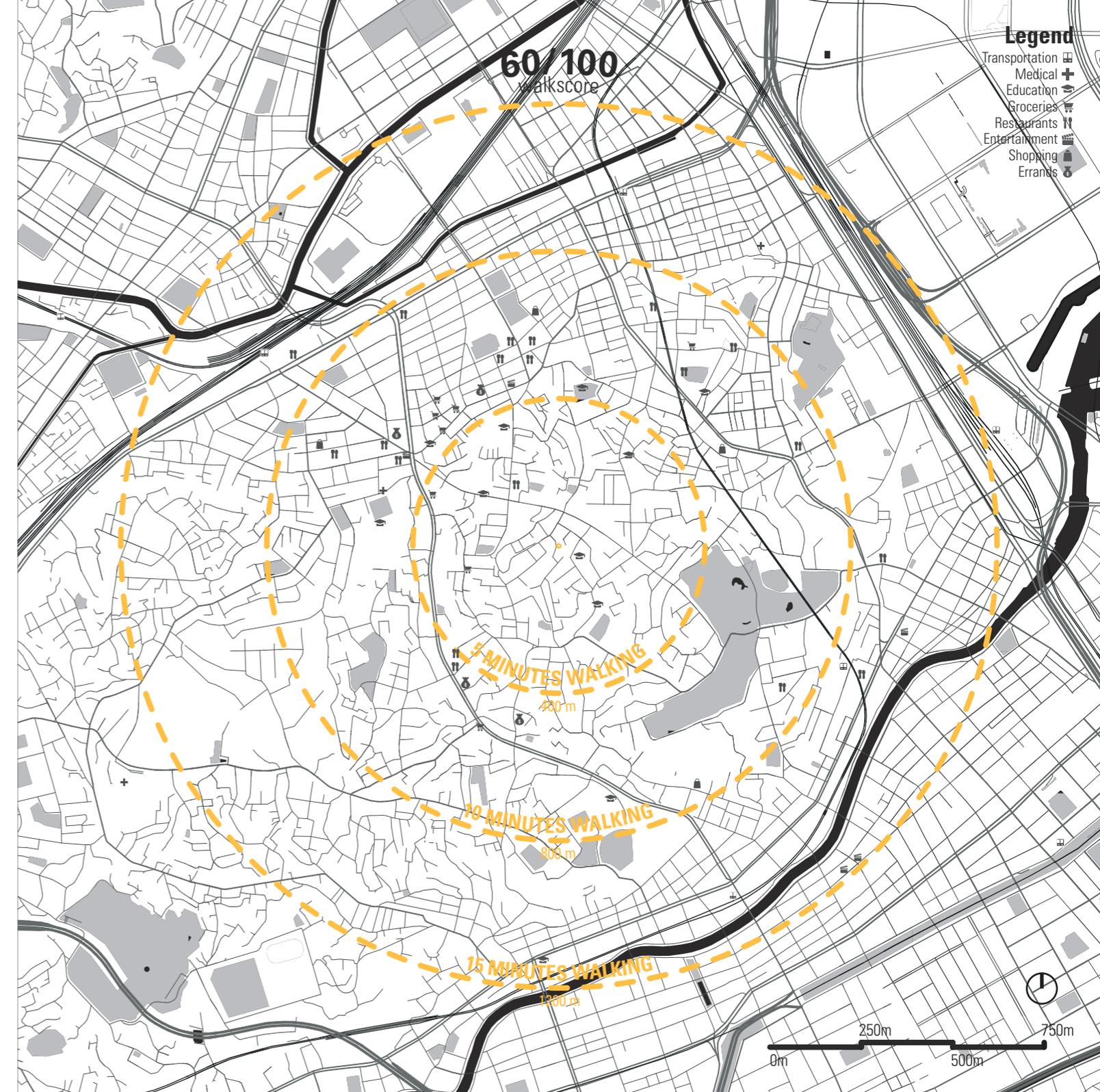
GPlusMedia. n.d. Real Estate Japan

Hildner. 2014. "Yokohama Apartment" in Hildner, *Future Living, Collective Housing in Japan*, 44-47.

ON Design Partners. n.d. "ヨコハマアパートメント".

西田司+中川エリカ/オンデザイン. 2010. "ヨコハマアパートメント".

Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT). n.d.. "住生活基本計画における居住面積水準".



PROCESS

Private - client
 Shinei - developer
 ON Design Partners - designer
Main Actors

No waivers were needed, since the local codes, in term of sizes, are quite relaxed
Overrides

No conflicts were registered in the process that led to the construction of the project
Conflicts

USES



The building is residential on the upper floor. The ground floor can be switched from common residential space to space for events

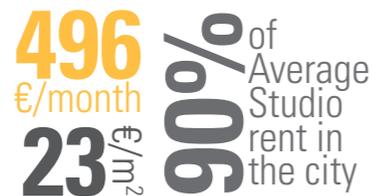


The building occupies 83 m² (59%) of the site, and offers a total of 152.05 m² of floor area of the 211 m² allowed, developing 108% of the site area instead of 150% allowed.

MANAGE

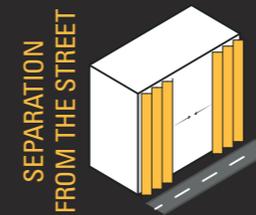
Rented
 without limits

The units are rented on the market without any limits of staying period. They are meant as one-person units



Rents are 60'000 ¥/month, equivalent to 496 €/month, 22.6 €/m². Rents are 90% of the average 553 €/month studio rent in Yokohama

No subsidizing programs were registered in regulating the rents and the eligibility of tenants



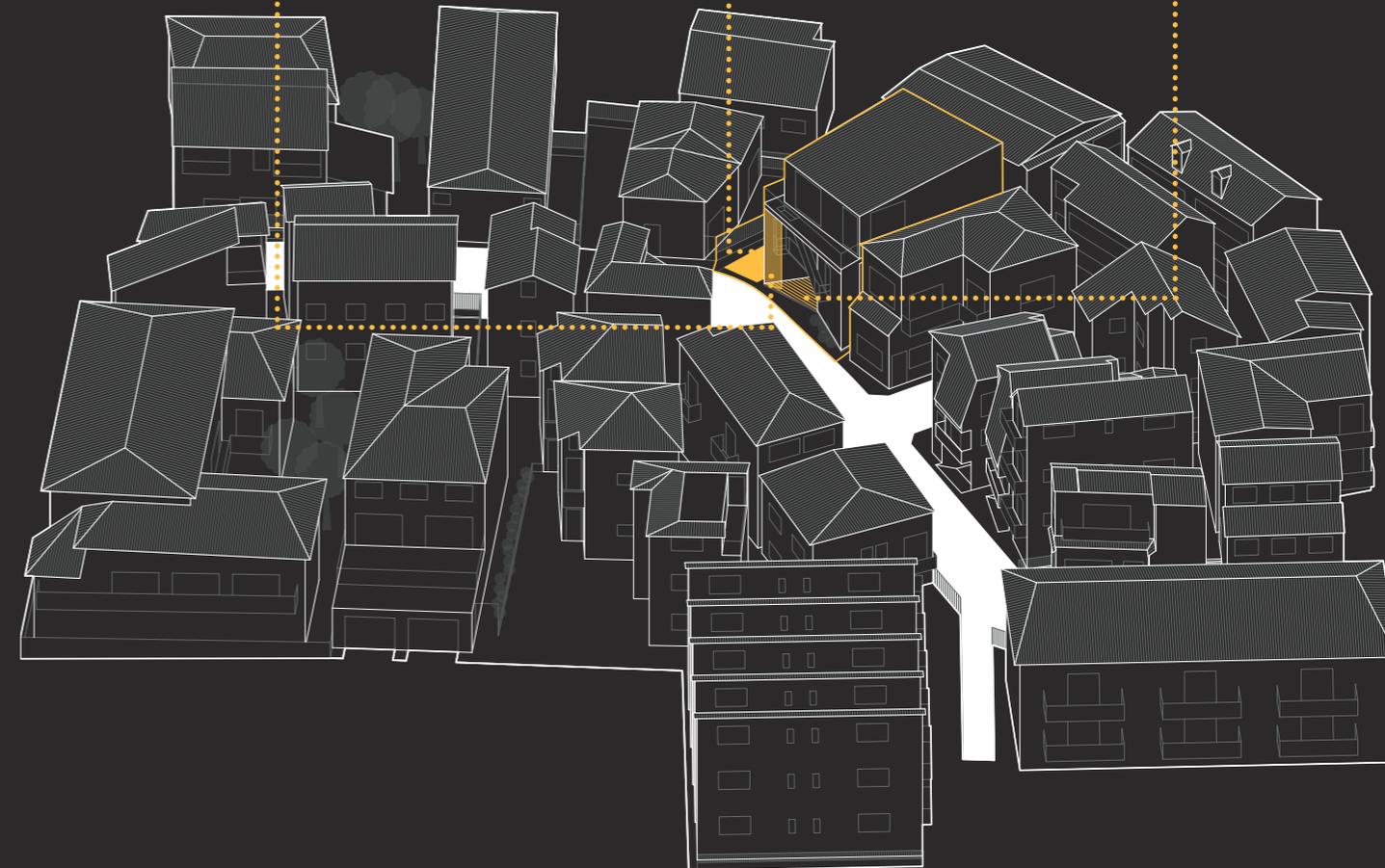
The access to the building faces directly to the street, and is separated only by a curtain



The building has a parking space for one car located on the side of the building



The building is meant as accessible by not residents at the ground floor, seen as a covered plaza



DISTRIBUTION



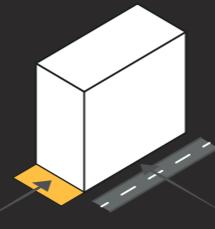
The distribution give individual access to each unit through one open stair wrapping around the storage rooms

CONNECTIVE SPACE



The connective space is usable by inhabitants also as space for activities

ACCESS



The entrance in the building is directly on the street or on the side of the building

UNITS' QUANTITY AND SIZE



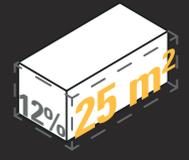
The building has 4 units, each of them composed of 19 m² of independent unit with 3 m² of private storage space

UNIT/AVERAGE SIZE RATIO

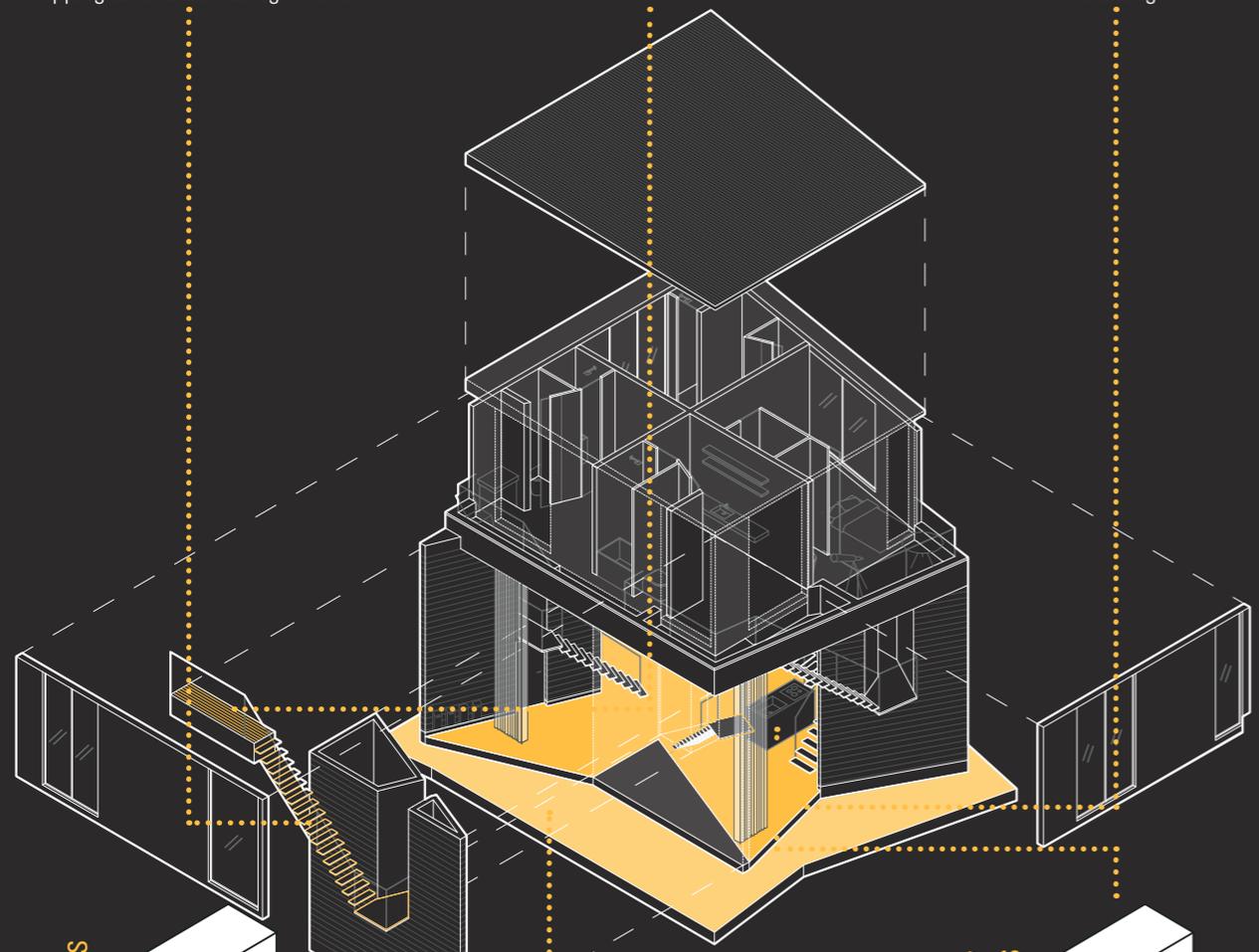


The unit is nearly 66% smaller than the average size of the houses in the city, which reach almost 66 m²

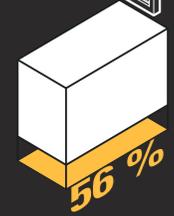
UNIT/LAW SIZE RATIO



Japanese codes does not ask minimum sizes for units, although they suggest an optimum size of 25 m² for person

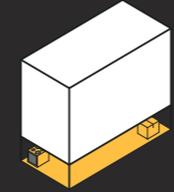


OPEN AREAS



The ground floor concentrates the 86 m² of building's communal open areas (covered and not)

SERVICES / AMENITIES



The ground floor hosts a flexible space for kitchen and exhibition, other than storage rooms for 71 m²

OPEN AREAS



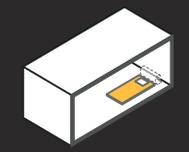
All the units have a small private balcony that works both as an open space and as access to the unit

OFFSETTING SOLUTIONS

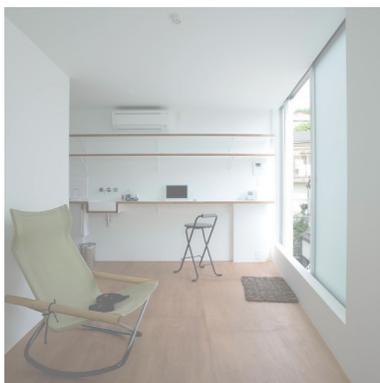
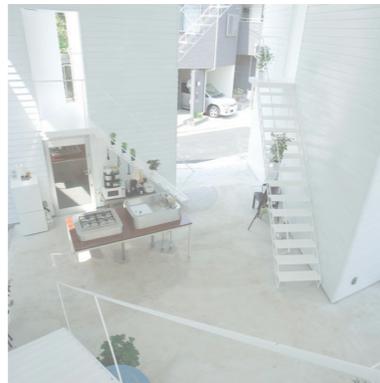
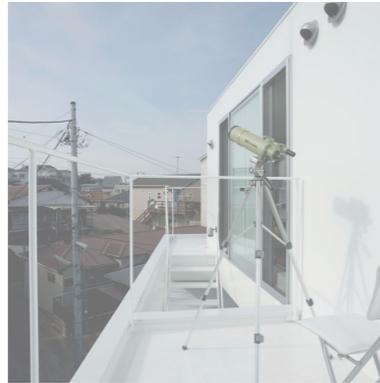


Two floor-ceiling windows and mainly white finishes. Besides, the common spaces has 5 meters ceiling

FURNITURE



The single unit does not utilize built-in furniture, while the Japanese futon is innately convertible



Before of a project of architecture, Yokohama Apartments could be seen as an urban and social project; bringing back the citizens to a neighborhood community was the main reason for developing it. The willingness of building up a community lead to the transfer of everyday used spaces, like the kitchen and the storage, in the central common space (which is the bigger space of the building, occupying by himself almost half of the whole developed surface), which forces the users to socialize with the others renters. The interesting point is that the building could be used avoiding the sociality part: is in fact possible using the sink in the unit, placing a microwave and an electric stove and, thanks to the Japanese habits of buying pre-cooked meals at コンビニ (konbini), eating inside the individual unit.

The size of the units is not extremely small if compared to Japanese reality, especially considering the Greater Tokyo Area, in which the high density, the scarcity of land, and the rapid substitution of buildings is driving the market to far smaller apartments (e.g. 8 square meters). Furthermore, the units does not override any rules, since no minimum size is requested by the local codes, but only suggested.

Another fact that is affected by the local context is the absence of built-in or convertible furniture: in the unit only a long table and some shelf are provided, while the western bed is replaced by the Japanese 布団 (futon), the mattress that is rolled up every morning.

Unusual for a Japanese apartment is the absence of a train station within the 10 minutes walking distance, which bring down, with others variables, the overall WalkScore.

Lastly, like a manifesto of the program of the building itself, the inseparability of the common space from the public street (if not for a translucent curtain), makes the ground covered plaza visible by anyone and the tilted walls invite passers-by to take part of this community.

In conclusion, the project is an interesting approach to the micro-units. It distances himself from the local average dimensions without reaching the extremes. Furthermore, it come close to the co-housing world without fully marrying it.

Photographs credit: Koichi Torimura



T-Plus

Jiayuan International Group; Stan Group

Hong Kong, China

2014-2019

Located in the Tuen Mun area, T-Plus is a mixed-use development, offering commercial, services, and residential spaces. The area is peaceful, far from the noise and chaos of Central, but it is well connected with it by the near train station.

Initially, it was meant as a development of 9 m² units for students of the nearby Lingnan University, but then technical issues moved the project to become a residential development. At the time of completion, the building hosted the smallest residential units of the city with competitive prices in the housing market. (Jiayuan International Group Limited/Stan Group (Holdings) Limited, 2020; Jiayuan International, n.d.)

Card's main sources

Centaline Property. n.d. "Centadata - Transaction History". Centaline Property

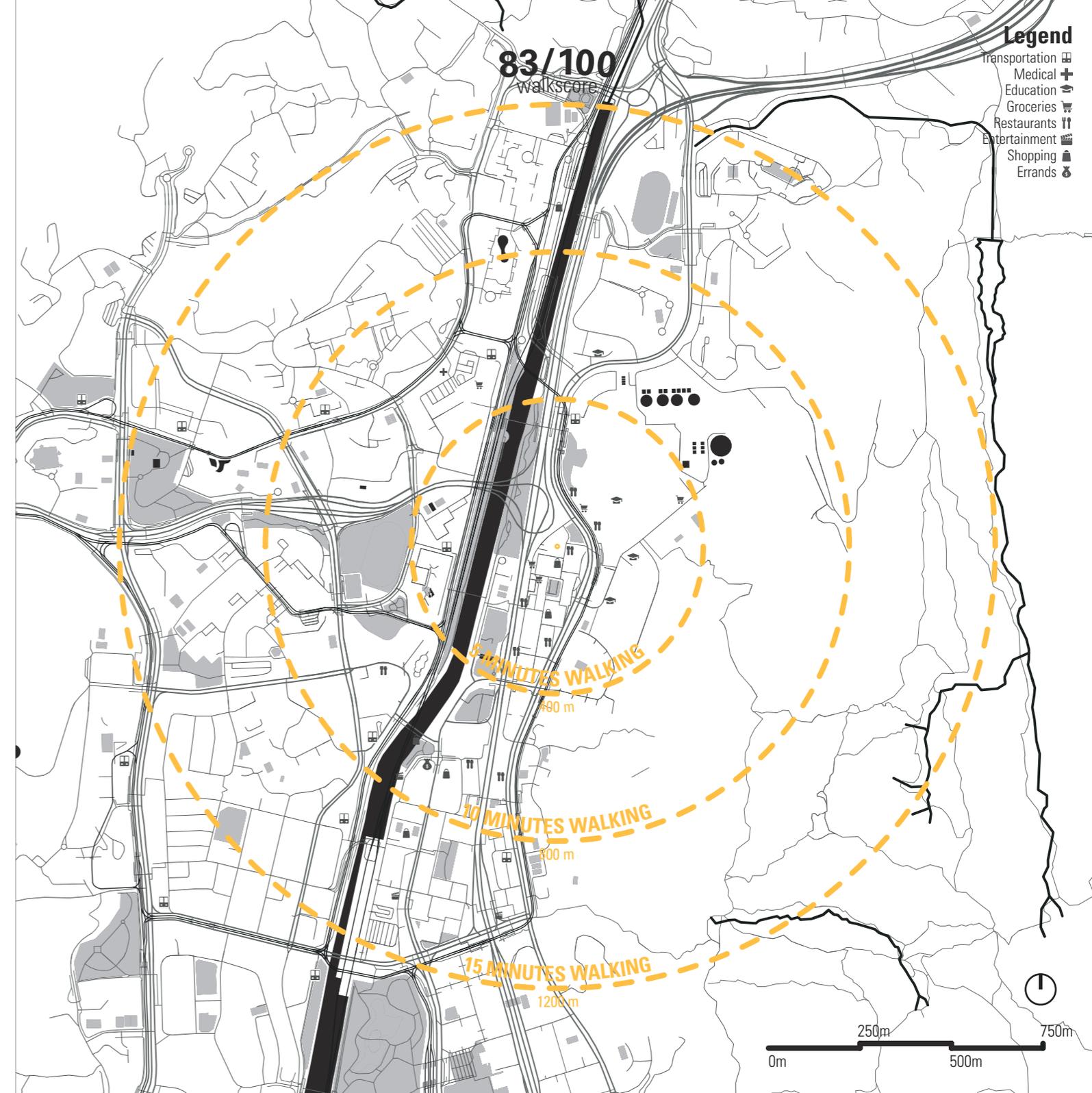
Jiayuan International Group Limited; Stan Group Limited. 2018. "Sales Brochure". TPlus

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Lau, & Wei. 2018. "Housing size and housing market dynamics: The case of micro-flats in Hong Kong". *Land Use Policy* (78), 278-286.

Li, & Liu. 2019. "Developer slashes prices of T-Plus flats by 38 per cent to get first-home buyers to give Hong Kong's smallest abodes a look-in". *South China Morning Post*. July 5th, 2019.

Ye. 2017. "A Peek into 6 of the Smallest Flats in Hong Kong". *South China Morning Post*. July 22nd, 2017.



PROCESS

*Jiayuan Int. Group; Stan Group -
developers + designer
Asian Allied Inf. - contractor*

Main Actors

No overrides were registered nor
been found

Overrides

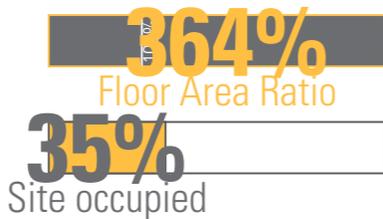
The development has been criticized
by civil advocacy groups defining it
as "inhumane"

Conflicts

USES



The building is residential on the upper floors,
with 7'346 m² dedicated to it, while the 7870 m²
of the lower floors are dedicated to commercial
spaces.



The building occupies 1'464 m² (35%) of the
site, and offers a total of 15'218 m² of floor area,
developing 364% of the site area.

MANAGE

Sold
in private negotiation

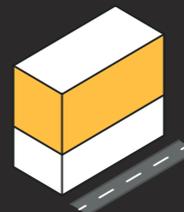
The units are sold from 2018 by the
Cetaline Property company



Studios have been sold for 3 millions HK\$,
equivalent to 326'000 €, 25.08 €/m², which
is 75 % of 434'450 €, the average studio
price in Hong Kong

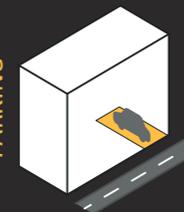
No programs in support of buyers
or helping the construction process
have been found

SEPARATION
FROM THE STREET



The part of the building hosting the
units is physically a volume placed on
the top of the shopping mall

PARKING

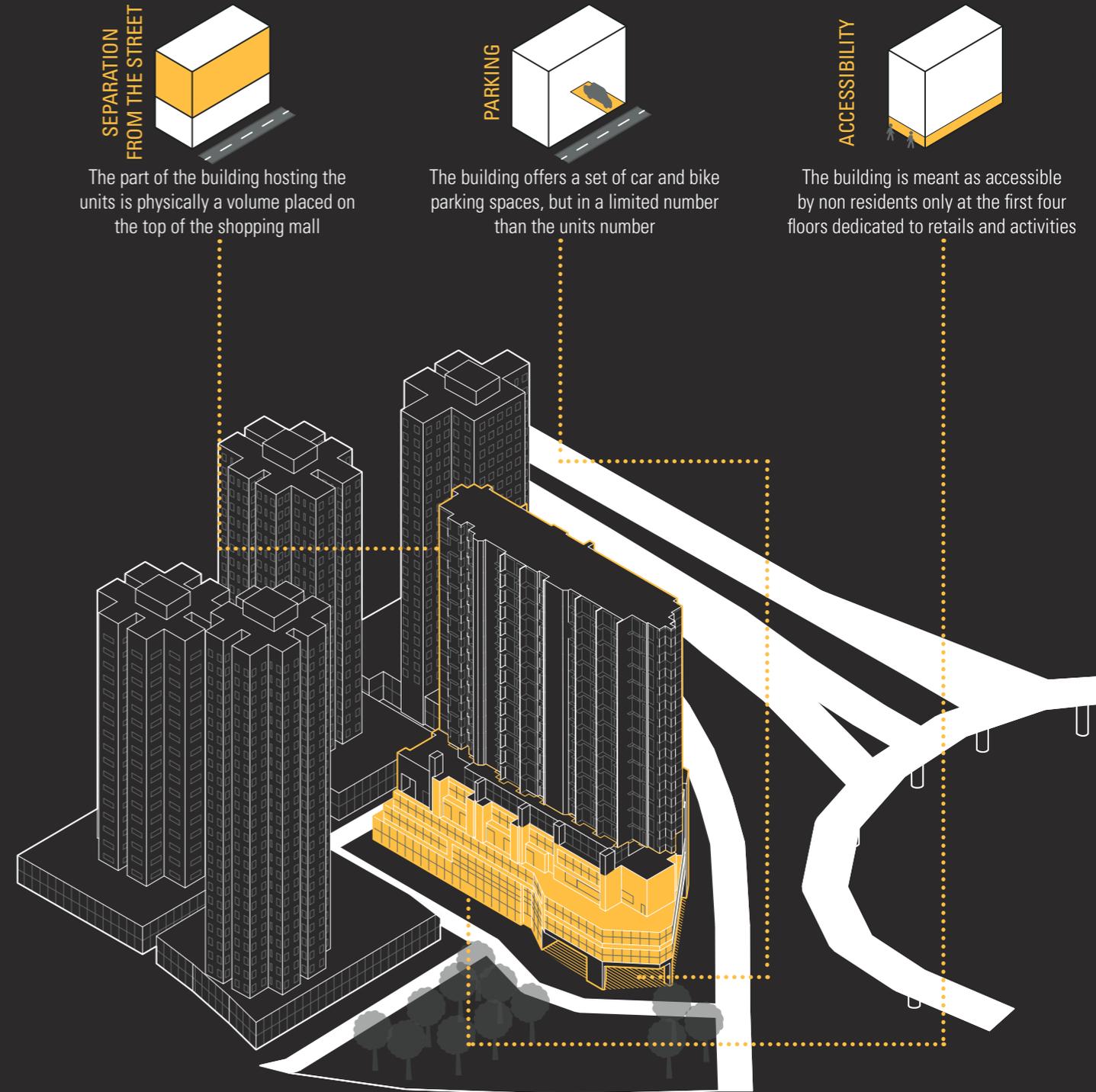


The building offers a set of car and bike
parking spaces, but in a limited number
than the units number

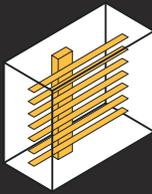
ACCESSIBILITY



The building is meant as accessible
by non residents only at the first four
floors dedicated to retails and activities



DISTRIBUTION



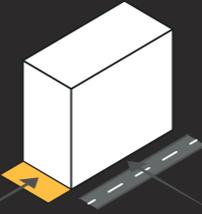
The distribution of the building is organized with a vertical core and horizontal corridors for each floor

CONNECTIVE SPACE



The connective space in the building is not designed for being used also for stationary activities

ACCESS



The main access is placed on the pedonal street, while vehicle access is places on te main road

UNITS' QUANTITY AND SIZE



The building offers 336 units ranging between 11 and 21 m², while other 69 units are larger

UNIT/AVERAGE SIZE RATIO

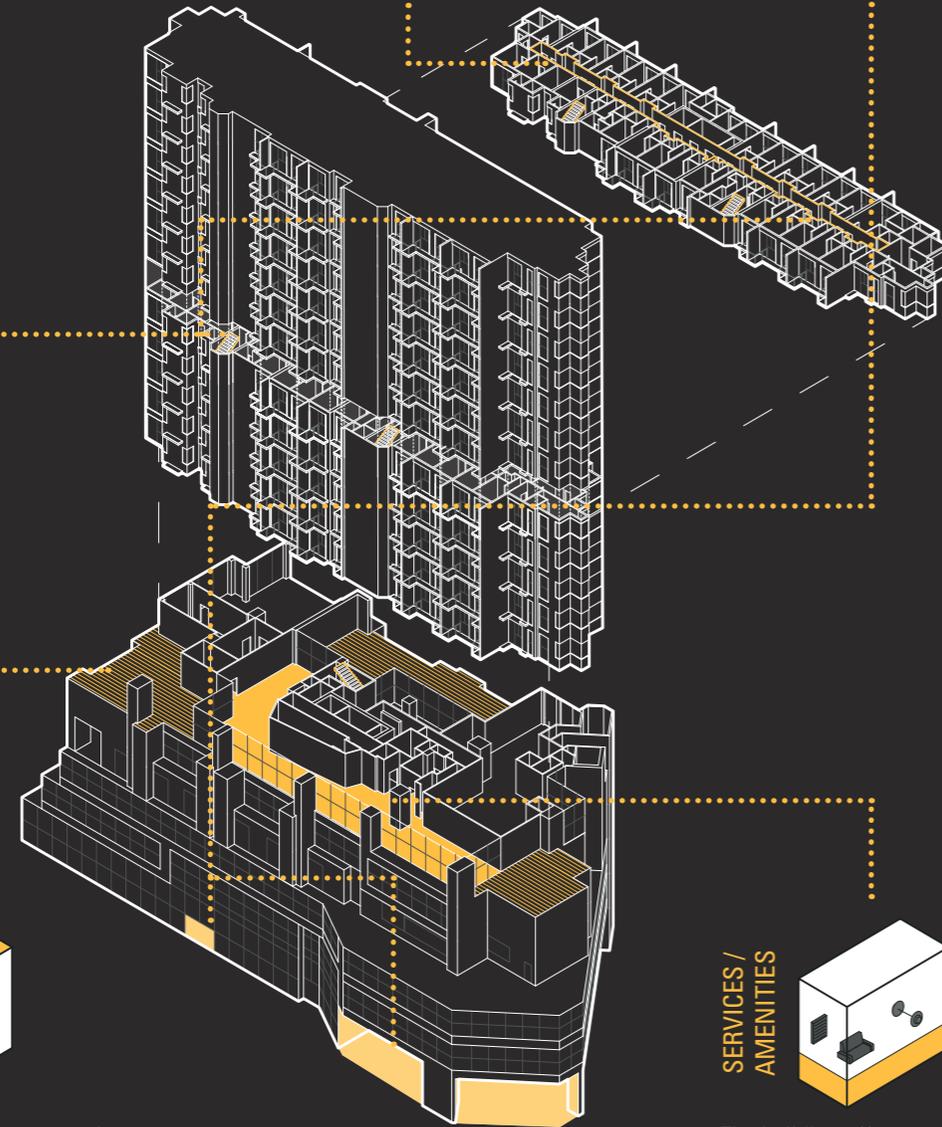


The unit is 69% smaller than the average size of the houses in the city, which stands at 40 m²

UNIT/LAW SIZE RATIO



Local codes do not require minimum dimensions for market apartments



OPEN AREAS



The building offers open areas at the fourth floor with the communal terraces and on the roof with private terraces

SERVICES / AMENITIES



The building offers extra spaces relax area, library area, yoga area, gymnasium area

OPEN AREAS



Some of the units have a private balcony of 2 m² as exclusive use open area

OFFSETTING SOLUTIONS

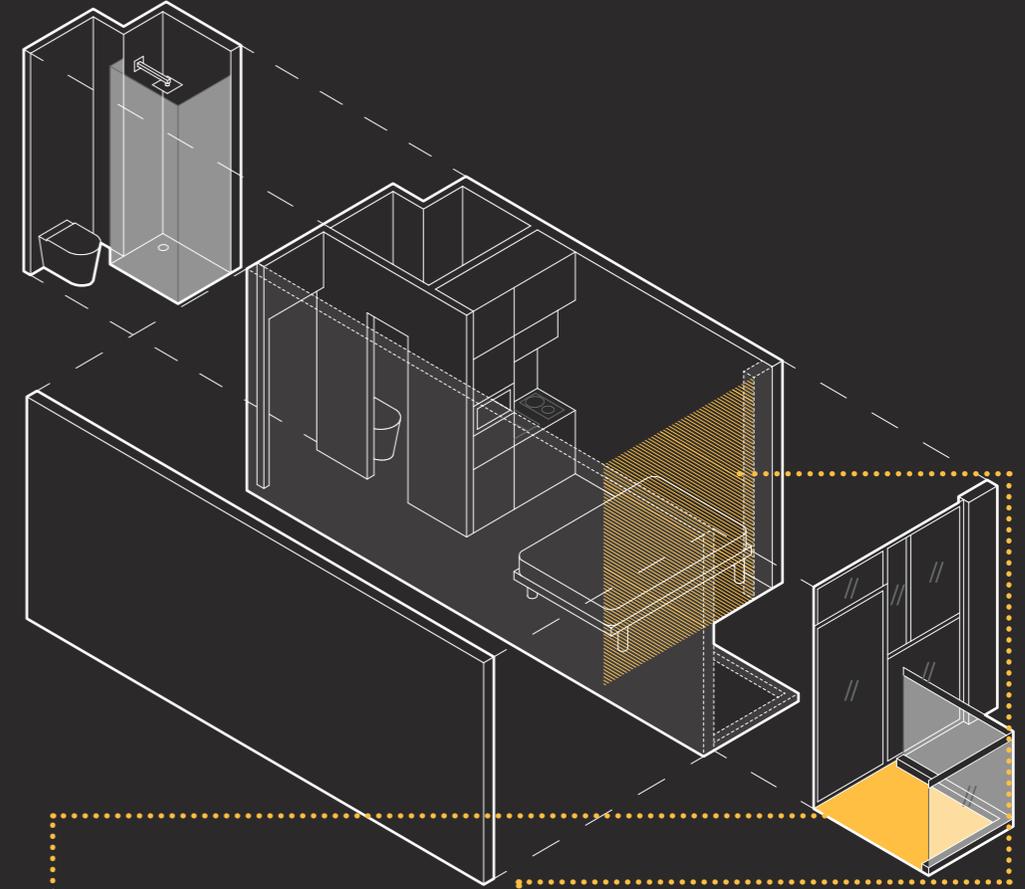


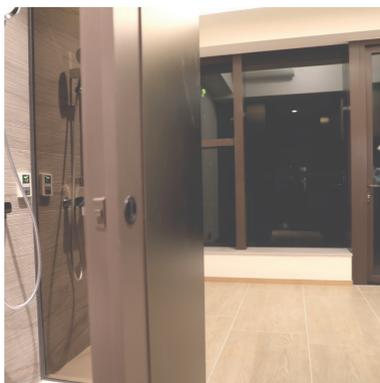
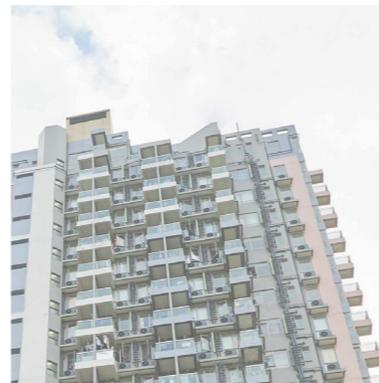
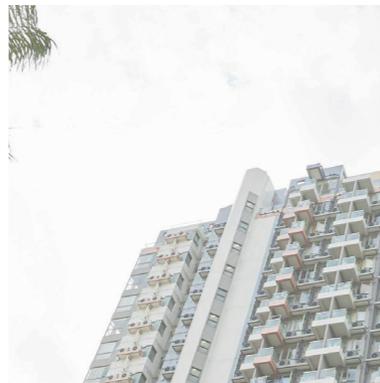
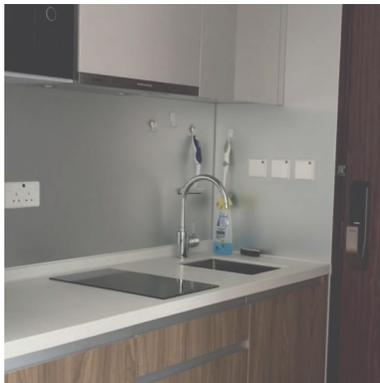
The unit has the short side completely windowed, granting more natural light to enter in the apartment

FURNITURE



No built-in furniture, nor convertible furniture is offered into the units





The T-Plus building is a massive development that, at the time of construction, set the record as the smallest apartments in Honk Kong. The Hong Kong real estate market is among the most expensive in the world, and for many years the apartment size is downsizing while the prices are growing.

Placed far from the central Victoria Harbour area, it obtains anyway a good Walkscore®, being defined as a very walkable area. The neighborhood offers many opportunities for shopping, various restaurants, schools, and even a hospital.

Composed of two volumes the building clearly differentiates the spaces dedicated to retails in the first six floors and the ones dedicated to residential in the last thirteen. The residential floors are filled at maximum with units, offering a total of 405 units. A communal floor links the two parts, offering a relax space, two terraces, and library, yoga, and gymnasium areas.

The micro-units are extremely small, ranging between 11 and 21 m². Subtracting the areas of balcony and bathroom, and the ones occupied by the kitchen furniture, less than 5 m² are left for living. However, these dimensions are only 68% smaller than the average studio flat in the city, highlighting the well-established trend of downsizing in the city.

Although most of the units offer to residents a small private balcony as open areas, only one standard size window is provided, not compensating the scarcity of space with light. Indeed, nor compensating strategies nor devices are placed inside the units, while, as other examples, cooking appliances are reduced to the minimum and in part left to external spaces, since only one heat place, a sink, and a microwave are provided.

The selling market has been a failure for developers, forcing to discount units already after few months since the opening of sales, while the development has received strong critics from civil advocacy groups, which defined the size of the units as “inhumane”.

In conclusion, the development is an extreme point of the shrinkage trend, probably moved by speculative reasons in a hungry market.

Photographs credit: *Factwire; Midland Realty*

the
TOOLKIT **4**

the TOOLKIT calls to ACTION

1 | INTRODUCTION TO THE TOOLKIT

Analyzing 1+11 cases can not be an all-embracing overview of today's micro-units' situation, but it could be a starting point for outlining some evidences. Moreover, the structure of the analysis is meant as extendable to other cases analyzed in the future for making the toolkit more precise and more statistically based.

The toolkit is here divided into two parts, following what have been the main fields researched during this research work:

- Processes
- Spatial

The processes part collects the evidences emerged in the cases related to the processes, especially in their normative, economic, and relations between the actors aspects. The spatial part presents more space-based evidences, suggesting concrete actions to do in the design phase. The spatial evidences are divided into three sub-groups: initial conditions, shrinkage, and compensating.

The two fields are, however, only a categorization, but it is intended that complex problems such the architectural ones can not be faced by totally separating one field from another.

Each advice reported is declined for the different actors involved in micro-units. All of them can make their part to improve the micro-units planning, development, and choice with simple actions. Each advice is, indeed, an exhortation, a call to act in a certain way. Why it is suggested to act in a way and not in another is explained highlighting the evidence of the analysis, reporting the results, and giving an explanation for them.

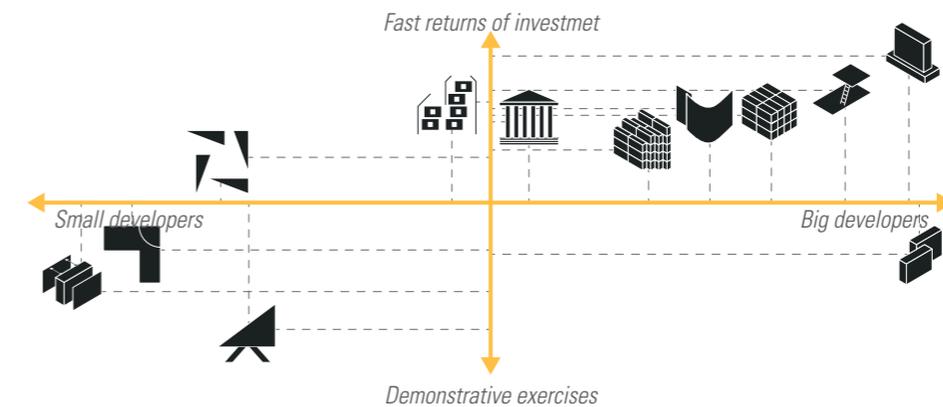
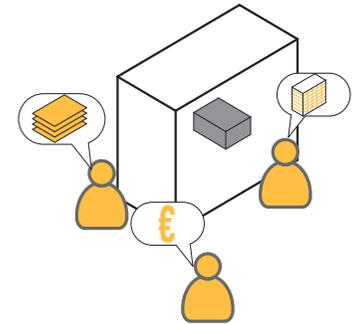
Furthermore, graphs and schemes are reported for strengthening the presented idea and showing which are the data, trends, and findings that underlies these exhortations.

2 | PROCESSES

Why are you doing it?

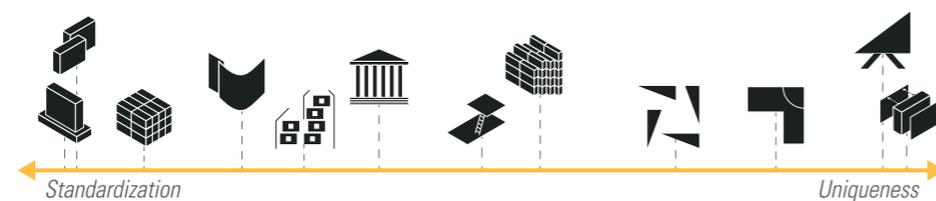
Reasons underlying micro-units are different in the analyzed cases, but a distinction can be done in dividing multi-dwelling developments from single-unit (or extremely small multi-dwelling) ones. The firsts are generally carried on by big developers with the aim of achieving fast returns of the investment. To reach this goal, they are moved by single-households needing one- or two-person houses for adding the units to the dwelling stock and pricing them near the market-price; by doing so, units are attractive because they are perceived as in-line or slightly below, in absolute terms with the market.

Second ones, instead, are promoted by small developers or by single person too, and are less economic-driven while being demonstrative exercises, tests, or artistic installations, and it appears they significantly exceed the market-price level (except Yokohama Apartments, which stays slightly below), concentrating on users' experience and innovation.



The reasons underlying micro-units could be divided also with an alternative, more simplistic, categorization too, separating new constructions from renovations, where, according to findings, new constructions search for profit while renovations try to maximize the use-experience of already existing small spaces, defining a unique and unrepeatable apartment.

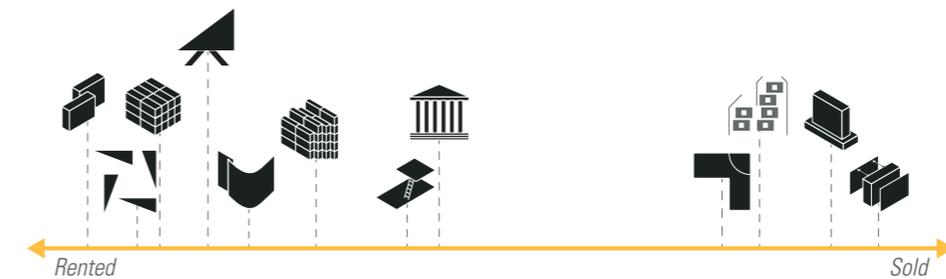
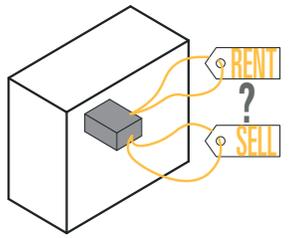
Uniqueness is a double-edged sword, because it creates a stronger appeal but for a smaller target only. Thus, it is up to users to decide if uniqueness deserves a well higher rent than its opposite standard and repetitive micro-unit inserted in a multiple-dwelling building. As well, it is up to the developer deciding whether to risk less or more, targeting its development to a broader base or to build a more “niche” market apartment.



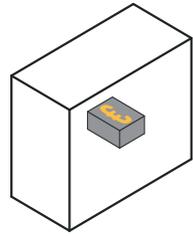
Rent, do not sell

Two-third of the analyzed cases are rented and not sold. Even though not a declared motivation underlying this choice has been stated, it is reasonable to think that this is related to the target micro-units are for: young people in a transitional phase of their life, in which they start to search for independence but are not ready to make long-term plans. This temporariness, even if related to some years rather than few weeks, together with the economic situation of this target of users, pushes developers to rent micro-units rather than selling them.

Developers should always keep in mind the characteristics the micro-units target have, and planning the developments depending on them. Users should obviously think about their future plans for deciding whether renting is a good choice for their personal situation.

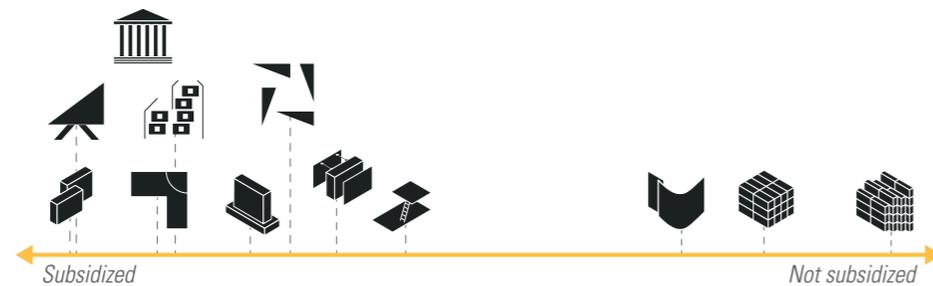


Consider to subsidize them

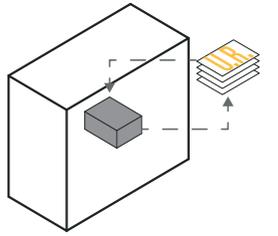


Some of the American cases offers a percentage of units as subsidized ones for low-income households. The reasons for the presence of subsidized units are different: in San Francisco they are requested by law as an alternative to the payment of a fee for the same purposes, in New York City, instead, the city took part to the project and they represented their goal and hope for the project.

In general, municipalities should consider to encourage designating units for subsidizing programs in these types of developments. Indeed, by taking a share of the developed units for a high-requested market (the one dedicated to singletons) through public-private agreements or ventures, they could promote the rise (in a ruled way) of the micro-units while offering apartments to the lowest-income individuals.

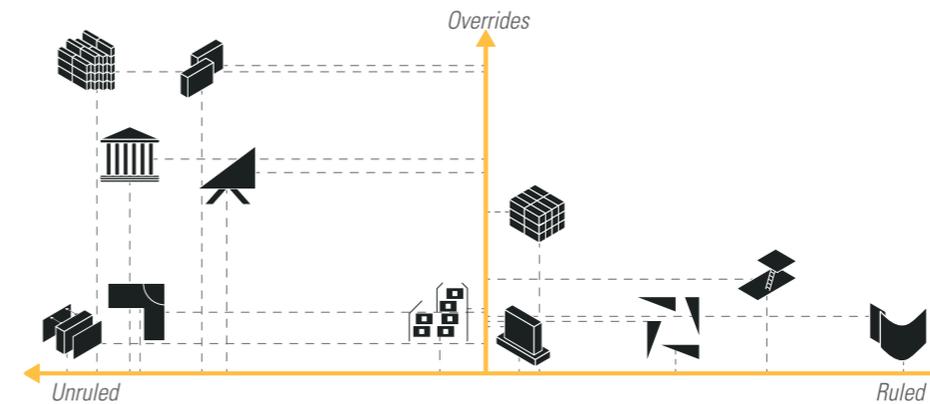


Regulate micro-units



The findings of the analysis highlight that some cases did not need to override the rules because municipalities already allow and regulate micro-units. Yokohama Apartments and Ququri in Japan as well as T-Plus in Hong Kong have no minimum size to comply by law, 388 Fulton, and CitySpace 38 Harriet in San Francisco and Songpa Micro-Housing in Seoul already dealt with minimum size values so small that were not reached or overcome. Thus, as a consequence, the process to carry on the project from the design stage to completion was easier in these cases.

Since the demand for adequate housing from potential users is high, cities municipalities should write down ad-hoc regulations for this new dwelling typology. It is what MyMicro NY has produced, a change in the regulations, but other cities still have too strict limits that force micro-units to apply for overrides.



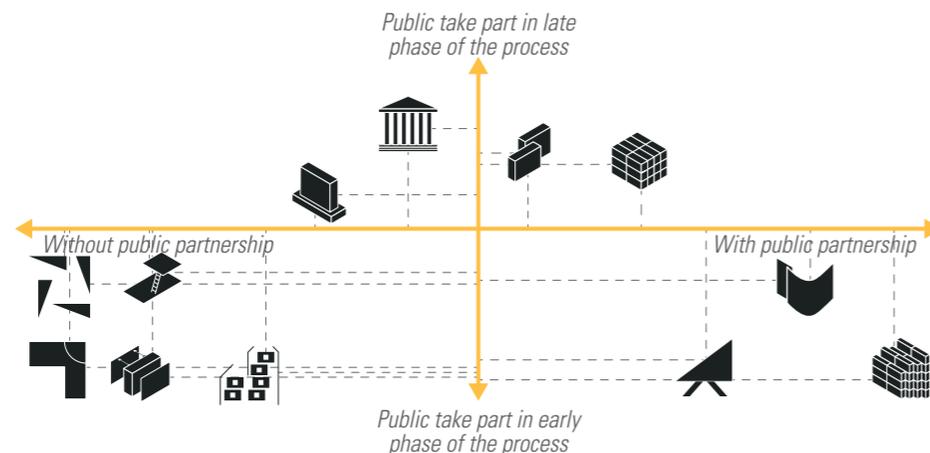
Join public and private actors



Even though most of the analyzed cases were promoted by private actors, some of them saw the influence of the public, whether in the proposal and design phase like in the MyMicro NY or in the Keret House, but also when the development needed to ask for overrides, like in the cases of San Francisco or London. Sometimes, even city's no-profit organizations took part in the process, like in the case of 388 Fulton, by sponsoring the project.

Keeping together different actors makes the project stronger, since it includes various instances and visions, and it also allows for faster development, due to the spread interest from all the actors involved in the process.

Municipalities and privates should collaborate in the planning and development of micro-units building for fastening the construction and mixing the different interests of helping weaker people and low-income households and having earnings from the development. In this sense other actors, relevant within the cities boundaries, could take part in the processes: universities, organizations, and foundations could contribute to develop micro-units.



3 | SPATIAL

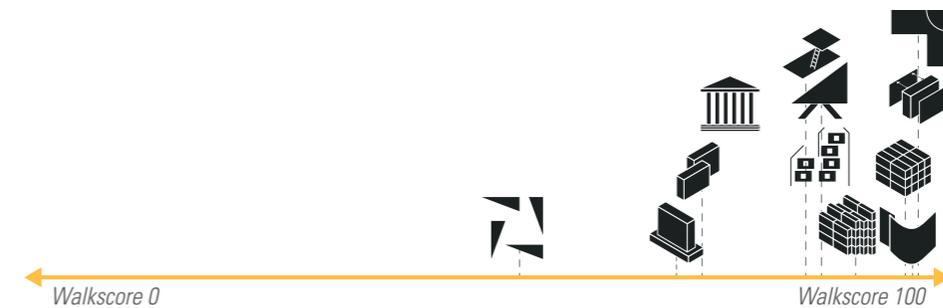
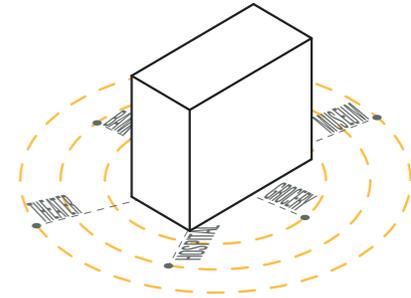
Initial Conditions

Choose walkable places

The first and most evident issue is the generally high value reached by all cases with the Walkscore® evaluation; of 12 cases, all scored more than 60 out of 100, and eight of them reached a score higher or equal to 90, which defines the place as a Walker's Paradise, according to Walkscore methodology.

The high walkability level of micro-units' locations could confirm what premises were: users of micro-units search for prime locations, full of services and amenities and avoid commuting, which, other than time-consuming, is generally quite expensive in big cities; this could mean both that users want to experience and be part of the neighborhood they live in and that users do not own a car for commuting nor they are willing to spend time in commuting.

The need for walkable surroundings plays a significant role in the choice of the area. This choice regards developers, who need to take it into account, since the risk is the units remain vacant, and by municipalities too, risking a failure of the plan proposing such developments. On the other side, users should always consider the presence, at least, of basic services and transportations, otherwise, there is the risk they leave the apartment ahead of schedule.

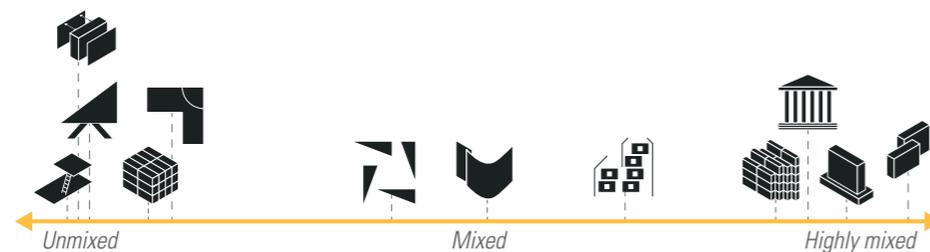


Mix the uses



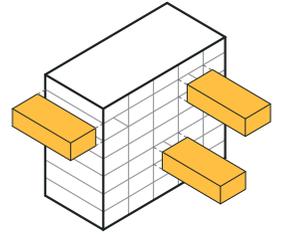
Many of the analyzed units are not only residential. Retail spaces, exhibitions, or other commercial activities are the services offered in these spaces. The presence of these spaces is often offered at the ground or lower floors for enhancing the street activity and attracting people. However, if a mix of uses are provided, the distribution paths of residents and other users are well divided (except in the Yokohama Apartments and in the Songpa Micro-Housing cases, which are designed with the idea of enhancing the community aspects of living).

Mixing the uses in a micro-units developments could be a great opportunity for developers because of the increase of attractiveness of micro-units, since they would offer other services within a walkable distance to users. Even municipalities could consider to require a share of non-residential spaces when regulating the development of micro-units, so that the street-level activity increase considering that these kind of developments are usually meant to be in central locations.

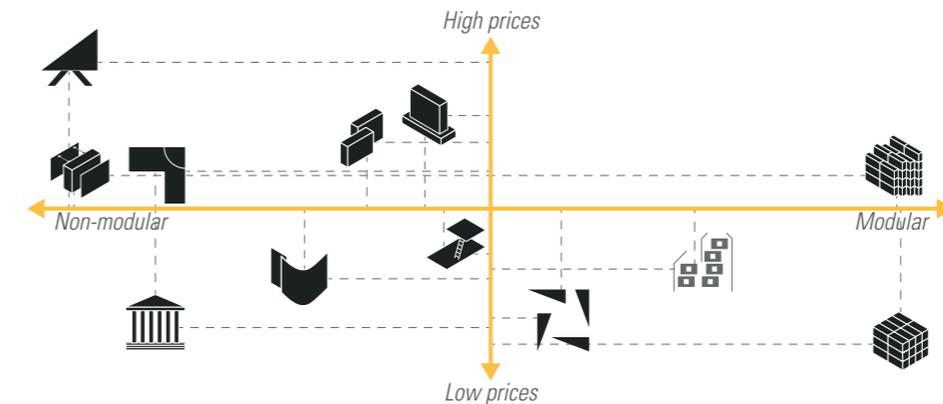


Do not necessarily focus on modularity

Speaking of prices, few cases kept the promises of lowering absolute costs, while most cases remained in line with the market or increased them. Among the cases with rents smaller than the average, Cityspace 38 Harriet has a modular strategy, while Yokohama Apartments has been built with the 2x4 construction technique, a construction system similar to the Ballon Frame which is easy and fast to build. However, technology not always helps in containing costs, since neither MyMicro, which uses modules assembled off-site, or Ququri, which uses the 2x4 construction system, showed a saving in rents.



Thus, the developer and designers' efforts should not focus too much on choosing the best technology for lowering rents because, since it is not the only variable of the equation, it cannot ensure a positive result. Users, on the other way, should carefully look at rents and prices and do it before looking at the details of the development, for considering whether it is a convenient choice or not.



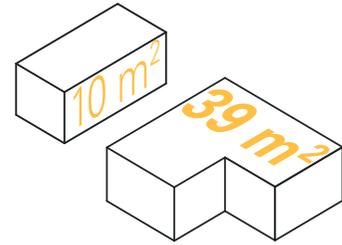
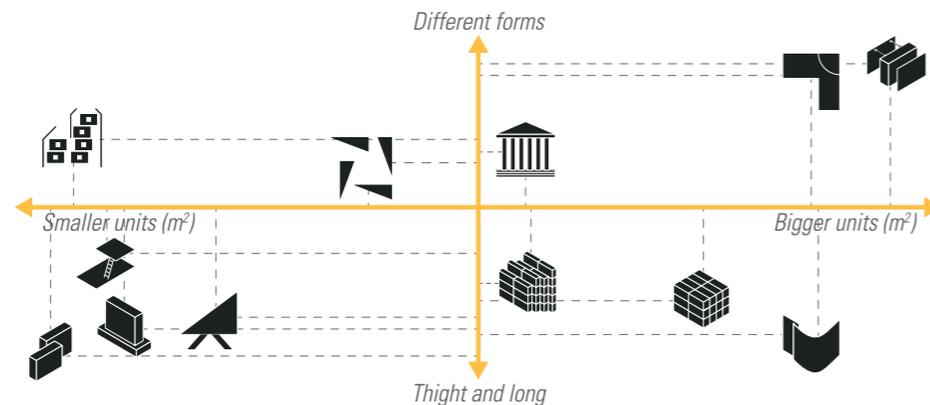
Shrinkage

Shape the layout thanks to dimensions

A point that emerges from the analysis of selected cases is that there is a sort of relationship between the size of the apartment and the layout they have. Looking at the apartments it could be noted that, generally speaking, apartments' layout standardizes as the size of the same down-sizes, becoming longer and tighter, with the main window opposite to the door and the bed far from the door.

A possible reason that explains why this happens could be that at the decreasing of space corresponds a minor number of combinations of furniture and elements, determining an overall standardization in tight and long units.

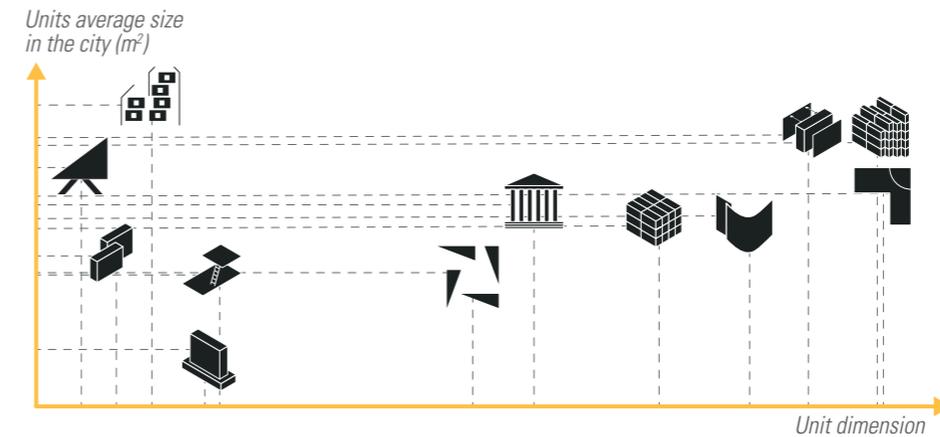
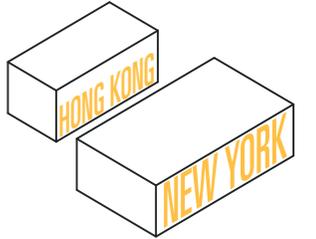
Developers and designers should carefully consider how much to shrink if they desire to reach an attractive development, in order to avoid same repetitive layouts. On the other hand, if great shrinkages are set as primary, the main actors should take into account to shape units with tested forms, which have solid foundations in perception studies and combination calculations.



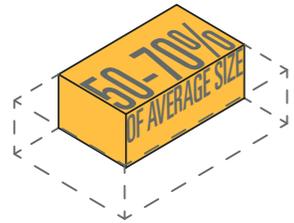
Shrink according to local culture

The analysis starts from a premise: micro-units are at least 50% smaller than the average dimension of apartments within the city. As evident from the analysis, different cities have very different average dimensions and very different outcomes in absolute terms, but the percentage of shrinkage is somewhat similar. A similar trend only strengthens the fact that the phenomenon is the same all over the world, but the different absolute values highlight how much culture and traditions are important in dwelling dimensions.

Developers and architects, as already stated, should keep in mind what the culture of the place is and design the units according to it, avoiding to repropose winning solutions of a place in another, because they could be not as successful as previously had been. At the same time, users should take into account their habits and what the unit offers, considering that choosing a space too small could become a source of stress.

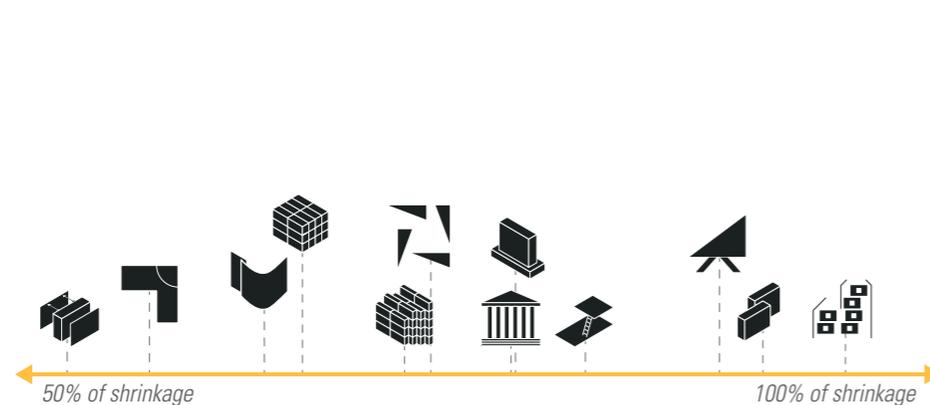


Shrink, but not too much



The majority of the analyzed cases has a reduction of the unit floor area from the average house dimension that stays between 50% and 70%. Only few outliers overcome these percentages, highlighting how an excessive reduction is not a common trend, probably because of problems in being accepted by users, relating to the cultural issues already discussed, or because of technical problems in the construction as in the Hong Kong T-Plus case. Indeed, the cases distribution, except the outliers, is almost an inclined straight line in the unit and average dimension relationship.

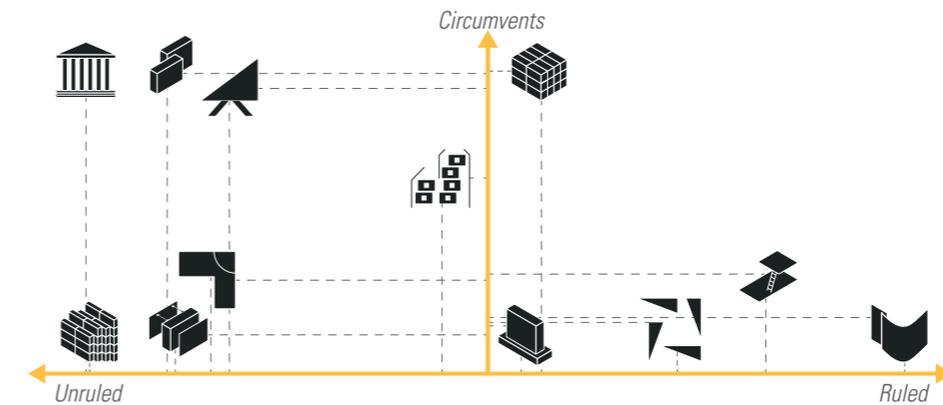
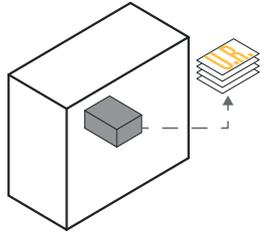
Developers and designers should carefully keep in consideration to not exceed the shrinkage. If overcoming the 50% is necessary to build a micro-unit, according to this specific research work, going to much small could only have the outcome of a vacant apartment, not helping to solve the housing needs for people nor ensuring profits for developers. In this sense the work of municipalities could be very important, accepting micro-units developments but regulating them, and not removing unconditionally any obstacle in the normative. The phenomenon must be enhanced but controlled for avoiding speculative processes.



Use experiences of cases for setting the rules

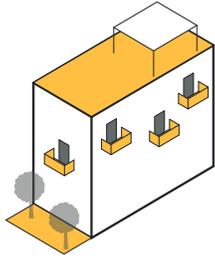
The need for overrides and the absence of a proper regulation specifically related to micro-units typology pushes developers to circumvent existing rules while shrinking the dimensions of the developments. Thanks to legal vacuums and grey areas of the regulations, some cases built micro-units in any case. The record of the development as student housing like Cityspace 38 Harriet, or as rooming housing like the Arcade Providence, has allowed the construction of the units. Leaving the ground floor free for parking purposes like the Songpa Micro-Housing has granted to give users a public plaza in front of the building, even if the space is classified as parking.

Since the absence of specific regulations, developers have been forced to place the project in legal vacuums and grey areas in order to build the development. These experiences could be taken by municipalities and planners for tracing down the rules that, hopefully in a soon future, will be set for controlling the micro-units developments.



Compensating

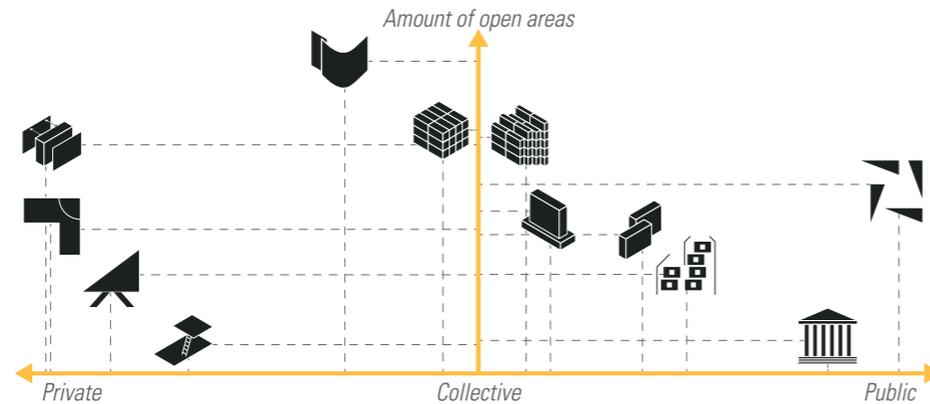
Open the unit (or at least the building)



Almost all cases offer an open area within the building's boundaries. Open areas are not standardized neither follow the same logic, some of them are for unit's tenant private use, others are communal rooftops or ground floor backyards, but the presence is a constant. This is related to the need, for people living in such small spaces, of having alternative spaces in which relaxing.

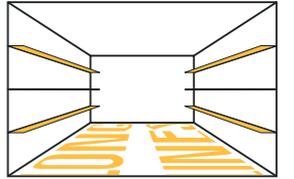
If usually micro-units tenants spend most of the time out of the unit while working, meeting friends, and "living the city", and they use the apartments mainly to rest and sleep, it happens sometimes that they spend a bit more time in the building; in this cases having an open area for giving users spaces alternatives to their "pod" helps them.

Designers should take into account to include open areas to the building not only because, sometimes, are required by law, but because they could increase the appeal for those who are not strongly motivated in looking for micro-units. Of course, people who barely tolerate small closed spaces are not in search of micro-units, but even more inclined users should pay attention to have an "emergency" open space for particular periods in which going out around the city is not possible, not only because of drastic events like the past lockdowns for Covid-19 pandemic but by more ordinary things too like flu.



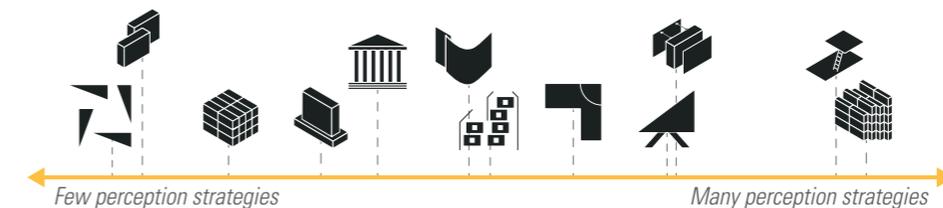
Let the unit be perceived bigger than it is

As already pointed out, the analysis highlights how the units standardize while becoming smaller and smaller, and how they assume the same configuration, even in the disposition of the furniture, with the bed placed as far as possible from the door and the window and the door placed on the opposite sides of the unit.

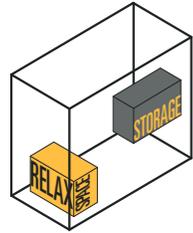


This structure is part of a studied strategy for giving the feeling the unit is bigger than it really is. This is achieved by specific relationships between elements and the users' eyes, as explained by Fisher-Gewirtzman (2016), who studied the perceived density in small apartments and found out that longer internal lines help in feel the unit bigger, as our findings suggest. However, also other strategies are adopted for making the units look bigger. All the cases betted on filling the units with natural lights, increasing the usual size of windows, or multiplying the number of them through the unit. Sometimes the concept of window has also been reinterpreted, adopting clerestory windows like the Songpa Micro-Housing or using translucent envelopes like the Keret House. At the same time, most of the units use white finishes and light wood floors or elements, which helps to reflect light inside and make space looks like it is expanding.

Developers should consider how small spaces are perceived by the human eye and what are tips and tricks for making the spaces look bigger. Users should be careful whether these kinds of attentions have been carried on in the design stage, or they risk leaving earlier than scheduled because of the sense of oppression they could feel.



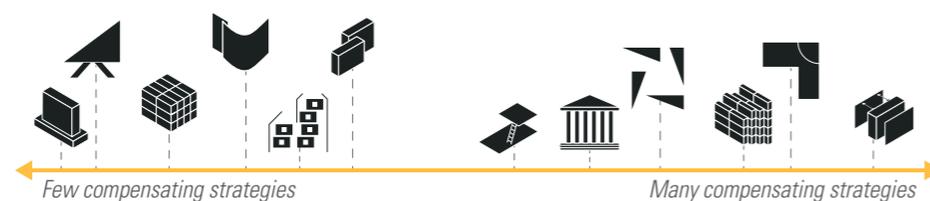
Compensate the shrinkage



Since dimensions are all considered small in the city where they are located (all cases are more than 60% smaller than the average apartment size of the city), they all adopt strategies and devices for compensating the scarcity of space offered.

In some cases, the third dimension of the height plays an important role in enhancing the livability of the unit, by reducing the perceived density and by offering additional spaces for storage, like in the MyMicro NY case, or by providing functional mezzanines like the Ququri case. The presence of storage is sometimes offered in separated residual places, like in the Yokohama Apartments, or in spaces not adapted for living (i.e. in the cellars, like in the Arcade Providence). The smallness of the units is faced by many cases also with the adoption of built-in and convertible furniture. In this sense, extremely transformable spaces like Life Edited 1 give an extra-boost to the sensation of changing surrounding conditions and so to the tolerance of small spaces.

Both developers and users should think about which are the strategies adopted to deal with the lack of the floor area, the first ones in order to provide more attractive solutions, the second ones for choosing apartments that offer more than the mere floor area they are paying for, so that the psychological and irrational part of the mind is satisfied.

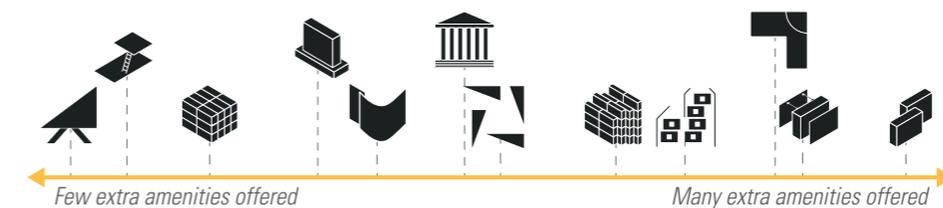
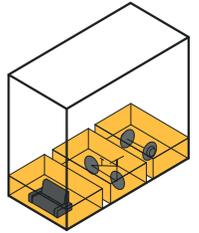


Offer extra amenities

Almost all the cases analyzed in multiple dwelling buildings offer extra amenities space, usually shared among the units. This is an important aspect since it allows users to have access to spaces and functions that do not fit into the private unit.

The extra space does not have to offer uncommon functions or be as much as in The Collective. Relax spaces like in T-Plus, extra storage like in Yokohama Apartments, bigger common kitchens like in MyMicro NY, on-site laundry as in The Arcade Providence, or maintenance equipped room as in 388 Fulton are useful simple spaces users could like. The amenities should not necessarily be a separate space but could fill other purposes areas like in the cases of Songpa Micro-housing in which corridors and balconies become relax and gathering spaces.

Developers should provide extra amenities spaces in the buildings for making their development more attractive; even if usually is not requested, offering non-basic facilities in such developments only represents a plus that compensates for the lack of space in private units. This point could become a request municipalities could fit into rules in regulating the phenomenon. Since micro-units still have to be controlled in many areas, a note could be added by requiring a certain percentage of extra amenities for units smaller than a defined measure. This condition would not transform the building into a cohousing, since it would miss the maintenance and management of the common parts by residents.



CONCLUSIONS

The carried-on research has granted to deeply analyze a discussed case (MyMicro NY) and it allowed to explore the emerging phenomenon of micro-units comparing international case studies. By doing so, the results of the work contribute to the debate on this phenomenon, and laying the foundations for analyzing it through different variables, not only focused on the spatial dimensions, forms, and design, but considering also the processes and socio-economical conditions and their effects on the built environment. These intertwined fields are even more indissociable while talking about a rising phenomenon like the one of the micro-units, which, as it has been discussed in the research, are still not commonly defined, often not regulated, and still not too much experienced.

This is why this research ends with a toolkit, a set of possible actions and suggestions addressed to designers of micro-units projects but also other private and public actors involved in city-making (as developers and municipalities). The toolkit is proposed in the form of calls to action, which highlight relevant issues that emerged in the analysis, regarding all the design process phases, from first conceptualization, decision making, exchange with existing regulations, to the final design proposals. The proposed toolkit is an early proposal, a product resulted from the outcomes that emerged in the cases studies analysis.

A significant part of the research carried out so far has been oriented to study in-depth a single project and elaborate a methodological approach for comparing it with other case studies. The twelve micro-units analysis is a first exploration and experimentation of this method. Accordingly, a possible future development of the research could be to extend the set of analyzed cases, to strengthen (or refute) the frequency of criticalities and potentials of micro-units explored in this work. In this way, the toolkit could be integrated with a wider range of actions for actors involved in decision-making processes.

In the future, the research could be oriented to integrate and expand this preliminary conceptual toolkit, with the aim to turn it into a more

operative and replicable set of tools and devices for designers, but also stakeholders, developers, and public authorities. This possibility could address the work toward an interdisciplinary perspective, enlarging the dialogue, already started, with other scholars and experts especially in economical and juridical fields. Moreover, the interdisciplinary perspective could be extended to sociologists and survey specialists, to widen the scientific analysis including the users' point of view. In this way, the research could be extended to highlight which are the subjective perceptions and opinions of living in such small spaces. This perspective could wide the discussion about the uses of small units: are used by the targets identified in the project phase? How important is the temporary nature of living in the choice of a micro-unit?

Furthermore, even if the presented research does not include the issues related to the after-construction management, in the future the research could be extended in this direction, focusing even on the long-term prospects of an emergent architectural typology and its effects on the urban context: what has happened after the end of the building site? How is long-term management organized? Do micro-units affect the surrounding urban contexts?

SOURCES

The phenomenon analyzed in this work is, as well described, a contemporary phenomenon. For this reason, less literature than usual is available in academic and non-academic researches. The research has been thus carried on also with the help of primary sources, like official documents produced in the process of decision and design of the cases analyzed, reports of cities' statistics and data, transcripts of meetings. The use of primary sources allowed the research to be also more objective, avoiding to filter the author's opinions in second-hand sources.

Furthermore, in the research even actors involved in the processes have been used as sources, both with biased documents or with direct interviews. Anyway, all the biased opinions have been taken as points in a wider drawing, avoiding to use them as solely sources, and always considering the interests at stake.

The primary sources used have been found in various archives. All of them are digitalized archives since the documents of a contemporary phenomenon are mainly produced digitally.

The archives of the departments of reference for the buildings in the different cities analyzed have been used for recovering documents relevant to applications of building permits, proposed drawings, possible rejections, or change of use permits. The documents for official complaints too have been found through this path. The archives described are all freely accessible through the official websites of the studied cities.

The archives of the departments of reference for the city planning in the different cities analyzed have been used for recovering the laws and regulations in force in the studies city or area. The zoning regulations and the building codes are freely accessible to the general public through the official websites of the studied cities or of the state in which the cities are located, depending on the level of applicability of the cited law.

For the City of New York, official statements of the Office of the Mayor's news section have been consulted for directly analyzing and under-

standing the positions of single actors in a process. They are accessible through the official websites of the City of New York.

Biased positions have been consulted also searching for the projects, visiting official websites of architecture firms, designers, and developers involved in the processes of the analyzed architectural projects. They are generally accessible portfolios of developed projects on architects and developers' websites.

The statistical office of the United States, the U.S. Census Bureau, provided a wide set of data referred to different years, periods, areas, and topics. Their data, freely accessible through a system in their official websites, have been used for interpreting trends and reporting facts of the actual situation.

Some direct interviews have been carried on during the research, even with actors directly involved in the processes, like Richard Plunz, member of the adAPT NYC competition's jury, or Jonathan Kirschenfeld, team coordinator in the Making Room initiative. Both the interviews have been done on the Zoom video conference platform.

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