Urban regeneration is accounted as the core potential impact resulting from new residential developments. Such a potential becomes even more relevant when newly designed buildings interact with a preexisting heterogeneous urban fabric. Teaming up with students of Politecnico di Milano, Oneshot Real Estate Solutions investigates the context and possible impact of Bosconavigli in Milan.

The Evolving City Lab 1

Studies on the impact of the Bosconavigli development

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The Evolving City Lab

Studies on the impact of the Bosconavigli development

The Evolving City Lab is a research format launched by Oneshot Real Estate Solutions and curated by Alessandro Scotti. The initiative focuses – through the partnership with external institutions – on investigating the impact of new developments managed by Oneshot on directly affected urban areas.

Oneshot
Real Estate Solutions

Survey area

City Life

Sempione Park

Central Railway Station

Piazzale Loreto

Lambro River

Duomo

Viale Forlanini

Fondazione Prada

Ring Road

Darsena

Naviglio Grande

Naviglio Pavese

See next page

NW

NE

SW

SE

Concept Projects

CP1	Urban Corridors
CP2	T.O.H.M.
CP3	Uptitude
CP4	Talea
CP5	SML
CP6	Interscambio
CP7	Seijaku
CP8	POV
CP9	Quipu

Ring Road

CP9

CP5

CP7

CP3

Porta Genova
Railway Station

Darsena

CP1

CP6

CP1

CP4

CP8

CP2

CP4

Railway

Naviglio Grande

CP6

Ring Road

Railway

CP9

Naviglio Pavese

Navigator

The possible changes produced by new urban developments represent the core interest of Oneshot as a real estate international operator. We do believe that carefully conceived projects have a remarkable potential of propagation.
Like many other city dwellers not necessarily operating in the real estate field, we were able to witness in the past few years how new constructions with unique positioning have the chance to express such potential by detonating extraordinary regenerative energies at both social and urban level, specifically when interacting with a pre-existing urban fabric.

The residential project of Bosconavigli in Milan (Italy) – conceived from an original idea by Stefano Boeri, signed by the architecture firms Stefano Boeri Architetti and Arassociati and with landscape design by AG&P greenscape – is a clear example of how innovation has the vigorous potential of fostering new living trends, not only for those who inhabit a specific building, but also for entire neighborhoods. While embodying a new model of sustainable “green” architecture, Bosconavigli provides

the context for a different urban lifestyle in a constant and pervasive interaction with nature, and acts as a pivot between Milan's Naviglio Grande (an area in which leisure activities and residential buildings are intertwined) and the city's reference neighborhood for fashion and design.

Experiential analysis on the ground and careful field research represent for us the main tools in dealing with each of our development projects: aiming at the convergence between shape and function, while longing for an active role in the constant reshaping of contemporary cities. For the above reasons Oneshot decided to engage POLI.design (the knowledge network founded by Politecnico di Milano, as a bridge between academic research and production dynamics) in order to develop a research around the new Bosconavigli.

The result of such partnership was surprising: it achieved its goals as a didactic experiment and provided a massive amount of information. This information proved to be particularly precious, as it springs from a new generation of designers. Their fresh

gaze blended with our rooted interest for new trends and ideas that are yet to become established. The choice of collaborating with POLI.design has proved very much in line with the commitment of having the "human experience in the living space" at the center of our approach to real estate.

Stefania Quattrini
Co-Founder
Oneshot Real Estate Solutions

The Evolving City Lab takes on the challenge of investigating the context and possible impact of a major operation in the heart of Milan. In this case, the process is conceived and carried out in the frame of the MSc Degree in Interior and Spatial Design of the Politecnico di Milano, with the involvement of 31 students for an entire semester, working around the future Bosconavigli: the residential complex developed from an idea by Stefano Boeri, designed by Stefano Boeri Architetti and Arassociati, with landscape design by AG&P greenscape, promoted by Milano 5.0.

The aims of the undertaking are numerous and ambitious: by engaging students in their final steps of educational training, the will is that of giving proper recognition to the gaze and visions of non-biased young professionals; thus capitalizing on the value represented by a new generation of specialists in the field of design and by their perception on the evolution of contemporary cities. In the process, and throughout the construction of the entire output, students are engaged – and thus regarded to – as researchers; prompted and guided towards a rigorous research on the urban context soon to be affected by the

development of Bosconavigli. While shaping the scheme for a new possible didactical experience of confrontation with the real, tangible, scenario of an ongoing significant evolution of the city.

All the researchers are briefed by the professionals who worked on and shaped the Bosconavigli project on the key relevant aspects that guided the conception and evolution of the project; such acquired knowledge is gathered by the researchers and plunged into the urban context surrounding what – at the moment of the investigation – is nothing more than a designated building site.

A wide range of different analysis are carried out by the researchers around the neighborhood where Bosconavigli is to be built and its immediate surroundings. The exercised method is that of the first person experiential analysis, in which every researcher engages with the urban existing grid personally and using his/her knowledge and body as a measurement tool of perception. All collected data are shared and elaborated, highlighting characteristics, needs, opportunities and possibilities of evolution deriving by the inception of the new building complex in the existing context.

The specific features of Bosconavigli as a project that combines traditional canons of Milanese architecture with cutting-edge principles of sustainability in reshaping the relation between private and public spaces, are taken into consideration. As a result, by crossing the outcome of the analysis and the above peculiarities with their personal knowledge, views and aspirations as per the evolution of a future livable city, the teams conceive and elaborate a network of integrated concept projects for the area more closely affected by the new construction.

The concept projects are developed in total freedom, disregarding the actual construction feasibility, but rather springing from the urges induced from the interaction between the existing context and Bosconavigli.

The yearned portrait of a possible future city generated by such interaction – as conceived by a new generation of heterogeneous international designers – is that of an inclusive, green, low impact and well connected urban environment.

Alessandro Scotti
The Evolving City Lab
Curator

A city is not made up so much of buildings
as of places, possibilities, relationships, surfaces, colors.
(Ettore Sottsass)

The crisis of urban planning and the traditional instruments connected to behaviors of “zenithal arrogance” (Multiplicity 2003) and the new fluid use of the city have rendered the rigid functional subdivisions promoted by the Athen’s Chart of 1942 (Living, Working, Free Time and Historical Heritage) obsolete, and have led in the past few years to a reflection on the new nature of urban spaces and the processes that, nowadays, determine their development. The phenomenon of weak and widespread entrepreneurship originated not only from the reconfiguration and reuse of abandoned buildings but also led to improper and transversal use of new architectures, based on elusive criteria that create sites with low functional identity, that are reconfigured on a case-by-case basis, without a specific function, but adjusting to the needs of the moment and becoming actual urban *funzionoidi*, “functionoids” (Branzi 2010). In the present-day city, the quality of the places is not just the result of its architecture but is increasingly linked to a diffused urban landscape; a sort of buzz design, the definition Andrea Branzi uses for the shower of small and medium-size projects that contribute to creating a new level of expression and culture of the urban setting.

The new nature of urban areas leads to some reflections about the competencies that are necessary for their organic planning, not strictly imposed from above, but acting more through an integrated system of micro-interventions that are better apt to deal with the characteristics of volatility, temporariness, and velocity of adjustment, typical of the postmodern era. Planning expertise, capable of connecting different disciplines in a context marked by complexity, generating a global transformation through local and specific interventions, from interiors to urban landscape, applying the concept of "see small to see more".

The design approach to the urban space transformation

How can design be helpful for issues related to urban development? First of all, considering design as an "infraordinary" discipline, a term that Georges Perec (1994) uses to define a situation that doesn't have a proper setting but rather "stays in between the things", unifies them, becomes their backbone, their least common denominator. The ability to create relationships amongst different disciplines and extrapolate inputs for the project at hand. Celaschi (2008) identifies a four-axis system on which the designer is formed: social sciences, economics, and management, technical and engineering, art and creativity. By creating a relationship between said disciplines and filtering them through design, we obtain its four aspects: form, function, sense, and value, which are the result of their equalization done through design. Design as an interdisciplinary framework that can govern complex situations and as an intervention that creates micro mutations that, when systemic, can lead to a bottom-up development of the city. Design is hence an interdisciplinary backbone allowing for managing difficult situations and areas of intervention for a number of micro mutations that, being systematized, could lead to a bottom-up development of the city. "Design has become a central aspect of contemporary urban life. Design can make things not only more attractive but also more efficient and more profitable. It is deployed not only in the development and redevelopment of neighborhood, buildings and interior spaces but also in the production of every component of material culture. Indeed, the claims that can be made on behalf of design extend to every aspect of urban life. Design can make urban environments more legible and can assist people in wayfinding (Gibson 2009). It can help people with physical disabilities through codified 'universal' design (Herwig 2008). It can promote and ensure Public Health (Moudon 2005) and bring order and stability to otherwise complex, chaotic and volatile settings (Greed & Roberts 1998). It can make transportation and land use more efficient (Wright et al. 1997; Levy 2008). It can be deployed for the benefit of women (Rothschild 1999), children (Gleeson & Sipe 2006), elderly people and those with disabilities (Burton & Mitchell 2006), minority populations (Rishbeth 2001) and social diversity (Talen 2008). It can prevent crime, protect built heritage, foster a sense of place, engender community, encourage conviviality, contribute to sustainability and combat climate change. It can signal social status and lifestyle, reflect the taste and spearhead cultural change. It can make places more appealing, buildings more striking, clothes more stylish and objects more efficient. But other important aspects of design concern its wider economic and symbolic value and its roles in supporting and sustaining the political economy of urbanized capitalism (Knox 1984, 1987; Cuthbert 2006). Because design can make places and things more efficient, safer, more functional, more attractive and more desirable, it is a vital dimension of the exchange value of things and a key determinant of their marketability – whether a building, a subdivision, a dress or a lemon squeezer. Because design can embody ideals and signal values, it is potentially a powerful element of the dynamics of the political economy of places and nations". (Knox 2010). Interior design plays a particularly important role in this context, in its most wide connotation of design of interiors and spaces, a complex and articulated discipline that flows out of the confined space to invade any place conceived according to a "user-centred" approach, where the project of the interior is less and less reduced to the

physical component of the space, rather than more and more projected towards an "environmental system" combination of space/product/services and communication that illustrates well the inner multidisciplinarity of the project. This change of focus, from the prevalence of the interior physical component to the dominance of a polyvalent system, has generated a series of changes, including those affecting the project's area, which shows a progressive rise of the informational-cognitive component where the control of the network of knowledge involved becomes extremely important. Regarding the link with the city, interior design holds a crucial role as the stage of all the tensions that more and more often can be detected between the physical space and living behaviors: the relatively slow pace at which the physical space reflects the change of living, causes inertia, a sort of friction where traces and hints of new lifestyles deposit. "The quality of the contemporary city depends more and more on the quality of its spaces, interior, and exterior, even more than the eloquence of its monuments. Particularly squares, streets, and parks, even playing now a different role than the one played in the past, provide the quality index of a territory and of its capacity to offer welcoming spaces to the new contemporary wayfarer. The 20th century has been crossed, besides the illusory unity of the modern project, by a non-resolved conflict between interior spaces, architecture, and the city. Each of these subjects claimed its strategic autonomy but also its cultural centricity. Internal and external spaces have never found a steady balance since they are leading diverging logics. In the past few years, the temporary component of design resulted in the rapprochement of the planned spaces to more proper design logics, moving away from interventions based on durability, typical of architecture, towards a mindset that looks at the space/product cycle of life, in this case urban, becoming increasingly temporary, convertible, and reversible".

"It is therefore within the framework of these historical transformations that the question of interiors arises today; not as an area of competence of a small professional sector, but as an activity that plays a fundamental role in the overall functioning of the contemporary city. [...] The contemporary city can no longer be considered, as it once was, a set of architectural boxes but rather a flow of goods, information, services that changes continuously, determining the formation of a fluid landscape, where an infinite number of actors and energies play.

In the context of the apparently immobile scenario of our cities, where nothing seems to indicate the existence of an urban revolution in progress, there is instead a phenomenon of great historical originality consisting in a sort of functional landslide of almost all the architectural and urban apparatuses, derived from the denial or the overcoming of many predictions, including recent ones. We work at home, in the car, in the street, universities are made in factories, museums in gasometers, we live in warehouses, banks are hosted in churches, schools in storehouses and remittances, study centers in apartments, offices in artisan workshops. An urban revolution that takes place entirely 'inside' architecture, to re-functionalize a city that has aged compared to its intended use. This re-functionalization process does not consist of a simple updating program of the existing typologies but involves the beginning of an uninterrupted evolutionary process. This activity of continuous re-functionalization of the contemporary city is therefore achieved through the design of its interior spaces, intended as an autonomous infrastructure that, respecting the existing architectural organisms, modifies its social and productive destinations and renews its image, creating those mental maps all 'internal' to the city (and of which Kevin A. Lynch spoke in 1960 in *The Image of the City*, trans. it. 1964), made of signs and furnishings, commercial communications, and products on display, which allow the citizen to shape their own city, creating an expressive context that goes beyond the macro architectural signs, increasingly distant from everyday experience". (Branzi 2010).

The interior toward the exterior

In 1977 Ugo La Pietra shot the short film *La riappropriazione della città* (*The reappropriation of the city*), examining

the relationship between inside and outside of man-made spaces and the different ways of living in the contemporary city. His efforts over the following years will focus on the sense of living, which must not be the exclusive prerogative of the domestic space but must also involve public space, no longer conceived as a place to use, but to inhabit. "There is a big difference between living and using space: one uses a hotel room, one inhabits a domestic space. Living means giving a meaning, expanding one's personality; in this sense, over the years, I have developed spaces, objects, signs to provide useful tools for the reappropriation of public spaces both from a mental and physical point of view." (La Pietra 2019). Public space must become a welcoming place to stay, in which urban projects aim to re-semanticize the city. La Pietra wants to renew the rules of urban planning: "and it is precisely in this direction that the design efforts must be oriented: to allow the urbanized individual to use spaces and tools, as well as to own them; and to be able to mentally and psychologically own something, this something must be a source of satisfaction. To achieve these results, a first step could be to ensure the presence of all systems: as the private space, for example, where space and objects are defined to develop activities related to communication, survival and hygiene practices, recreational and cultural activities, even the public space should contain all these functions equally" (Zalone 2013).

Ugo La Pietra then analyzes the furniture objects, moving them outside the domestic space, placing them on the façade of the houses, in streets and squares, breaking the wall between public and private spaces. He takes single elements, examines them, and finds them a new meaning in their outside location: curtains, vases, armchairs, chairs; each of them has a significance in the past and finds a different one if it is simply brought outside while maintaining a solid semantic bond with its primary function, demonstrating that not only it is possible, but above all necessary, to regain possession of public space in a private form, guaranteeing and activating social exchanges between people and therefore democracy. Public space is made of people, men and women, society: in this recent period of forced physical confinement and prohibition of free access to public spaces, this assumption seems to us to be absolute.

"The square is a synthesis of the convergence of flows, relational exchanges and emotions. It is a meeting of visions and visuals, a place where points converge. It is the result of the urban area that surrounds it and qualifies it, but it is always an individual space, which cannot disregard a subjective reading. It can only be guided by excellent design and disposition that is able to correctly channel the visitor's perception towards the sensibility that he or she follows the most" (Faroldi 2020).

Urban Leftovers

In 2018 Luciano Crespi published *Manifesto del design del non-finito* (Manifesto for the Design of the Unfinished), inquiring about the role of interior design in relation to available spaces no longer used, which he defines with the term "leftovers", rethinking the disciplinary status of the project by adopting a new form of transdisciplinary approach, defined as "design of the unfinished", positioned between architecture, design, scenography, restoration, and exhibit design. "Leftovers" are not attractive enough from an economic point of view to be included in the investment programs of real estate operators and don't have a unique historical and artistic value that would be a reason for them to be restored and returned to their original condition.

These are places which, having ceased to perform the function for which they were made, are found, as containers without function, in a state of standby and awaiting. The challenge is, therefore, to experiment, within this category of buildings, interventions capable of assigning new possibilities of use employing temporary, light and reversible installation devices, as long as they are consistent with the nature and spirit of the site, in order to promote reintegration into the living and social fabric and the enhancement of their symbolic content. As for the concern of a possible declination of the design of the unfinished urban

space, Crespi (2021) states that: "It cannot yet be said that the true phenomenon of the abandonment of urban open spaces exists. The system made up of streets, squares, voids and widenings, is so vital for the operation of the city, a delicate organism based on permanent flows of people and things, that it cannot be deactivated except for very short periods of time or due to accidental causes. It would therefore seem inappropriate to speak of leftovers in relation to urban open spaces. There is the phenomenon of degradation to which portions of this system are often subjected, due to the underestimation by public bodies of the importance of what was once called urban decorum. After the presumed death of public space due, according to the American sociologist Richard Sennet, to the irruption of intimism in everyday life, whose effect would have been to push people to seek in the private sphere what is denied of them in the public sphere (Sennet 2006), we have witnessed its rebirth in recent years. Having lost the character of a specialized place, contemporary urban space is now required to accommodate the multiple methods of self-consumption on the part of the user, allowing everyone to build a sort of personal palimpsest, on the basis of which they can also interact with the devices present on the site, modifying it. And also, to enter into a more 'intimate', empathetic relationship with users, so as to make them somehow protagonists albeit in very different forms than the past.

If we assume that, the 'urban leftovers' can therefore be called places, streets, squares and widenings, which do not have the character of spaces that are hospitable, welcoming and endowed with civil eloquence; a character which some of them possessed at the time of their creation and which the lack of an effective maintenance and innovation policy has erased over time. They constitute a leftover not because they no longer perform the task assigned to them, but because they perform it inadequately" (Crespi 2021).

In this context, interventions in the urban public space that have a limited duration in time – which we will refer to as "temporary urbanism" – are particularly frequent. Temporary urbanism actions re-assign value to the human dimension as a project theme. If it is true that they are a testimony to the widespread sense of uncertainty that permeates contemporary society (Carmona 2012), it is also true that they represent a manifestation of current needs and trends. Interventions that involve temporary changes in urban public space are defined with different expressions depending on the emphasis they place on the process and the established objectives – place-making, pop-up urbanism, tactical urbanism, open-source urbanism, parklet, city repair – which sometimes reveal strong characters of protest such as guerrilla urbanism and occupy movements (Camocini et al. 2020).They present different degrees of legality, an important contribution of information technology in their organization, and different degrees of expertise in urban planning. Most of them are characterized by a major relational component that involves different process phases. It is, therefore, an extremely varied geography whose effects can be both material and immaterial, such as changes in behavior perception and interpretation of the place by the inhabitants (Ginelli 2015), rather than concrete physical modification of the space, which these interventions leave as a legacy more in time than in space. However, tactical urbanism must not be considered an alternative solution to the permanent re-development of urban spaces, but as a time of support and experimentation for a conscious public space planning.

In-between spaces

A third approach to public space and the role that interior and space design can assume in its planning, is highlighted by Giovanna Piccinno in the text *Spatial design for in-between urban spaces* (2012). The reflection starts from considering that there is an opportunity for spatial design to give value to specific urban exterior, to those interstitial places constituting the 'third landscape', dynamics, marginal and residual generated by the urban sprawl. The author takes up the concept of 'heterotopia' elaborated by the philosopher Michel Foucault (1967) to describe certain cultural, institutional

and discursive spaces that are somehow 'other': disturbing, intense, incompatible, contradictory or transforming. Heterotopias are worlds within worlds, mirroring and yet upsetting what is outside. The prefix hetero comes from the Ancient Greek word ἕτερος (héteros, 'other, another, different') and is combined with the Greek morpheme τόπος ('place') and means 'other place', emphasizing the nature of uncoded spaces. Starting from this assumption heterotopias can become sites for spatial design actions and researches, to activate other forms of urban identity for a renewed hospitable aptitude.

"Theorists Lefebvre and Edward W. Soja suggest the actual existence of an in-between reality, a third instance, by introducing 'an-other reality, a different alternative that both reconstitutes and expands upon the original opposition'. For example, it can be said that the amorphous and abstract space between public and private spaces is, in fact, a real space that is both public and private, commonly prefixed with the term semi-, leading to an inter-situation or middle location. From this point of view, it is possible to read, within the urban context, that third spaces are now what constitutes the common ground for the new public realm and that its core qualities may also stand for the key attributes of a new spatial category. In-between is the only space of movement of development or becoming: the in-between defines the space of a certain virtuality, a potential that always threatens to disrupt the operations of the identities that constitute it. Naming this spatial category in-between is mainly due to the need of underlining its main value/characteristic, betweenness, both from a spatial and a temporal point of view" (Piccinno & Lega 2012).

Thus, the role of design as a mediator of knowledge becomes fundamental, as a connector of experiences that knows how to give voice and answer to the user's question concerning the different roles that the public space can play, moving from the concept of technical functionality of spaces to that of performative adaptability, focusing the analysis on what a place really is and not on what it is said to be. "The diversity and variety of in-between spaces within the urban fabric does not allow to describe them through fixed pre-categorized types, but leads spatial design to find new tools of interpretation to analyze these complex systems of queer places through the use of open interpretative categories guided by spatial characteristic/values and performative quality variables. A possible analysis of the in-between spaces divides them into two open categories that differ according to the predominant character component of the space: in-between spaces as discontinuous to the surroundings or in-between spaces as continuous and/or in transition" (Piccinno & Lega 2012).

Through a design-driven process of analysis, it will be possible to identify the different layers of the complex spatial condition (relational aspect, invisible network, hidden behaviors related to the actual use of the place, etc.) and reveal the real spatial relationship established between these places and their surroundings, giving life to a changing project that stitches up the edges of the city, giving new meanings to spaces in search of an author.

Conclusion

The design of interiors and spaces becomes, therefore, a tool for the re-development of urban space through different approaches linked by a single crucial theme: the centrality of the space's user, according to the Global Public Space Toolkit (2016), which defines a public place, "a portion of an area or location designated or available for or being used by someone. A place comes to existence when people give meaning to a part of a larger space. Places that have a strong sense of place have an identity and character felt by local inhabitants".

The importance of urban space, meant as a connective space, a space of sociality, a space of connection between public and private, emerges even more strongly in these years in which the health emergency has led, on the one hand, to an increase in the use of the outdoor space as an appendix and an alternative to confined space, and, on the other hand, to regain the meaning of place dedicated to the community, a platform of personal and physical relationships and a medium for the recognition and sense of belonging of the inhabitant. "In contemporary societies, public space has become a medium, a tool, an enabler, a place where everybody should feel included and have the possibility of personalizing, reclaiming and conquering it. At the same time, public space is the best platform for designers to think about the future of cities. It is the ideal framework for testing and prototyping new ideas and possibilities, and creating future scenarios that can then be shared, discussed, and debated. Public space should be the place where individual and societal freedom is most represented and by rethinking and re-shaping it, designers are affecting people's present and future lives. In this framework, design is a powerful and meaningful instrument to transform public space from a mirror in which society is merely reflected into a tool that can change society in a collaborative way. However, design should not be approached only as a physical and material intervention. The way in which urban transformation processes are conceptualized and ignited can also be designed and curated to foster an augmented citizenship, more active and conscious" (Tato et al. 2020).

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Materials are the constituent of everything, the means that permit existence. Humans and living beings understand the world through their senses interacting with materials. The relationship between men and materials began between 1.8 and 1.3 million years ago with the first humans building their tools and has continued evolving and deepening. This relation marked the eras which usually took the corresponding material discovery name: from the Stone Age through the Bronze, Iron, Steel and Plastic Age. The close relation between the maker and the material has been a fundamental part of craftsmanship, without which culture would not be as we know it (Ashby 2008; Attfield 1999).

For ages, artisans have worked on different materials, from wood to clay, metals etc., developing high knowledge about potentialities and critical aspects (Bunn 1999). Touching and interacting with materials is the way to experience the three-dimensional world. As Gibson said, sensing is a process of exploring; whereas using the motor system to act or make is performative (Gibson & Carmichael 1966).

While this physical process of knowledge was taking place, specific rules and techniques

for material processing were also defined over the years. Humans became more conscious, started exploring materials and developed artifacts and knowledge that have brought them to the present production system. Nowadays, there is a clear idea of the potentialities of the role of materials in our life: design, good design, is conscious of this, putting materials as one of the crucial points in its process (Ashby & Johnson 2003).

Functionality, usability, and aesthetics depend on the proper material's choice, meeting the technical, production safety and cost requirements. Material needs to ensure finishing, color and texture, to convey the right interaction message. Finally, the material defines the aesthetic and the perception aspects of the material, defining its personality and, consequently, its place on the market in product design, the character of architecture, and the style of a fashion item (Ashby & Johnson 2003).

It is now evident that the selection of materials becomes the central task of a project. However, it is not so simple because designing is an activity that constantly changes. Moreover, materials and technology are continuously evolving too (Papile et al. 2021).

Over the years, due to the increase in technical knowledge, the amount of information considered in material selection has grown. The materials themselves have increased in number, giving a great multitude of alternatives and entangling the activity of material selection. In the last 20 years, advances in research have led to the identification and synthesis of slightly more than 160,000 different materials, and this number is constantly increasing (Papile et al. 2021). Moreover, with the growing environmental emergency and limited resources, sustainability has now become a priority. When making the right choice of material, information about its extraction, processing, transport, use, recycling and general impact on the environment is relevant (Ljungberg 2007; Ashby & Johnson 2013; Papile et al. 2020).

The growing amount of information involved in the material selection with the vast number of materials available has led practitioners to face a complex decision-making task, an *iperscelta* ("hyperchoice"), as Manzini called it (Manzini 1989). To manage this "hyperchoice", several methodologies have been theorized. Material libraries, tools and platforms can efficiently support material selection. In recent years, many online tools and libraries have been implemented due to extreme digitization (Del Curto & Dantas 2009; Ramalhete et al. 2010; Papile & Del Curto 2021). Those can be divided mainly into two categories, the information tools and the inspiration tools: the first ones consider the technical properties in the selection process, while the seconds exploit perceptual and visual elements inspiring creative and innovative solutions. As Ramalhete et al. reported in their study, there is a tendency to create specific tools for designers or architects with less technical information and user-friendly interfaces (Ramalhete et al. 2010). However, the technical aspect must not be minimized but conciliated with other properties that designers may find interesting.

It becomes clear that nowadays and in the future the availability of materials will not increase and there will be critical issues in energy supply. Many production methods together with the system will change and so will the designers' choices. The attention to the origin and the recyclability of materials and the impact of their processing will be more and more relevant. In this context, the material selection will become an essential aspect of design to meet project requirements (Allione 2012; Papile et al. 2021).

Materials & sustainable architecture

Material science has been fundamental also in architecture for the construction sector and the evolution of housing well-being. However, the construction sector is one of the most environmentally impactful, equivalent to almost 50% of global material consumption and 20% of global greenhouse gas emissions (Gallego-Schmid 2020).

The attention to green architecture has increased, focusing on planning efficient and eco-friendly houses and building.

The main principles of green architecture concentrate on energy efficiency, water efficiency, resource supply and management, cost efficiency and respect for social values (Li 2011; Lembi et al. 2021). As Li said "sustainable architecture must not solely become a question of CO_2 emission-reducing. It is necessary to consider sustainability from a holistic point of view that considers financial, cultural, and social issues as well as wider ecological and environmental aspirations" (Li 2011). But the roots of this attitude go back a long way: from the very beginning, humans have tried to make the best use of nature for their convenience in life (Thackara 2017).

The spread of ecological thought in the 1970s and 1980s and climate awareness led to the first voluntary sustainable interventions since the beginning of the industrial revolution.

Humans began to act mainly on a large scale (urban design and architecture), with projects that involved the redevelopment of mostly rural buildings, trying to integrate them as best as possible into the territory.

As early as the 1960s, some professionals expressed the need to construct buildings that harnessed the free energy of the sun; however, it was only from the 1970s, with the oil crisis, that people have become conscious of limited natural resources. This trend has prompted architects to adopt solutions that have made homes increasingly energy-autonomous, thanks to the careful design of the materials used (Gauzin-Müller 2006).

Alongside the efficient development of the project, intensive research has been conducted on the materials' use. Materials have provided solutions to problems identified by engineers, architects and other construction sector specialists (Bechthold & Weaver 2017). Those innovations have permitted the creation of an efficient way of living, including effectively insulating interiors, creating new aesthetics, constructing glazing systems for efficient daylighting of interiors (Li 2011; Bechthold & Weaver 2017; Sahlol 2021).

The best materials according to the green architecture principles are those that best respond to the 4R rules (Li 2011):

Reduce
Reduce the needs for energy, water, land and materials used in buildings. It becomes significant to exploit materials and technologies that improve and optimize building performance, use clean and renewable energy systems and reduce water use (Lembi 2021). Materials that require less energy in their production and have less impact on the environment should be preferred.

Recycle
Recycle construction materials wherever possible. It becomes significant to prioritize the choice of materials that are recycled, recyclable and allow the recycling of resources used in the building (e.g. rainwater recycling).

Reuse
Reuse most materials. Building materials should be used in a much better way as a post-consumer resource to obtain: new materials, remanufactured components and alternative uses. The building stock must be perceived as a resource and a possibility to have stocks for the future.

Renewable
Exploiting energy and materials from renewable sources as much as possible in sustainable design. The use of clean energy in the construction and life of the building is crucial for a lower impact. It is also relevant that, for the same performance, materials from renewable rather than non-renewable sources are preferred.

Implementing sustainability can enhance the quality of our lives by improving the way we live and our relationship with the environment. Sustainable architecture must meet human needs without destroying the existing environment and resources. It becomes crucial to design by trying to involve the surrounding environment: not only from a cultural and

social point of view, designing buildings in harmony with the context; but also using local energy, materials and labor (Allione 2012). Sustainable buildings become an asset for people and the environment, preserve human and ecosystem health, can last longer and have a reduced cost. The appropriate use of materials in architecture makes it possible to achieve this goal and to ensure the well-being of all for a long time.

Materials & future

The evolution process of materials and technology has permitted to slowly define a materials palette that has been engineered and improved until the basic creation of a traditional construction method: wood, stone, ceramics, metals, concrete, glass and recently plastic and composites (Bechthold & Weaver 2017). In the 20th century, the increased offer and the problem of *iperscelta* involved the architecture field too (Manzini 1989; Papile et al. 2021). However, designers have continued to use the limited materials palette because of the established know-how and the request for normsv and standards.

In the early 2000s, a rapid development in materials, technology and digitization began. Through the fast exchange of information, knowledge from different sectors has been shared, promoting technology transfer. This phenomenon has led to an increasing number of new possibilities. The role of material scientists has changed, becoming the center of innovation and making materials the catalyst for novel design expressions. Driven by their curiosity and enthusiasm to test themselves, designers and architects have begun to explore new materials and new possibilities, in some cases becoming "designer makers" (Camere & Karana 2018). Designer makers have explored the possibilities of new materials from renewable resources, recycled resources and revived materials from discarded resources of industrial streams of production, becoming active actors in the creation of materials: this practice takes the name of DIY materials.

Thanks to this phenomenon, there has been a development of research topics on materials for interior design and architecture in general. Although it is improbable that there will be a reduction or significant move away from conventional materials, it is possible to identify some alternatives for the future (Papile et al., 2022). Researching through online databases, books and literature, six different material trends can be identified:

Functionals
Materials that respond to an input with an output

Bioxxx
Biobased and/or biodegradable materials, material classes characterised by the "bio" prefix (plus compostable materials)

Re-discovered
Materials that are recycled, reinterpreted, redesigned to avoid waste

Biomimetic
Materials that get inspiration and seek connections with nature

Alive
Materials that change, move, grow over time

Foodology
Materials and/from/being food

Functionals

Functional materials, also known as smart materials, have peculiar characteristics by their very nature (Lefebvre et al. 2014). In this trend, we can find some examples of materials for architecture and interior design.

Two case studies by the MIT are experimental and can be inspirational for architects and interior designers. The first is Aeromorph, an origami that turns an ordinary sheet of paper into a three-dimensional shape. The project structures are designed through a simulation software and then created using a three-axis CNC prototyping machine. Once Aeromorph is ready, researchers can inflate it to create the designed three-dimensional shape.

The second project is Programmable materials, a collection of dynamic artifacts made of self-transforming carbon fiber, printed wood grain, custom textile composites and other plastics. The project aims to exploit the properties of functional materials and composites to create highly programmable materials for product design, the fashion industry and architecture: robots without robots. During the last Fuorisalone (2021) at Bulgari's exhibition, the Studio Roosegaarde showed Lotus Oculus. The installation consists of an active wall that unfolds itself and creates a play of light and movement.

In the same trend, we can find all the traditional functional materials. Those comprehend self-cleaning surfaces like the TiO2 cement or paintings, materials optimizing the energy exchange like fluorescent and phosphorescence materials.

A practical example of the application of functional materials is the Smart glass that reacts to the external stimulus by modifying the amount of light that passes through it (Mohamed 2017). Smart glasses can be passive, without electricity, or active so that their properties are controlled and changed when a specific voltage is applied.

Bioxxx

The desire to reduce the environmental impact of materials has led to finding alternatives to traditional materials in the bio-based materials field. The use of renewable resources has had a lower impact, reducing carbon and energy emissions. Bio-based materials also enhance social and living well-being, ensuring a more harmonious environment for human life. However, it should be noted that the use of bio-based materials is not always the most sustainable choice, if, for example, it does not guarantee the same long-term efficiency as traditional materials. To compare and combine bio-based and sustainability words is necessary to take stock of the actual efficiency of these materials. Methods of measuring environmental impact, such as LCA (Life Cycle Assessment), can be used to overcome this problem. The fact remains that materials from renewable resources have less impact on the environment in terms of origin and can be more easily incorporated into a circular economy system.

In this regard, designers and architects have rediscovered some traditional materials as new opportunities for architecture, such as wood, hempcrete, straw and cane (Yadav & Agarwal 2021).

Wood is one of the resources that has always been used in architecture because it is easy to work with and suitable for various uses, both structural and for furniture. Although it has been associated with low-level buildings, wood has gained much more interest in recent years. Furthermore, materials scientists are showing interest in the hygroscopic and orthotropic nature of wood, and its mechanical behavior is becoming a topic of interest to fully exploit its properties (i.e. material properties differ along three mutually orthogonal axes) (Bechthold & Weaver 2017). Moreover, although scientifically speaking bamboo is a grass, it is increasingly valued as a construction material. Its rapid growth and wood-like properties make it a readily available and regenerable alternative to traditional solid wood. Bambuflex, on the other hand, is the first flexible bio-agglomerate of bamboo constituting panels. This material is biodegradable and has thermal and acoustic insulation properties. The raw materials used are 100% of vegetable origin, and the production process has a near or zero impact.

Hempcrete is another emerging material. Hemp is a fast-growing plant that is resistant to flake and mould. The properties of its fibers make it suitable for architecture, both for the insulation panels construction and hempcrete. Hempcrete is a mixture of hemp, water and lime. The low weight of this material compared to traditional cement means that hempcrete can also reduce the amount of energy that a building needs to generate by reducing the emissions associated with moving significant materials (Yadav & Agarwal 2021).

Straw and reed have been widely used materials since ancient times. Some studies have shown that straw, if protected from humidity, is a durable, load-bearing, long-lasting and insulating material. While reed, traditionally used as straw for roofing, can last even more than 50 years if of good quality.

Another significant bio-based material for architecture is rice husk. The Piedmontese company Ricehouse focuses on using waste products from rice cultivation to make building products. The company offers materials based on rice husk and rice chaff. Rice husk, the outermost husk of paddy rice, combined with lime or clay, replaces sand to create an insulating plaster. The dried husk, the middle layer covering the rice, can be incorporated into plaster or paint, making them more elastic, breathable and antibacterial.

Re-discovered

In this category, there are materials from waste and byproducts (Sauerwein et al. 2017). The increasing focus on more sustainable materials has led to attempts to produce traditional materials from recycled sources. Therefore, it is possible to obtain products with similar characteristics to traditional ones but with new aesthetics. Recycling takes place not only for plastic materials but also for metals, ceramics and glass, wood, etc.

An example is Silicastone, a ceramic material made of 98% waste material (recycled glass and porcelain). Its production method respects the environment: all internal waste is recovered, and the material is joined with no binders but heated at a considerably lower temperature than conventional ceramic. The material is available in tile and board form for indoor and outdoor use. By its nature, each piece of Silicastone is unique, and no two surfaces are ever the same.

Another example is the Italian company Stonethica which recycles waste from marble and natural stone processing and assembles them into slabs using a non-toxic two-component resin.

Thanks to the patented process, an average of 80% of the starting material is recovered, resulting in products made up of between 98.6% and 99.4% stone waste. The use of Stonethica contributes to meeting the parameters for assessing the environmental performance of buildings. The final product is a homogeneous material characterized by layered textures due to the overlapping of marble strips that prevent the areas of intersection between the assembled scraps from being perceived.

Finally, PaperStone panels are made from recycled paper and cardboard. After obtaining superimposed layers of paper, these are subsequently impregnated with a resin called PetroFree, coming from cashews. PaperStone uses natural pigments for coloring instead of traditional ones, ensuring greater UV resistance, stable colors and even better color distribution. PaperStone can be easily repaired, cleaned and maintained thanks to a treatment with natural oils, as if it were wood.

Biomimetic

The trend takes its basis from biomimicry. Biomimicry is the study of the biological and biomechanical processes of nature (Benyus 1997; Rossin 2010). From a circular economy perspective, it is very relevant to understand the mechanisms of nature to create systems that regenerate each other.

The designer Lindey Cafsia develops Plyskin, an insulation material that imitates the skin and fur of a polar bear. Plyskin consists of three layers: the outer layer is a white fur made of recyclable polyamide; the second layer has a honeycomb structure, which makes the panel rigid; the third is a black, hollow layer filled with heat-absorbing material.

Another significant project is Responsive Surface Structure by the Department of Form Generation and Materialisation of the HFG Offenbach University of Art and Design. The research project tries to exploit the dimensional changes of wood caused by variations in environmental humidity. The surface structure adapts its skin porosity, and related cross-ventilation, in response to humidity without mechanical control devices. As they report, the response is triggered by the changes in moisture content of the material and actuated through related shape changes in a material element, which affects the structure's degree of porosity.

Water Reaction was conceived by the designer Chen Chao as his end-of-year project at the Royal College of Arts (London). He drew inspiration from the pine cone and its behavior: opening and closing, it releases and protects the seeds. Water Reaction modifies its shape without mechanical structures or electrical elements but only by detecting humidity. The material has already been applied to various products used in water-related contexts, such as outdoor architecture and crops.

Alive

The interaction between materials and the surrounding environment is getting deeper, creating a new dimension of the relation between material and designer. From the metabolic waste of living organisms such as bacteria, fungi and yeasts, new materials have been created that are still being explored. One of the main processes used is biofabrication: producing through the growth of living organisms and cells, using renewable resources as feeding elements for the living organisms, as reported by Camere and Karana (Camere & Karana 2018).

The designer maker works with biofabricated alive materials and experiments with new production methods for tangible solutions applicable to artifacts of the near future.

Mycelium is an example of biofabrication. Developed over the last ten years, this type of natural composite has now found its place in some market sectors. Mycelium is the root and digestive system of mushrooms. It is constituted by uncountable groups of hyphae, which form the vegetative part of the growth of fungi. The mycelium can develop in a few minutes: it is sufficient that the right conditions exist in soil for it to spread rapidly (Yadav & Agarwal 2021). After an initial experimental phase, some companies have started to industrialize this process and exploit the material's low density, acoustic and thermal insulation properties. Today, it is possible to find ready-made solutions such as sound-absorbing panels and floors by Mogu, or packaging solutions, for fashion and food experiments by Ecovative.

Other resources for alive materials are bacteria. Bacterial cultures can give rise to composites used for leather-like or paper-like materials production. These processes require a lot of attention, especially to avoid contamination.

An example is kombucha leather, a cellulosic material deriving from the fermentation of tea. To date, these remain almost experiments, but designers are looking for possible applications in the world of fashion, products and interiors, trying to industrialize the process as best as possible (D'Itria et al. 2021; Papile et al., *in press*).

Materials produced from algae are other alive materials. The algae came mainly from the beaches, preferring harvesting to cultivation. Cultivation would involve a significant use of water and energy. The collected algae are then cleaned to be processed. There are several projects by designers who use this resource. They can use algae as a source of proteins to create bioplastic, like Ari Jónsson did with the bottle he designed. The designer started from agar, and by mixing its powder with water, he obtained a gelatinous membrane with which he made the container. The bottle decomposed immediately after being emptied.

Designer Shneel M. Bhayana has developed another active use of algae with the Bio-ID Lab. The Indus project consists of a modular system of clay tiles inspired by leaves. These clean the water thanks to algae and seaweed-based hydrogel. The project focuses on the rural community of artisans in India, enabling them to regenerate water for reuse within their manufacturing processes. Indus has won several awards, including LafargeHolcim Awards and the Art Foundation Futures Award.

Foodology

In this category, we find materials from food waste. Starting from different waste streams, such as fruit, mushrooms, and proteins of different nature, we get to create yarns, fabrics and bioplastics. These materials constitute a trend that combines the concepts of bio-based and re-discovered. Foodology materials, based on their nature, have anti-bacterial, anti-humidity and thermo-regulating properties.

Totomoxtle is a project by Fernando Laposse in collaboration with the Ejido Tonahuixtla community. The decorative panel is created from a composite material from the colored bracts of native corn. The waste from the corn processing is used to obtain very different products and surfaces. The idea is not only a starting point and an invitation to develop a circular economy but also a warning about the risk of extinc-

tion of the diversity of native maize in favour of genetically modified maize.

Another project is Cooking New Materials. At the Fuorisalone 2019, the designer Youyang Song presented her new materials created through a process developed by herself. She has combined banana and orange peel or soymilk pomace with a natural binder as a matrix. The result is a 100% biodegradable, flexible, leather-like material with different finishes and textures that can be easily reused through annealing.

A product already partially industrialized and present on the market is Piñatex. Born from the company Ananas Anam as a plant-based alternative to leather, Piñatex is made from pineapple waste in the form of thin cellulose fibres extracted from its leaves. The latter is generally considered an agricultural by-product often burned or left to rot.

The company, therefore, took the waste from the pineapple plantations in the Philippines from which local factories pic the threads and, through a decortication process, felted them together into a non-woven fabric used for clothing, footwear or furniture.

Meanwhile, the designer Thomas Vailly has explored how to turn sunflower crop waste into bio-materials. Sunflower cultivation traditionally produces oil, seeds, bio-fuel and agricultural waste. The designer exploits the leftover from the harvest to create material with a non-synthetic binder and a non-toxic varnish. As he said: "The rules were simple, we can only use sunflower by-products, no added ingredients [...]" (Hitti 2019). The resulting material is an acoustic insulation panel constituted by the marrow combined with the water-based glue made from the sunflower seeds to form a light and foamy composite material that acts as a natural alternative to polystyrene.

Materials and architecture have a mutually dependent relationship. Materials allow architecture to exist, and architecture enables advances in materials development.

Over the years, we will encounter an intensification of the complexities of the materials world due to the deepening of different research themes. Complexity will concern the technological dimension but, above all, the relationship between man and the environment. Therefore, it will be crucial to look at nature as a source of inspiration but also as a precious gift. Experimentation becomes a fundamental point for creating new functions and aesthetics that offer innovative design ideas for architecture and interior design.

The new materials explored are examples of how different approaches can achieve sustainability.

Designers and architects can take inspiration from nature to create new buildings that ensure human well-being and, at the same time, have a reduced environmental impact.

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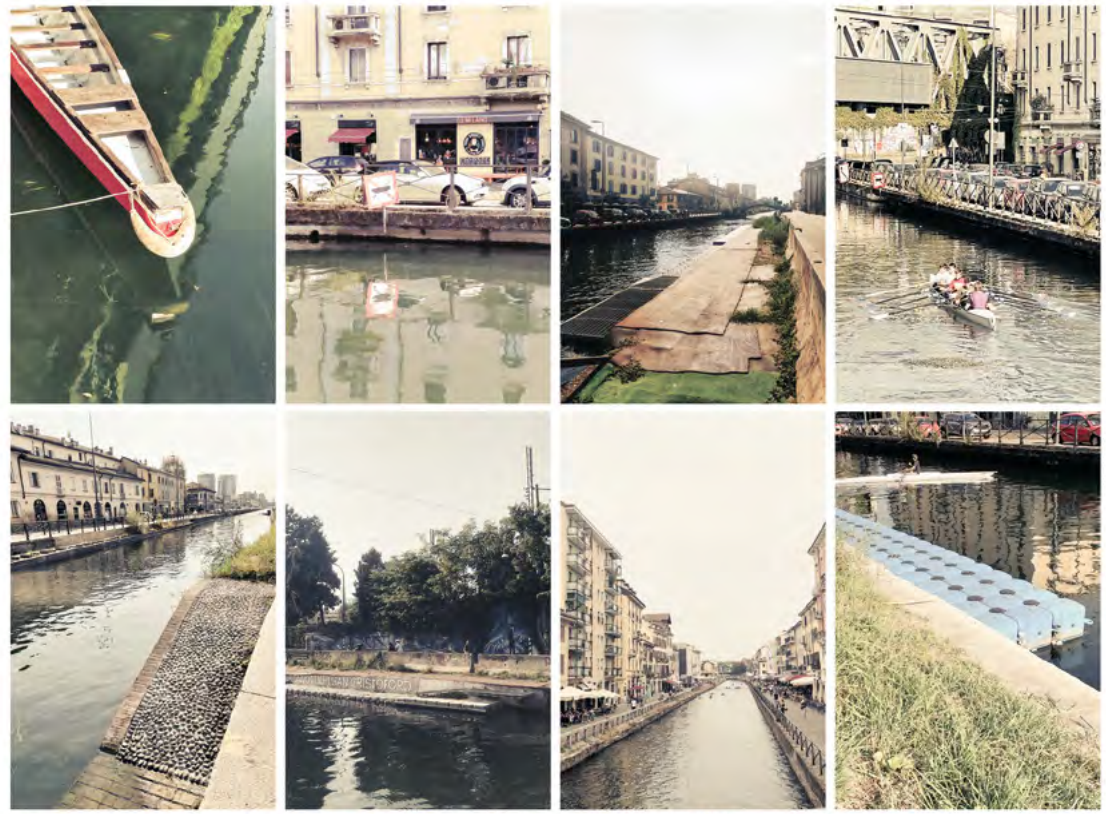
CASE STUDIES

Aeromorph
https://tangible.media.mit.edu/project/aeromorph/
Programmable materials
https://selfassemblylab.mit.edu/programmable-materials
Lotus Oculus
https://www.studioroosegaarde.net/project/lotus
Bambuflex
https://www.f6s.com/bambuflex
Ricehouse
https://www.ricehouse.it
Silicastone
https://www.alusid.co.uk/products/silicastone/
Stonethica
https://www.stonethica.com
PaperStone
https://www.paperstone.eu
Plyskin
http://lindeycafsia.com
Responsive Surface Structure
http://www.achimmenges.net/?p=4411
Water Reaction
https://www.designboom.com/design/chao-chen-biomimetic-water-reaction-material-pine-cones-06-30-2015/
Mogu
https://mogu.bio
Ecovative
https://ecovative.com
Kombucha leather
https://www.lionnevandeursen.com
Algae materials
https://www.atelier-luma.org/projets/algae-platform-2
Algae bottle
https://www.dezeen.com/2016/03/20/ari-jonsson-algae-biodegradable-water-bottles-iceland/
Indus
https://www.dezeen.com/2019/09/21/bio-id-lab-indus-algae-tiles-water/
Totomoxtle
http://www.fernandolaposse.com/projects/totomoxtle/
Cooking New Materials
https://youyangsong.com
Piñatex
https://www.ananas-anam.com
Sunflower Entreprise
http://studiothomasvailly.com/project/sunflower-entreprise-i/

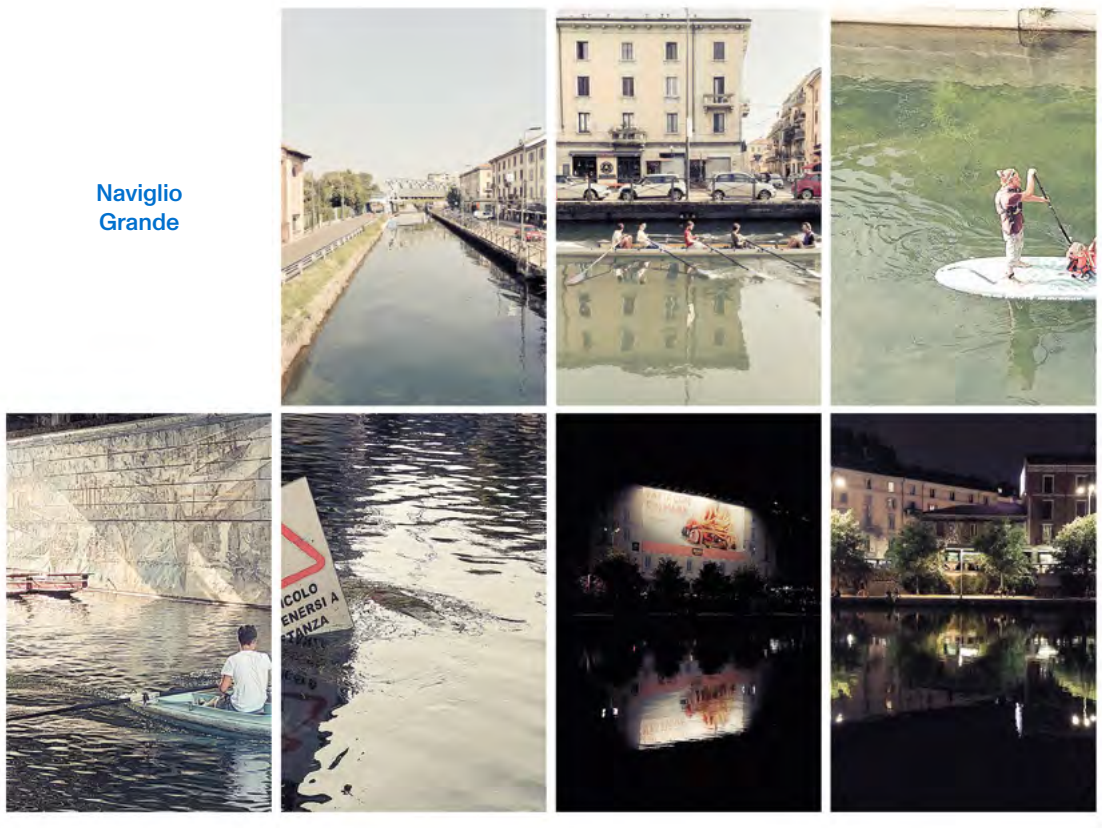

BUONGIORNO AMORE MIO TI AMO

Instinctual perception of the neighborhood

The entire research team is invited to survey the area around the building site of Bosconavigli residential complex. No specific indications are given to researchers, other than the location of the building site and the overall characteristics of the development project. A first inspection is carried out. The task of describing through images an undefined area serves as the means to geographically circumscribe the space which the researchers perceive as relating to the new development complex.

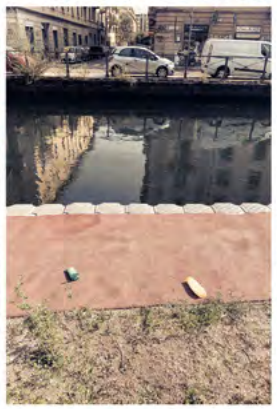


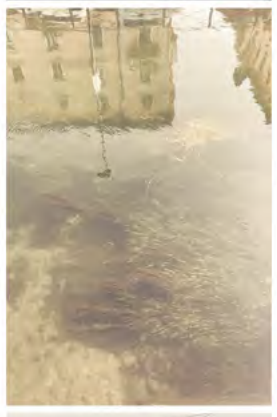
Naviglio Grande



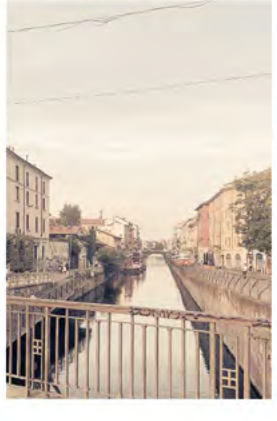








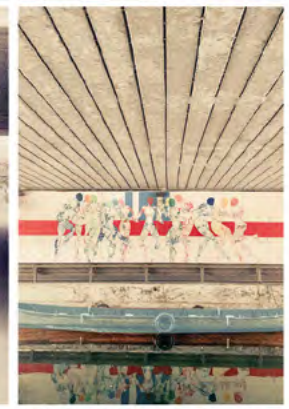


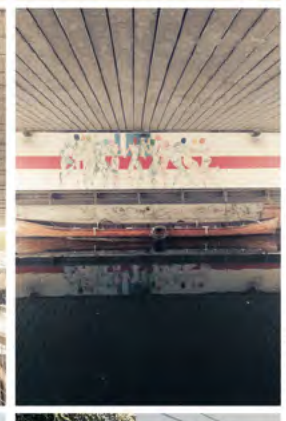

Guido Crepax
Bridge
(under)









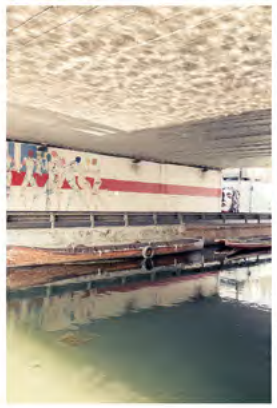













Guido Crepax
Bridge



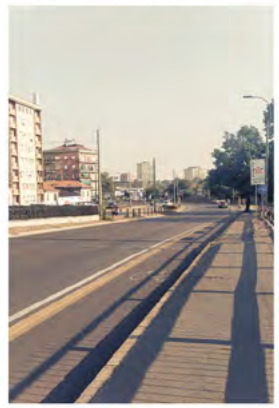






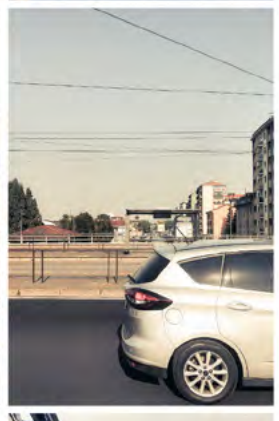




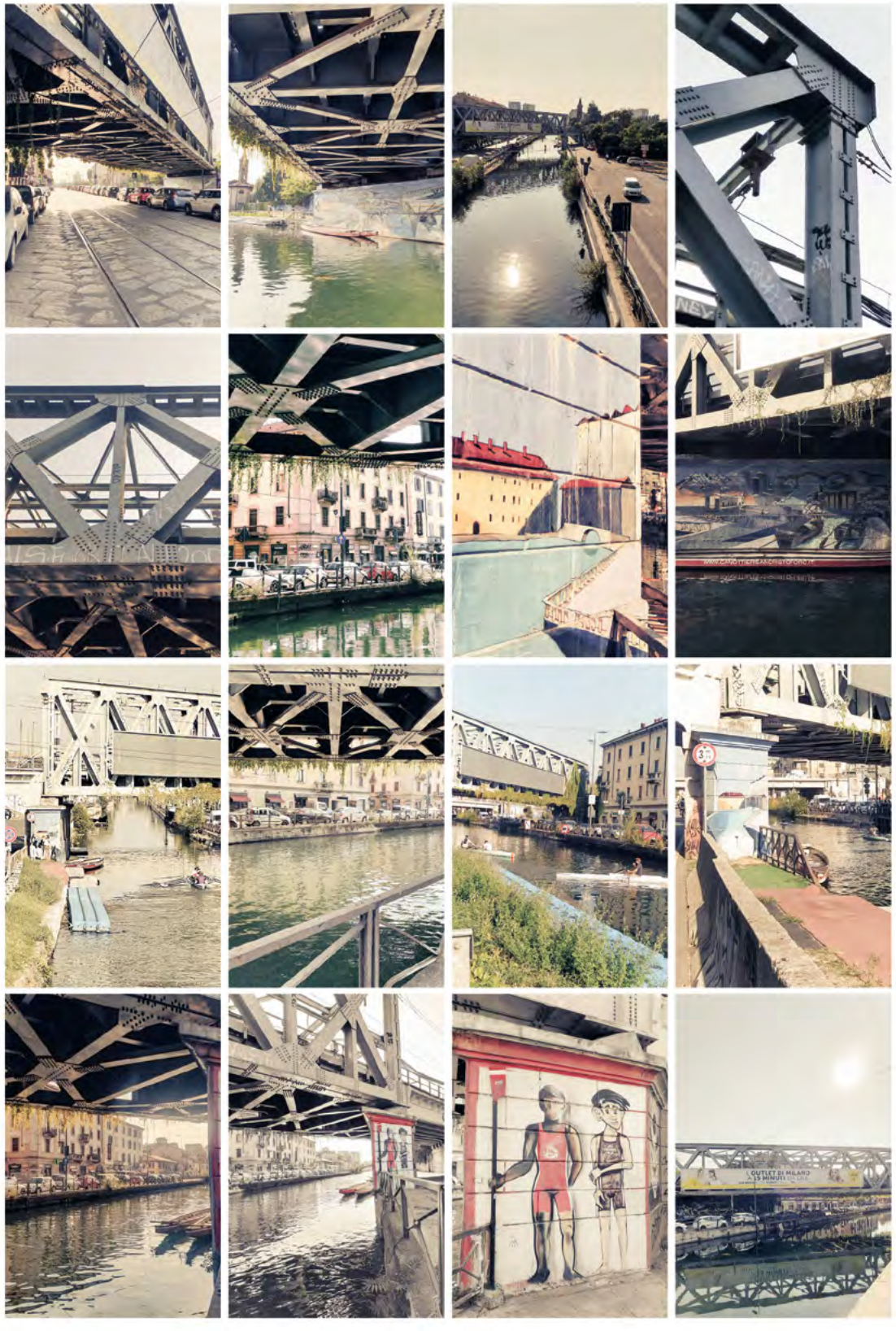








Railway Bridge
Viale Cassala


Walkway
San Cristoforo

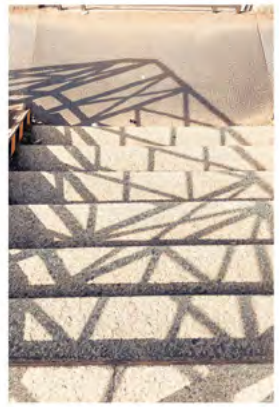











Walkway
Via Elia Lombardini /
Ripa di Porta Ticinese



NW

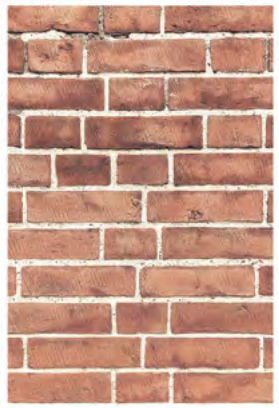
San Cristoforo
Church







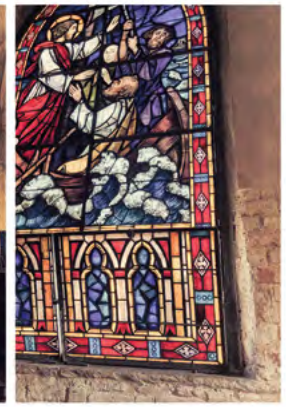






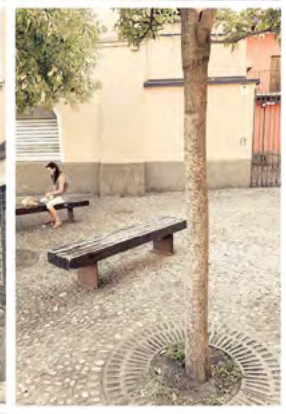




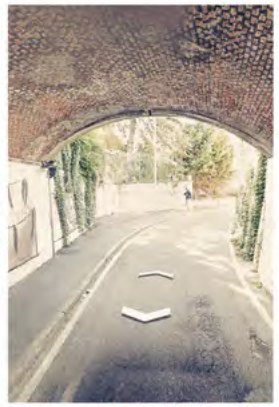
Yard of
San Cristoforo
Church

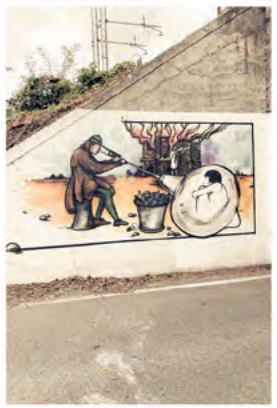




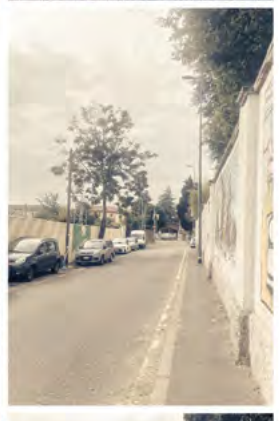

Railway Underpass
Via San Cristoforo





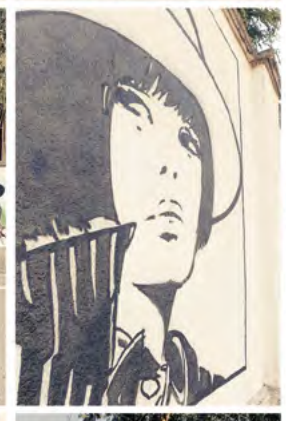



Via San Cristoforo



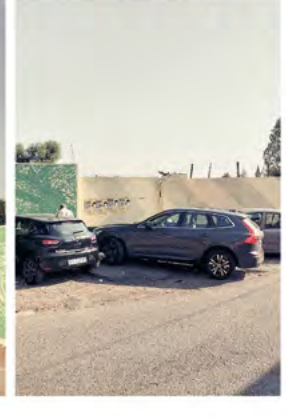


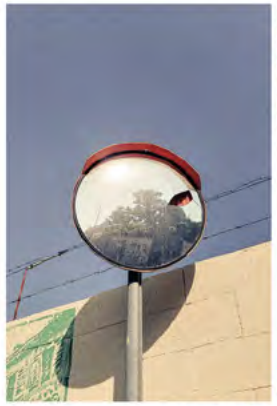






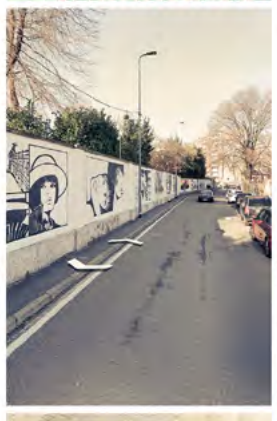


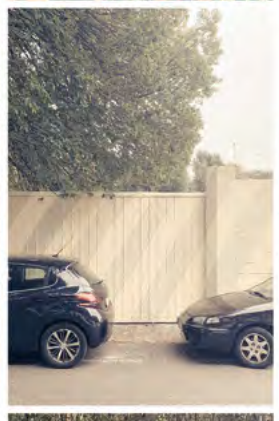



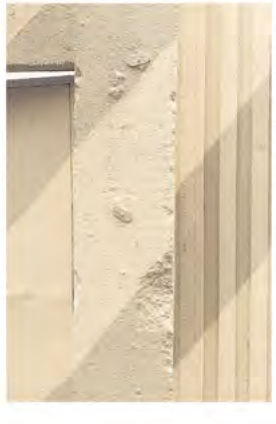
GUIDO CREAX
WE RUN THE STREETS




CRISTOF

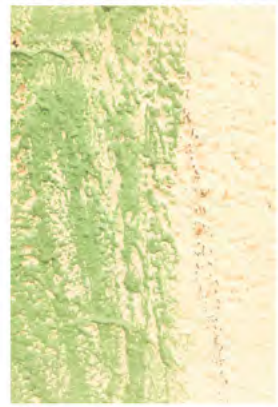




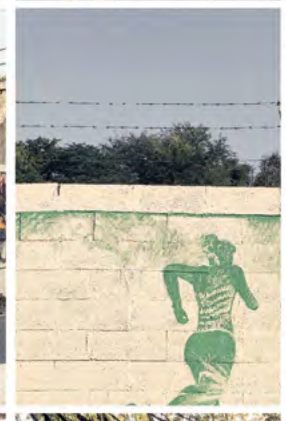







Un muro che...
...unisce!


Un muro che...
...unisce!



SAN CRISTOFORO










Green area next to Guido Crepax Bridge







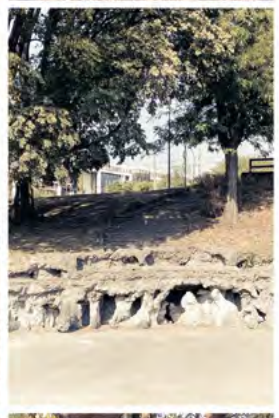
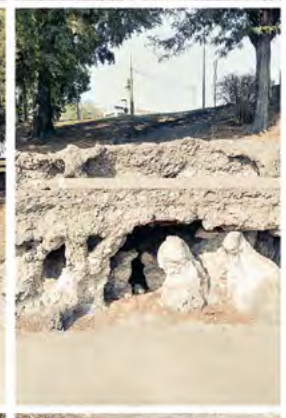




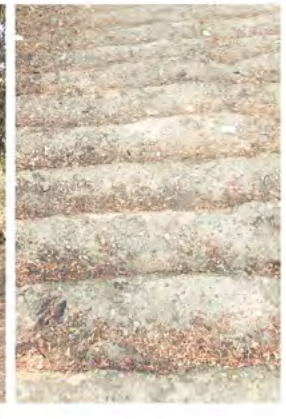














Via Pesto





Alzaia
Naviglio Grande






Railway
and level crossing











DER




ETTI-BRESCI



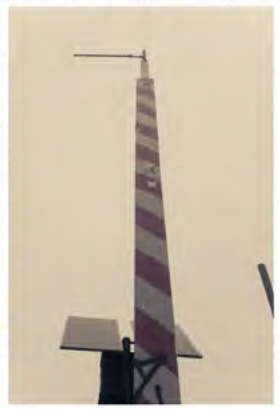


21d




90

72


RUSTY
Odio eterno



STRAIL





PERICOLO DI MORTE











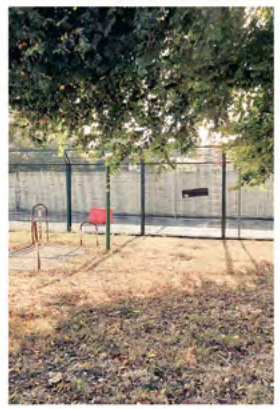
Piazzale
delle Milizie
and recycling area





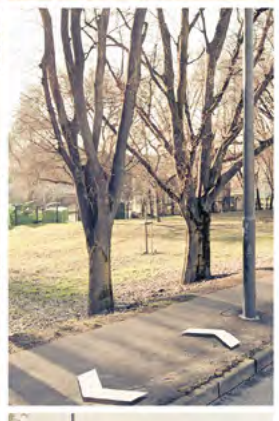








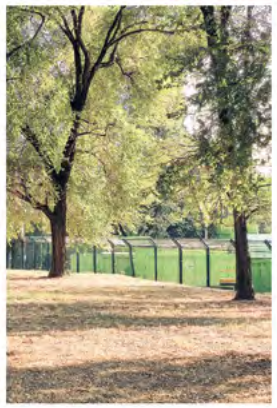

















Via Leone Tolstoj



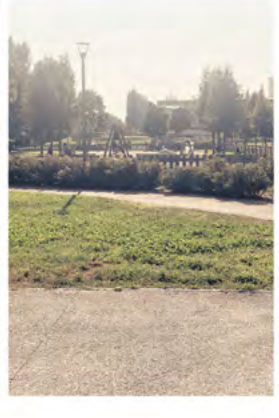



Del Bo Boffino Garden and Savona Skatepark













Piazza Enrico Berlinguer


















Viale Carlo Troya





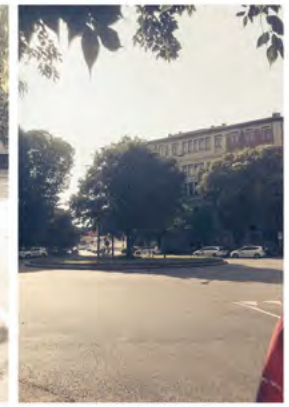





NE

Via Bergognone
and Largo
delle Culture

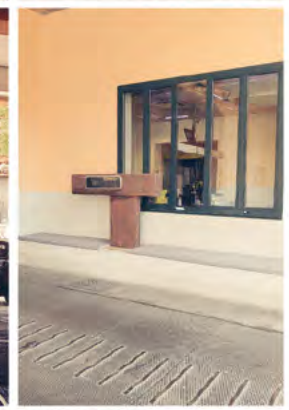


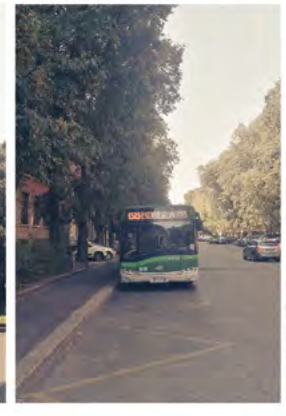


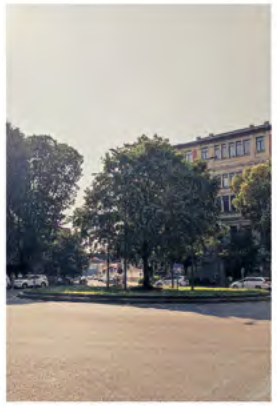


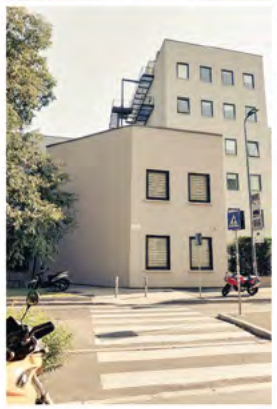
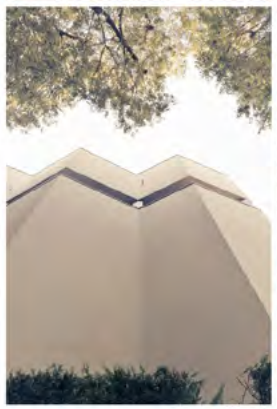
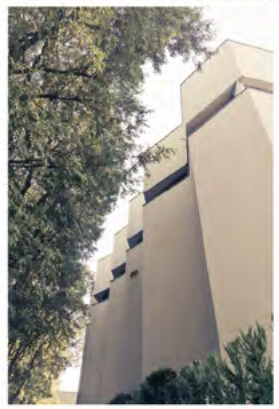






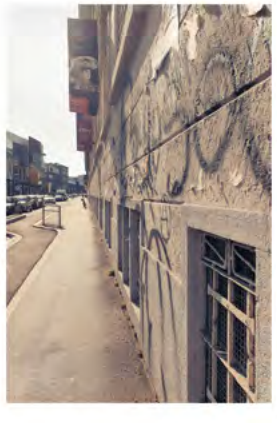



Via Tortona























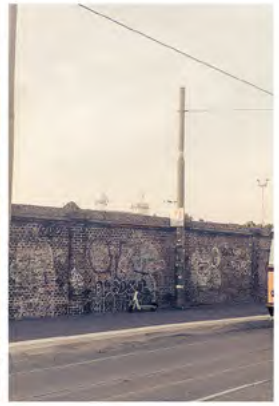
Porta Genova Railway Station and neighborhood











SW

Via Lodovico il Moro







Via Andrea Ponti

Via Giovanni Enrico Pestalozzi

The 31 researchers are of various origins, most of them were not born or raised in Milan, some are foreign nationals, and in most cases their perception of the city was shaped in the past few years as graduate students. One of the researchers – not being in Milan – performs the task in remote, navigating the space through the Internet.

The area resulting from the survey extends unevenly over the 4 quadrants stretching around the building site: the artificial canal of Naviglio Grande is clearly identified as the main artery connecting the space. The NE quadrant is the one perceived as more strongly linked to the location of the new complex, stretching all the way to Porta Genova railway station. The NW quadrant is recounted as compact and dense, with its boundaries embracing the area of the old core of San Cristoforo and the areas of Via Tolstoj and Viale Carlo Troya. The SW quadrant extends very mildly into Via Andrea Ponti; while the SE quadrant is hardly accounted of beyond its Naviglio Grande boundary.

Urban chromatic analysis

A series of photographs is taken in the immediate vicinity of the building site of Bosconavigli. All the image files are treated according to the dominant color present in each landscape, thus sampling the chromatic palette of the urban scenery. The resulting images are classified according to proximity and to the quadrant of pertinence.

NW

NE SE SW

Researchers involved	OC_MS_SM_MB_
Visibility	Good
Weather conditions	Good
Season	Autumn
Position of the researchers	Scattered in the proximities of the building site, in public spaces at ground level

The palette of grays is clearly dominant in the area, with relevant sections of paved roads and cement infrastructure. Patches of green are identified in correspondence to recently revamped small public parks, while nuances of browns and yellows emerge in correspondence of traditional Milanese “case di ringhiera”.

A prevalence of blues can be detected in the areas immediately NW of the building site, where the lower urban density allows for broader patches of sky to appear in the pictures. Overall the chromatic dominance is that of cold colors (higher range of the chromatic spectrum).

The presence of Bosconavigli suggests the opportunity of improving the fluidity of the connection between via Tortona and the area of the Naviglio and San Cristoforo.

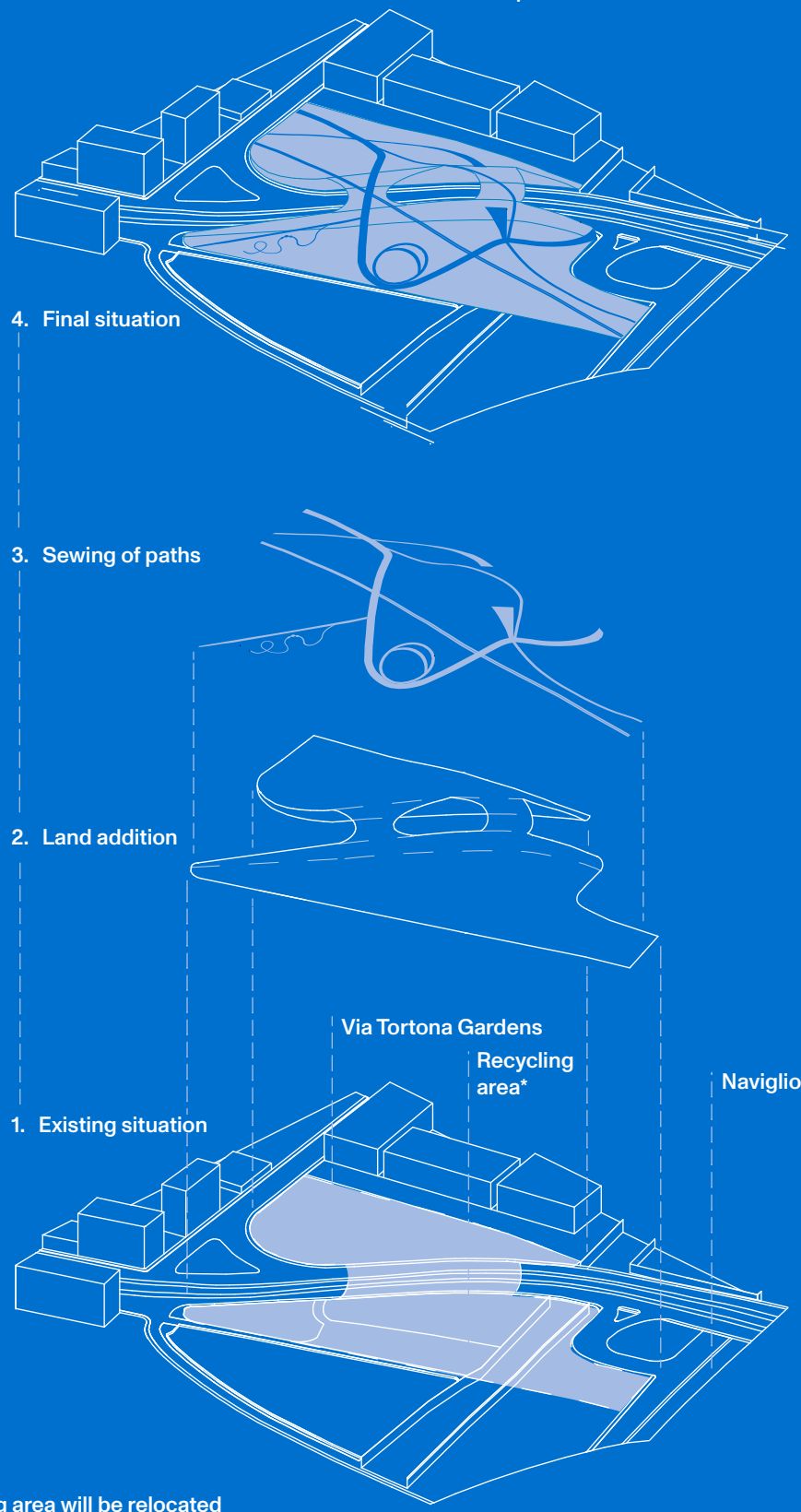
The Urban Corridors concept project is a hill covering the ring road of Viale Cassala and connecting the areas of Tortona and Navigli.

From the analysis of the area, a necessity of linking the two sides emerged, as well as the need of a safe passage for pedestrians and a gathering space for the neighborhood.

The project consists in an overpass on the ring road, that rises to 13 a.s.l.; although man-made, the hill follows the natural topography of the surrounding area, with the aim of creating a well-integrated insertion. At the top, a bridge connects the two parts of the hill and conceals in its core a covered indoor space offering shelter and opportunities to convene.

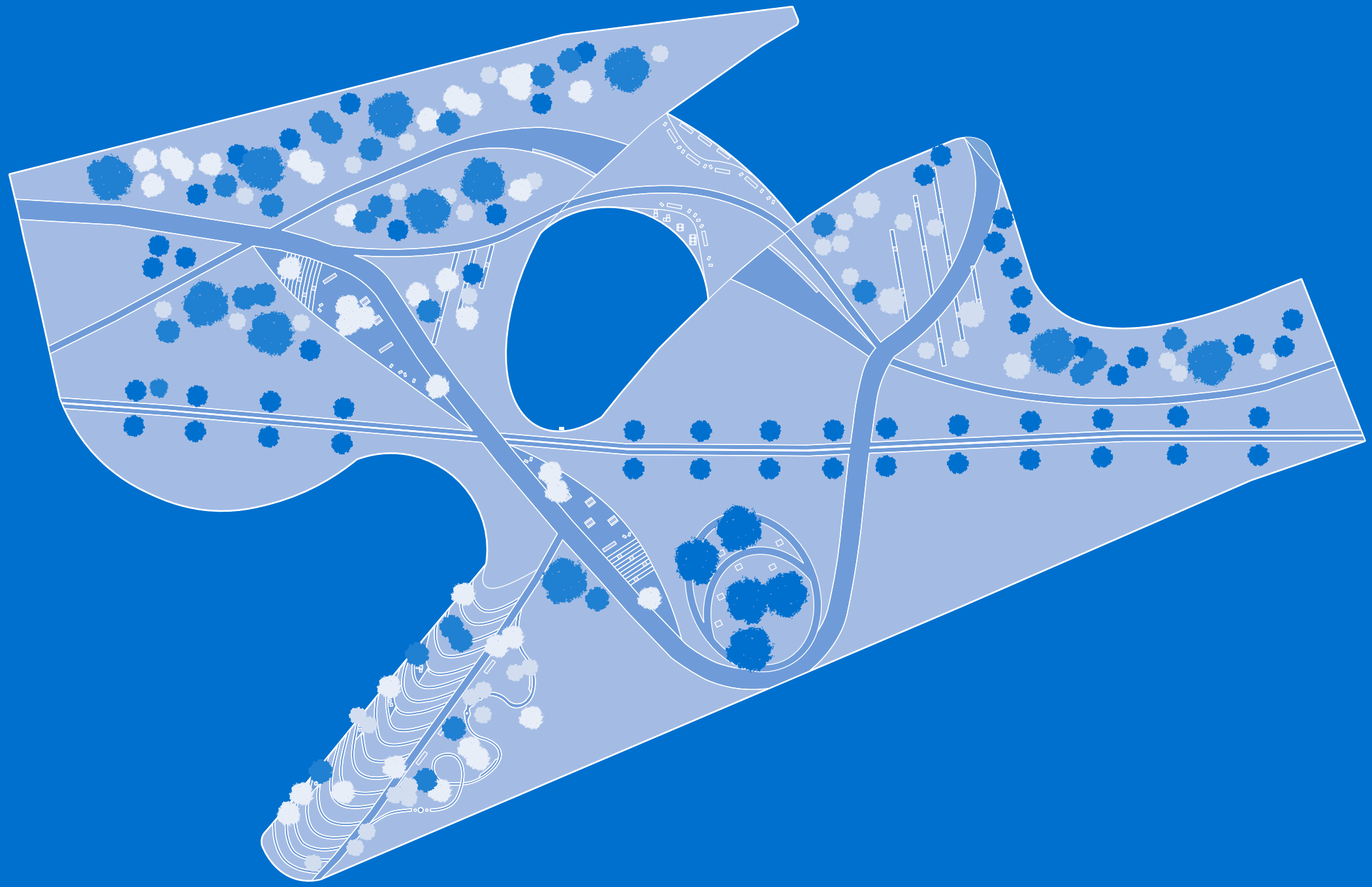
The park weaves together the Tortona and Navigli areas thanks to 7 passages - the urban corridors - which all have particular functions. The different paths are interconnected, foreshadowing the intertwining of different people who can use the same area for their different needs.

Busy commuters use the “corridor for passing fast” to get to their destination promptly, whilst groups of friends catch up wandering around the “corridor for bringing you and all your friends together”. Children have their own designated “corridor to feed their imagination” which is alongside people in the “cultivating your time corridor” maintaining the park’s terraces. The hub of the park is the “corridor for stopping”: in its mid point, a covered shelter collects the different flows of people in a light flowing environment. On the roof of this shelter the “corridor for changing your point of view” gives visitors a different perspective of the Navigli area and all its surroundings. Finally, the “corridor for strolling with your beloved one” is the perfect setting for a personal moment with your other half.

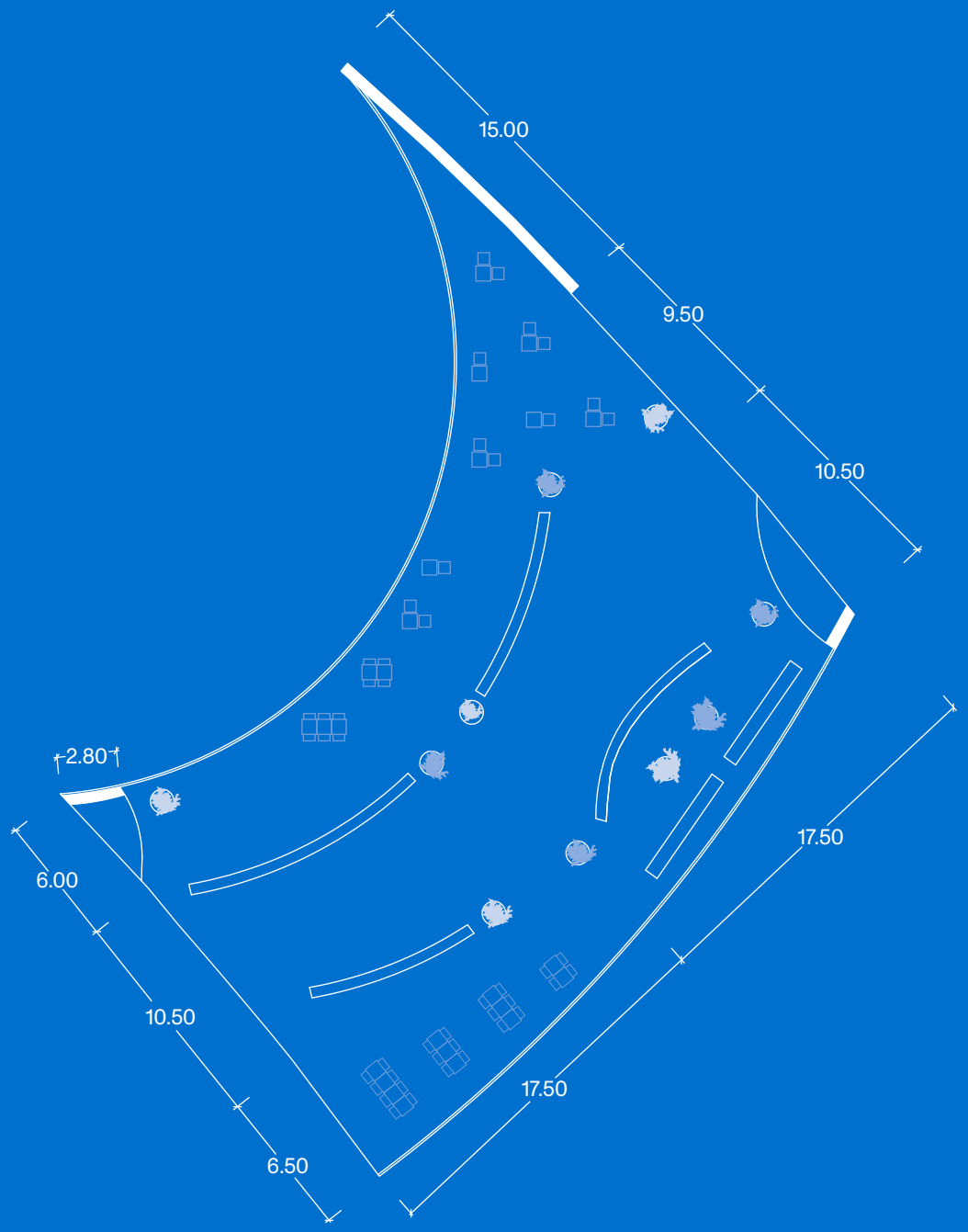


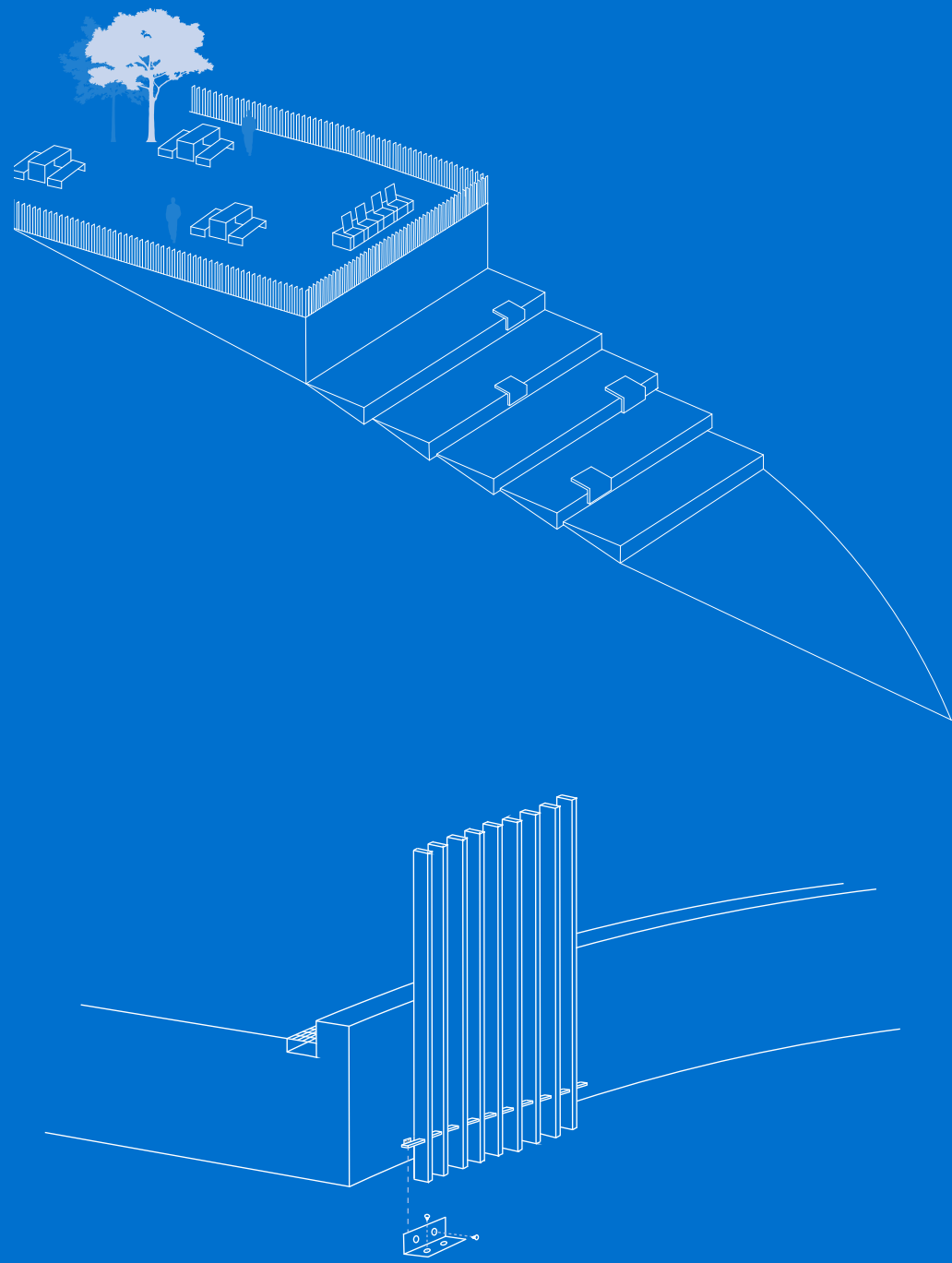
* Recycling area will be relocated

1:1000 North ↗ 0 ——— 10 m



1:250 North ↖ 0 ——— 2,5 m






LIEBHERR

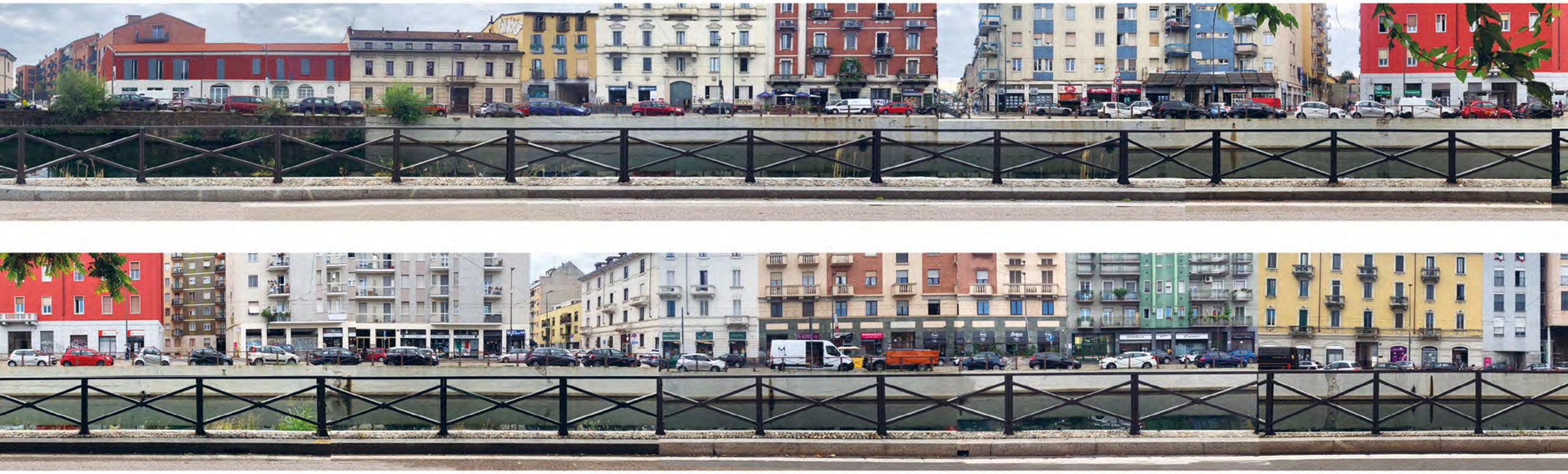
Naviglio Grande, southern bank

The comics store Super Gulp is the starting point for the research, which then stretches southwest following the canal for about 1.4 km. The route is largely pedestrian-friendly, with a long cycling track running along the Naviglio Grande at an average 4-meter distance from the shore. The only interruption of the cycle-pedestrian track along the researched segment is the crossing of the road leading to Porta Genova railway station. The end point is represented by the ancient San Cristoforo church complex. The path between Super Gulp comics store and San Cristoforo church takes about 20 minutes walking.

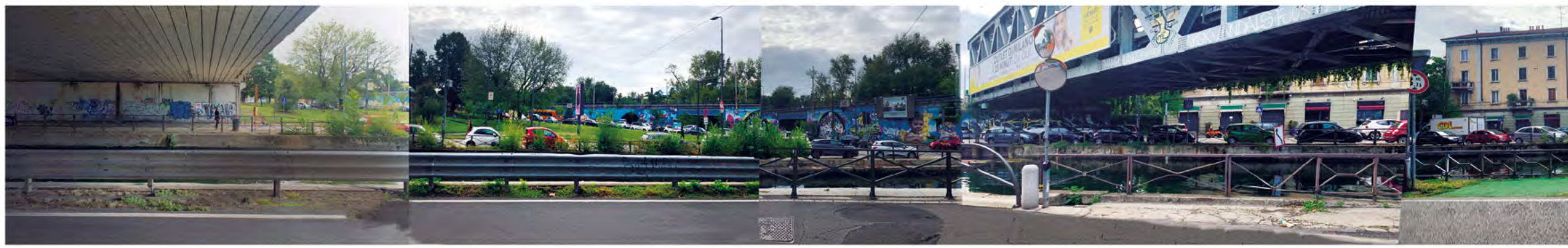
SE

● Start
Alzaia Naviglio Grande 54


Cortilia



SW



● End
San Cristoforo Church

Naviglio Grande, northern bank

For the research carried out along the southern side of the riverbank, facing north, the edges of the considered segment remain the same; though inverted in their order. The southern bank of Naviglio Grande is a driveway for most of the considered route, thus forcing the researchers to move along the canal at an average 6-meter distance.

NW

● Start
San Cristoforo Church

NE


Pisotti


enjoy

Researchers involved AP_PA_MC_
Weather conditions Good
Camera used iPhone XS Max

● End
Alzaia Naviglio Grande 54

3 researchers tread the riverbanks of the Naviglio Grande with the aim to visually scan the side of the river opposite to the one they are walking along. The basic model for the scanning process is offered by Ed Ruscha's *Every Building on the Sunset Strip*, the path is rectilinear, as determined by the floorscape along the banks of the artificial canal. Photos are taken at regular distances, so as to have the edges of each image coinciding with the following one, the reference for each image being the buildings in the background.

The two panorama scans, rather than mirroring each other, show a very different distribution of the urban fabric; with the southern bank uniformly developed as residential, while the northern bank, squeezed between the canal and the old railway tracks leading to Porta Genova station, is either devoted to small businesses or yet to be re-qualified.

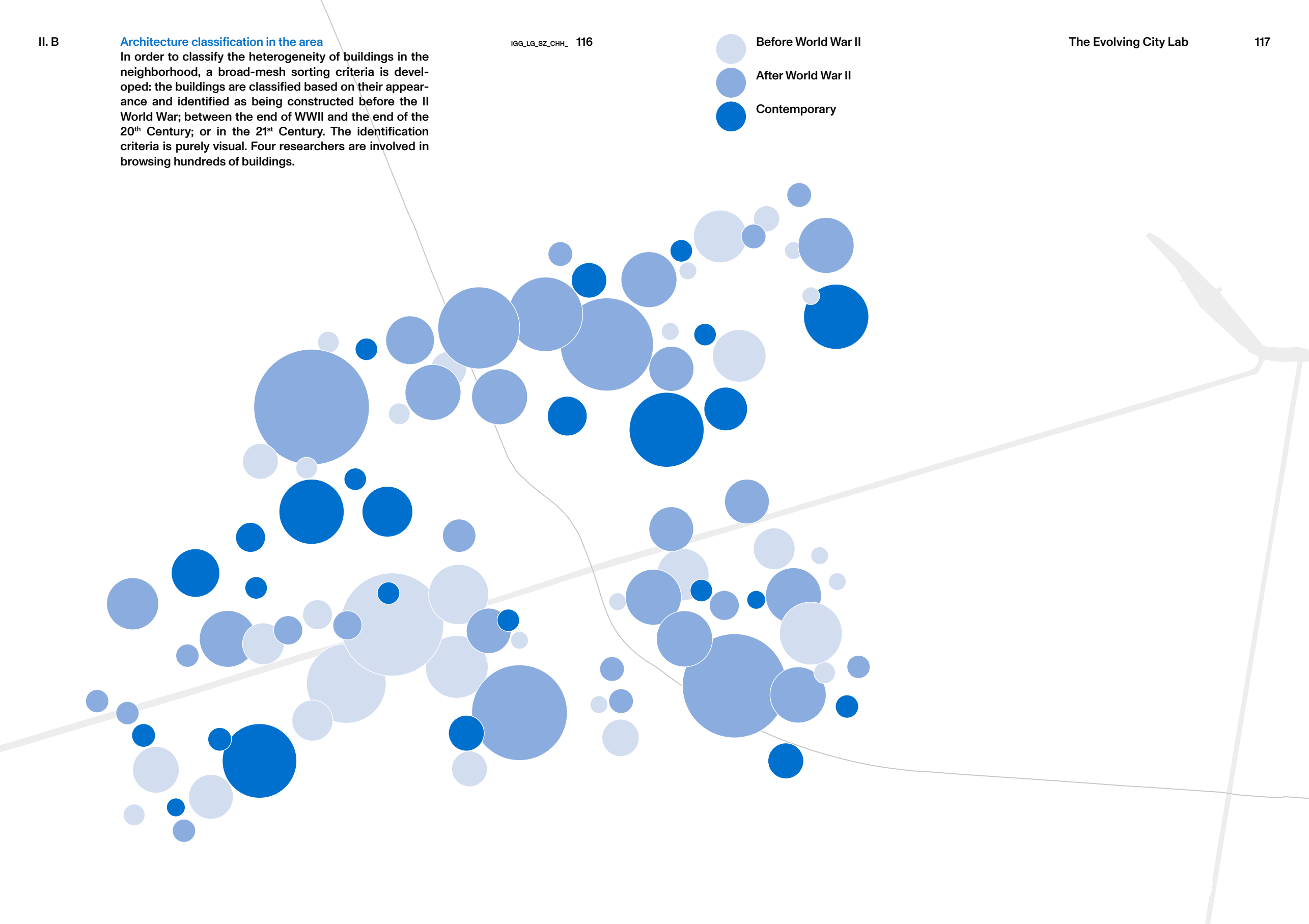
Architecture classification in the area

In order to classify the heterogeneity of buildings in the neighborhood, a broad-mesh sorting criteria is developed: the buildings are classified based on their appearance and identified as being constructed before the II World War; between the end of WWII and the end of the 20th Century; or in the 21st Century. The identification criteria is purely visual. Four researchers are involved in browsing hundreds of buildings.

Before World War II

After World War II

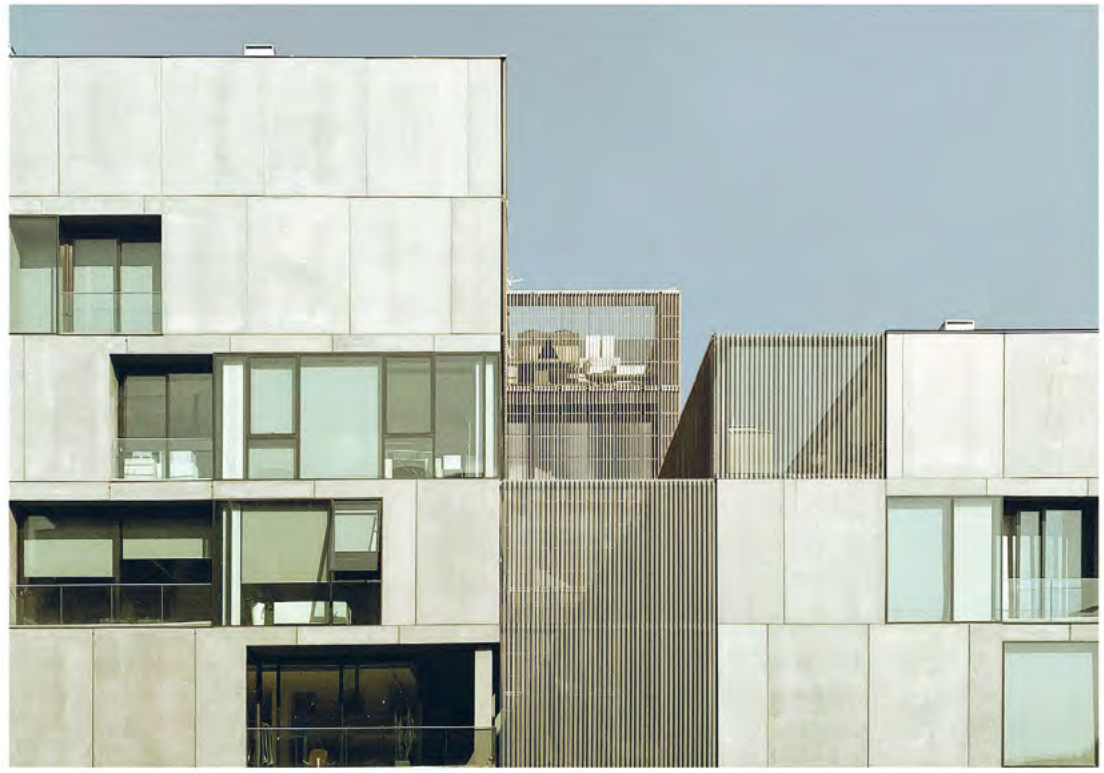
Contemporary



Before
World War II

After
World War II

Contemporary



The four quadrants object of the investigation are densely built. Samples of the visual categorization of buildings are rendered through a series of images and a distribution map of architecture typification in age groups is redacted. The high density of the urban fabric allows for a broad overlapping of different architectural typologies all across the spectrum; though the two southern quadrants appear clearly to have been less affected by construction after the II World War (possibly having suffered a lower level of shelling).

The areas in the immediate proximity of the ring road have been profoundly redesigned after the end of WWII, hosting medium to high rise, large residential complexes. While a long strip of the neighborhood, north of the old railway that borders the Naviglio Grande, has been the main focus for new developments after the turn of the century.

Averagely it can be said that a lower level of architectural dynamism is registered in the lower two quadrants, while the highest level of dynamism is recorded in the first couple of blocks north of the canal.

Urban density

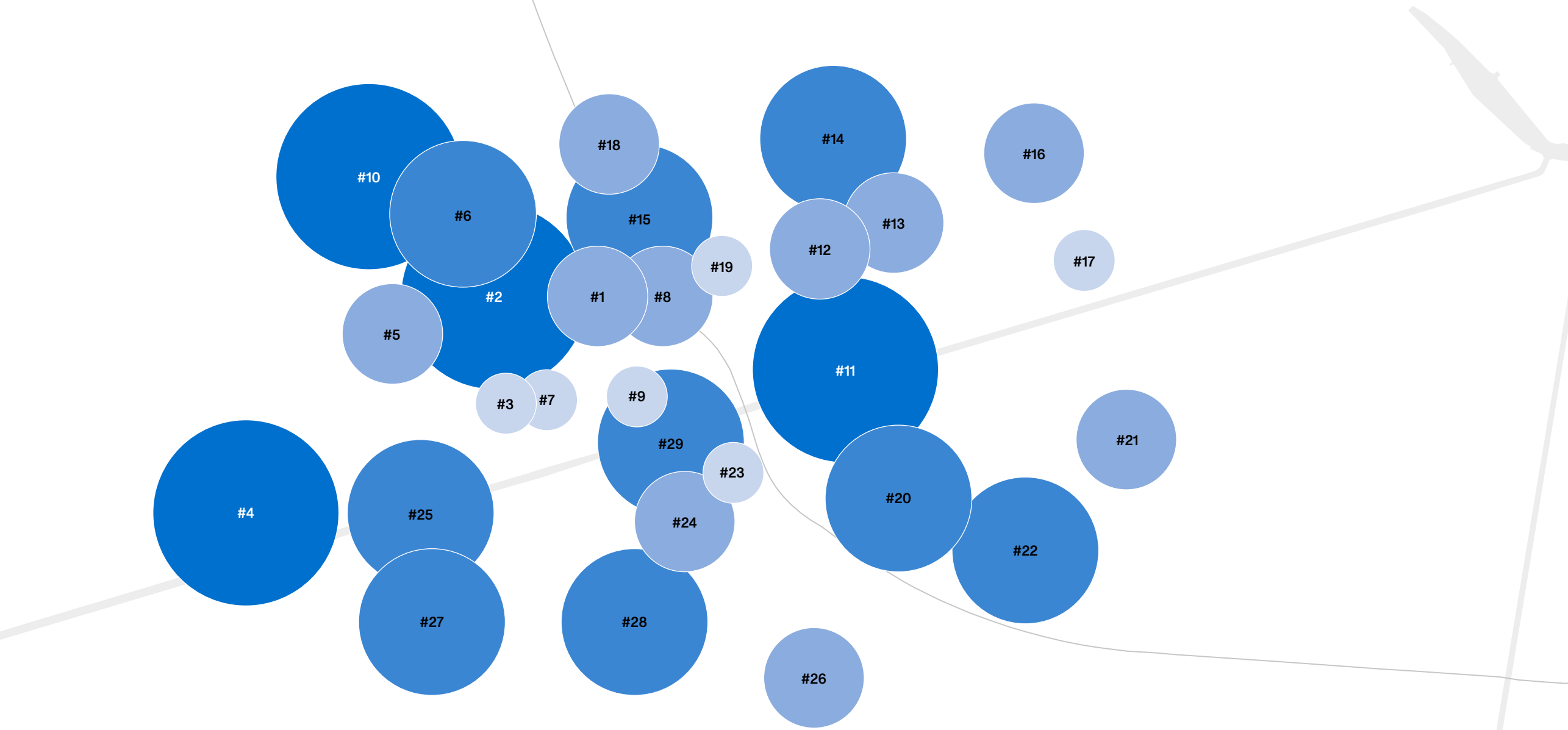
Given 29 predetermined observation points scattered around the neighborhood, urban density is measured. 3 researchers are involved; their eye level is between 1.4 and 1.5 meters from the ground; two out of three researchers suffer from myopia, but both wear corrective lenses for the entire duration of the research.

< 6 buildings

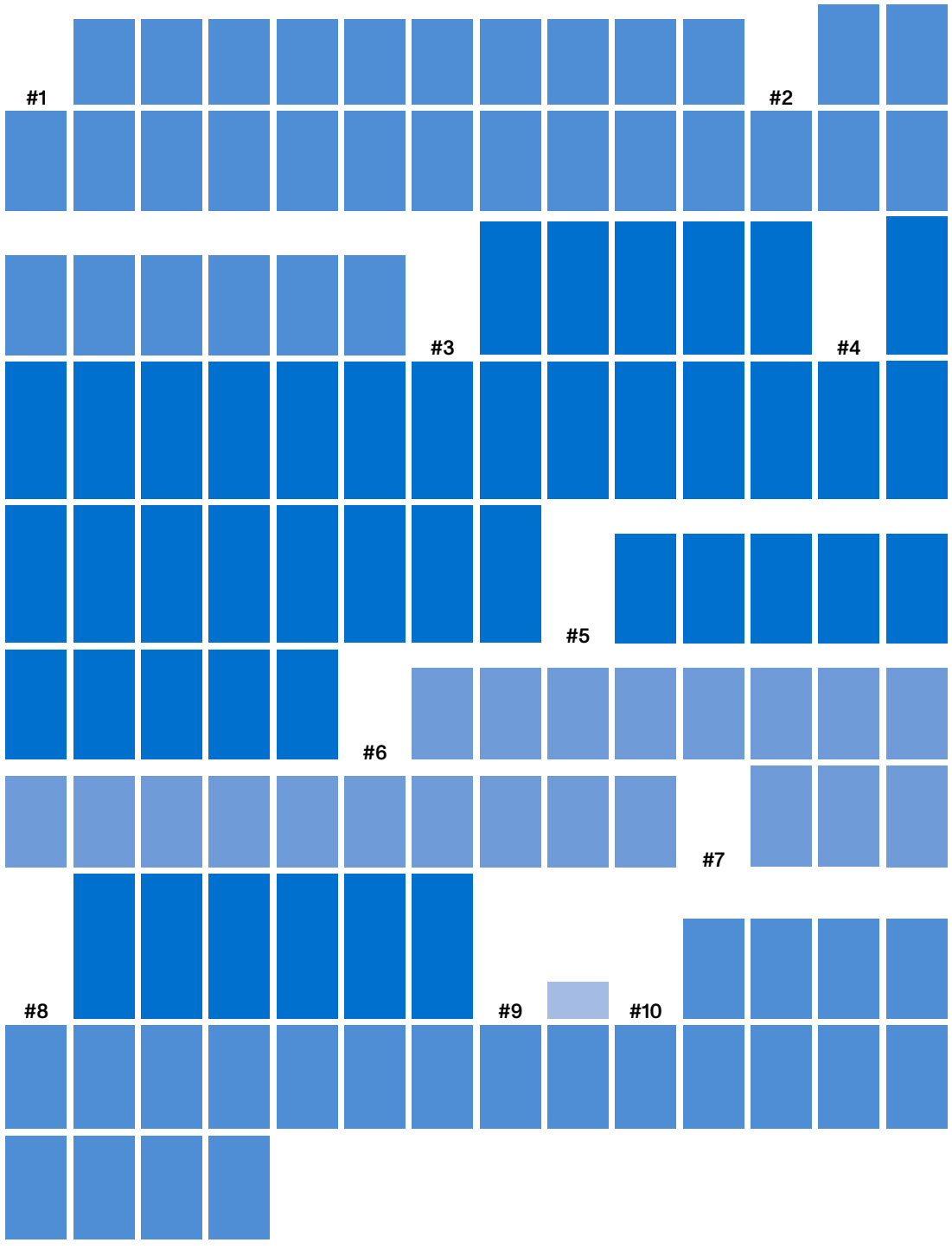
6-10 buildings

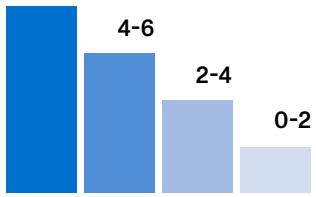
11-20 buildings

> 20 buildings

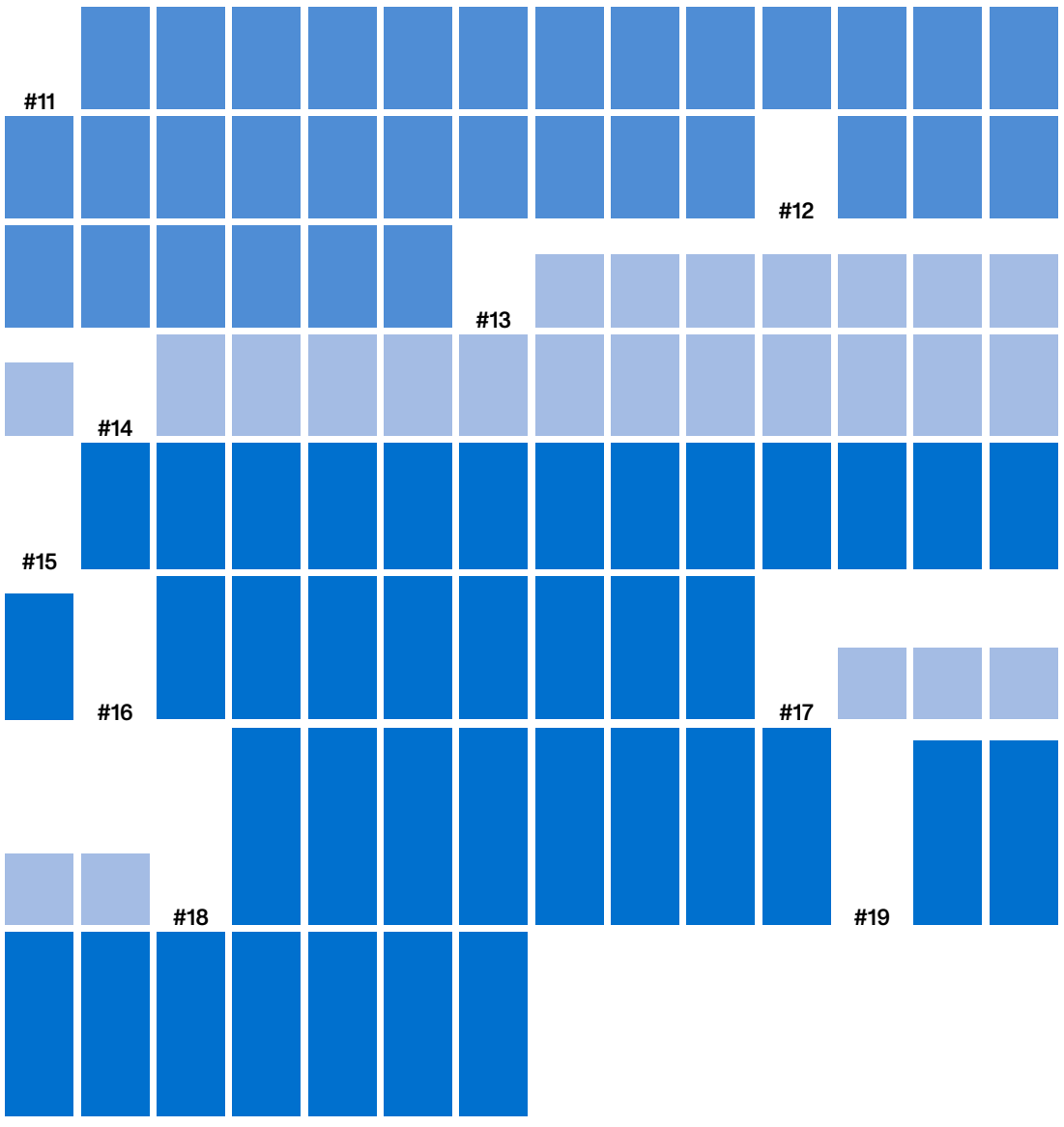


NW



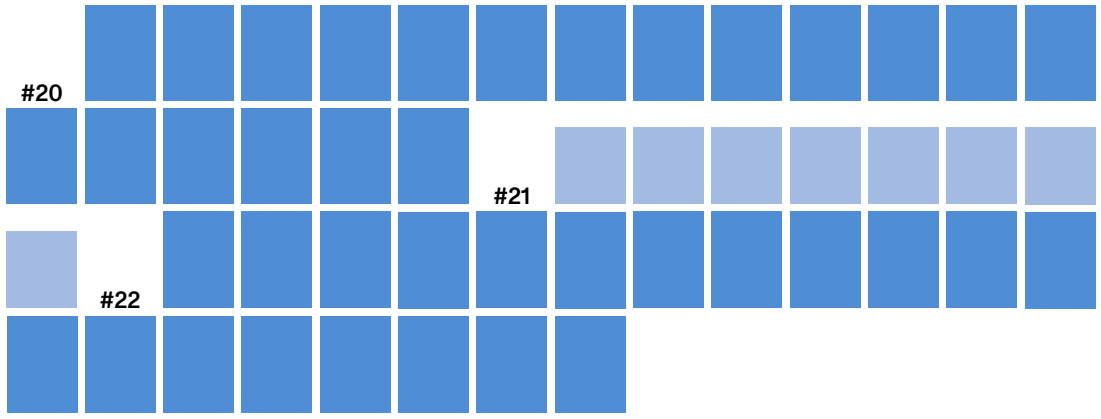


NE

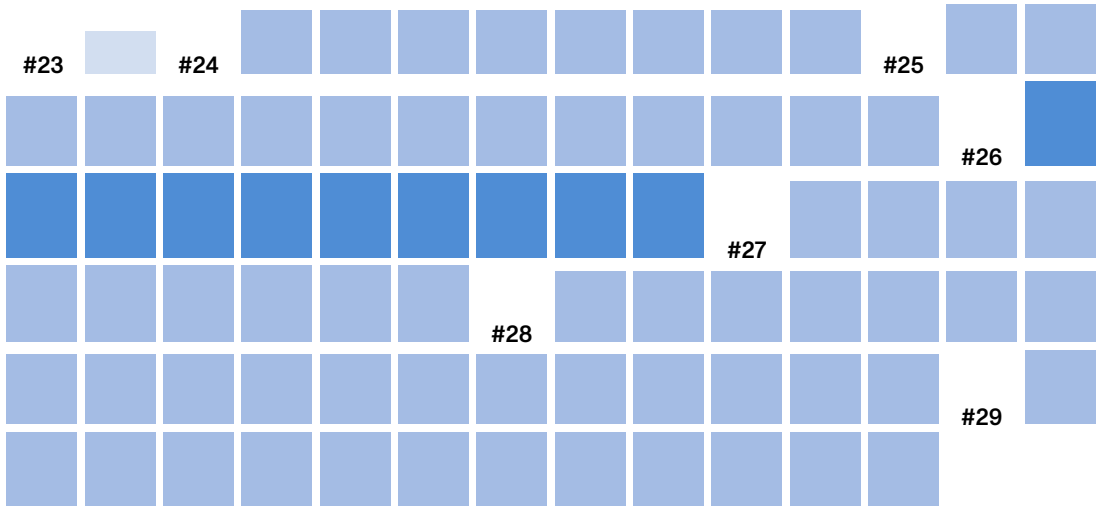


Researchers involved AP_PA_MC_
Visibility Good
Position of the researchers 29 predetermined observation points
Ground level
Public space
Daytime

SE



SW



Urban density is here measured visually. 29 observation points are identified prior to the research. Standing in each of the observation points the researchers record the amount of buildings they can see and the number of floors per each building. The visual measurement of urban density is affected by the average height of buildings in the immediate vicinity of the observation point; researchers are therefore asked to shift their position for a maximum of 10 meters around the predefined observation coordinates in order to maximize their vision scope. The north-eastern quadrant results as the area with the taller visible buildings, as opposed to both the southern quadrants in which older constructed residential blocks have less stories. All the four quadrants visually display a decrease in density when approaching the central position of the research, corresponding to the new Bosconavigli building site.

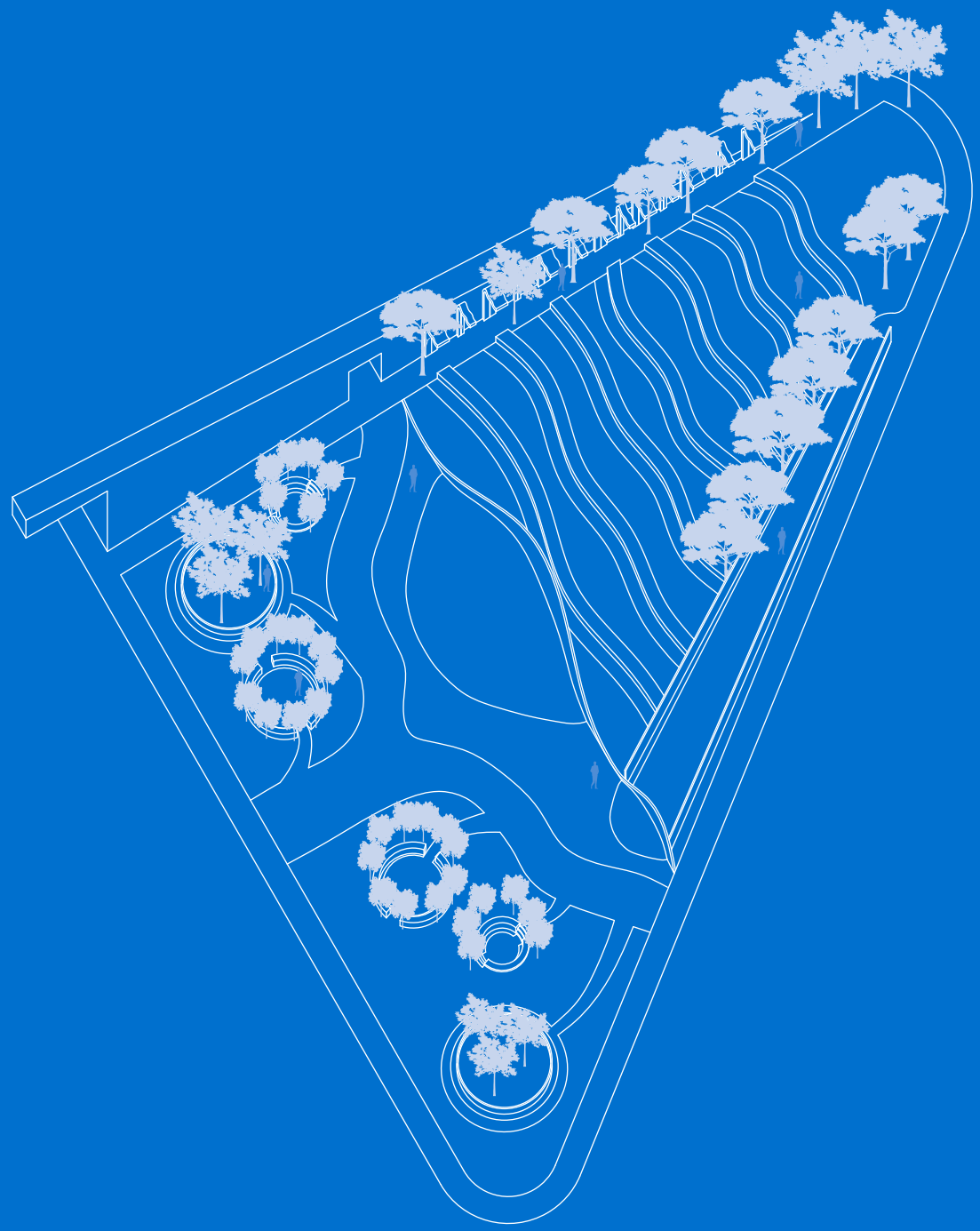
Concept by LP_VT_FV_

A foreseeable increase in the number of inhabitants and visitors of the neighborhood, generated by Bosconavigli, opens the need for new green areas.

T.O.H.M. is an acronym that stands for Theatre On Hill Milano. The concept proposal is that of a new garden designed for the city of Milan, located in the San Cristoforo district along the Naviglio Grande canal, between Via Lodovico il Moro and the ring road of Viale Cassala. The garden was conceived aiming at the rebirth of the urban greenery, hosting open-air shared social and cultural spaces, with the final goal of attracting population in a now neglected area while creating a new landmark for the community.

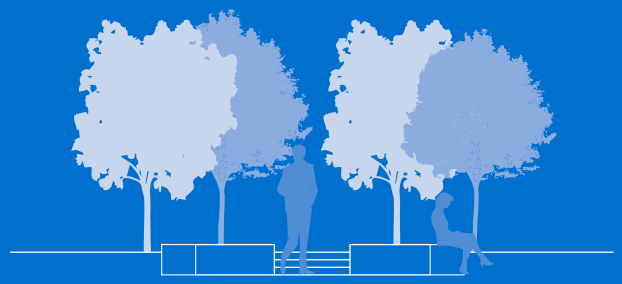
The main feature of the garden is its Theatre On a Hill, so called because of the change in elevation of this portion of land – which climbs from the southern canal banks to the level of the ring road – and is used both to enhance the identity of the area and to add functional value to the project. The seats for the audience emerge from the slope and look towards an artificial hill, under which the stage is located. Through organic paths visitors can reach small circular arenas surrounded by vegetation. The shape of the arenas invites visitors to seat and relax, while these intimate gathering points act also as satellites of the theater, so serving the community for different kind of purposes.

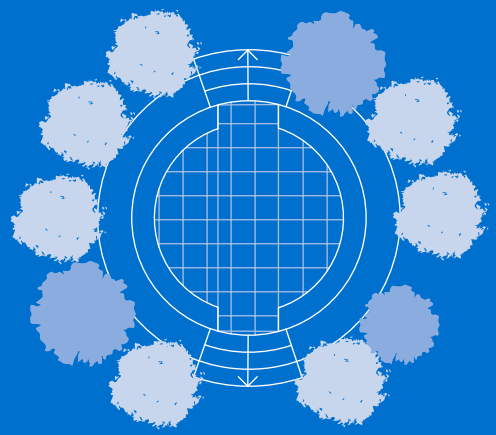
1:500 North ↗ 0 _____ 5 m



Isola 1

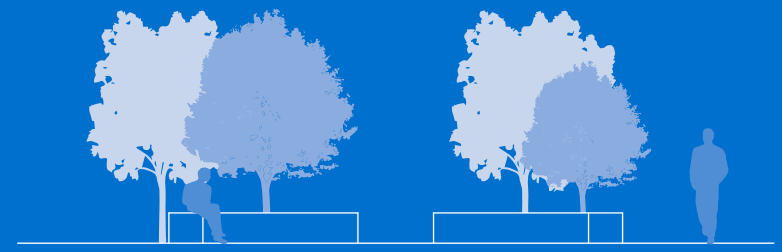
1:100 0 1 m

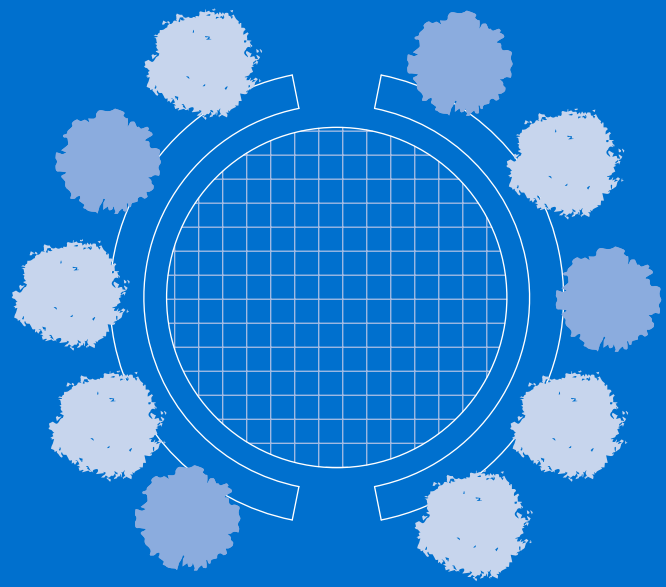




Isola 2

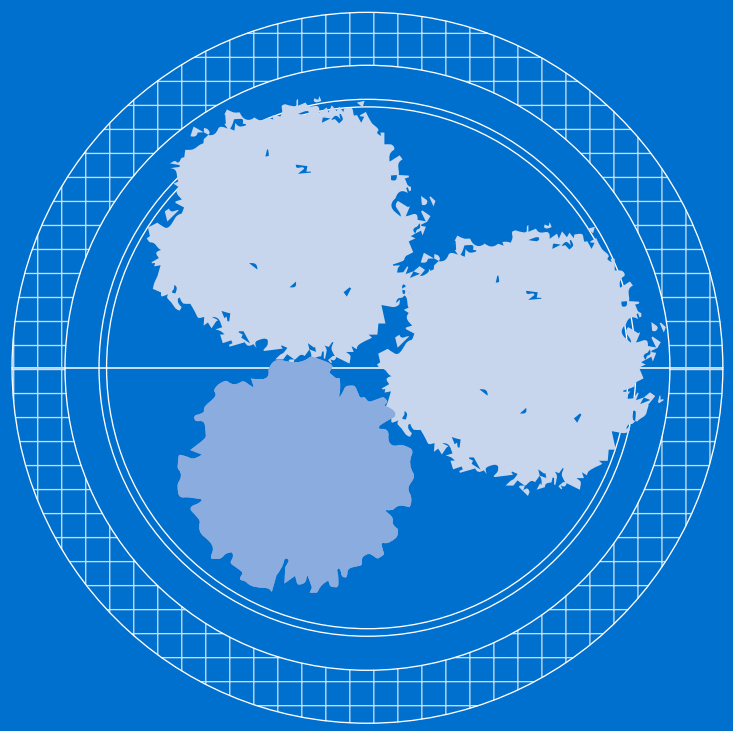
1:100 0 1 m





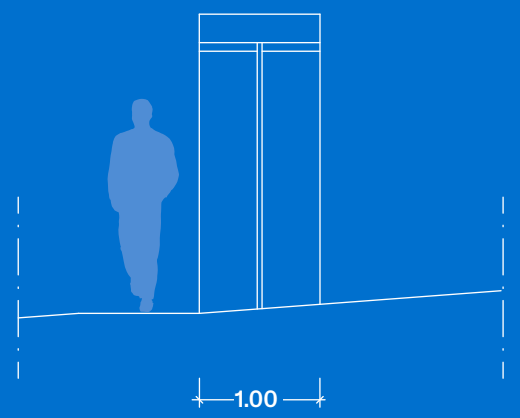
Isola 3

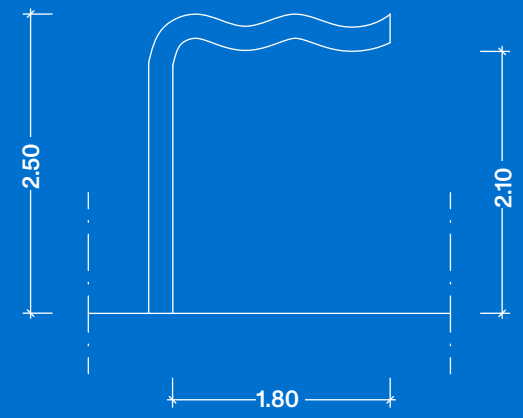
1:100 0 1 m

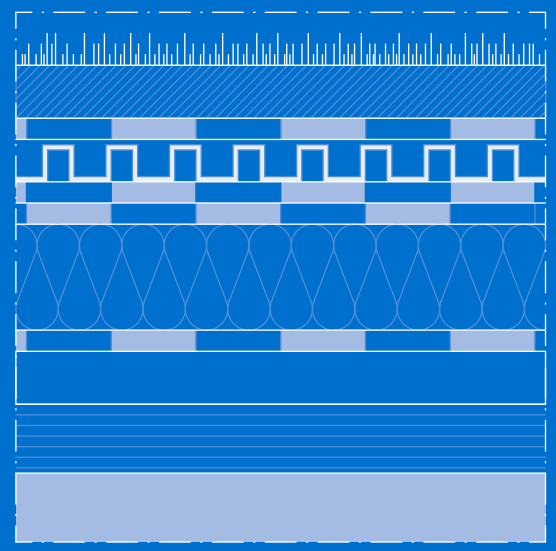


Details and over layers

1:50 0 0,5 m







1. Grass
2. Culture layer
3. Filter layer
4. Water storage and drainage element
5. Mechanical protection layer
6. Root protection and waterproofing
7. Corkpan panel layer
8. Separation layer
9. Collaborating insole
10. Slab in rick
11. Concrete

Analysis of available commercial services

The analysis is carried out by 7 researchers, surveying 12 different micro areas scattered evenly around the 4 quadrants object of the overall research. The aim is to visually map, account and classify the typologies of commercial services present in each micro area. The mapping process is done over an entire weekend in late September 2021.

NW

Via Giambellino

Via Leone Tolstoj

Via Filippo Brunelleschi

Via San Cristoforo


94
Adesilandia
GRAFICA E ADESIVI
POSTER ADESIVI

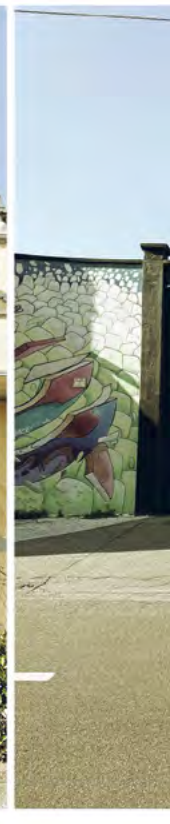

Amici
MINIMARKET
PRODOTTI ITALIANI
E TUTTO IL MONDO
CONSEGNA A DOMICILIO 351 1913 744
APERTO


La Bottega
del Ponte

Via Savona


HOGUN
HOGUN
ASIAN FOOD

Alzaia Naviglio Grande



NE

Via Tortona

Via Stendhal

Via Andrea Solari

Via Cola di Rienzo

SE

Ripa
di Porta Ticinese

Via Carlo d'Adda

Via Elia Lombardini

SW

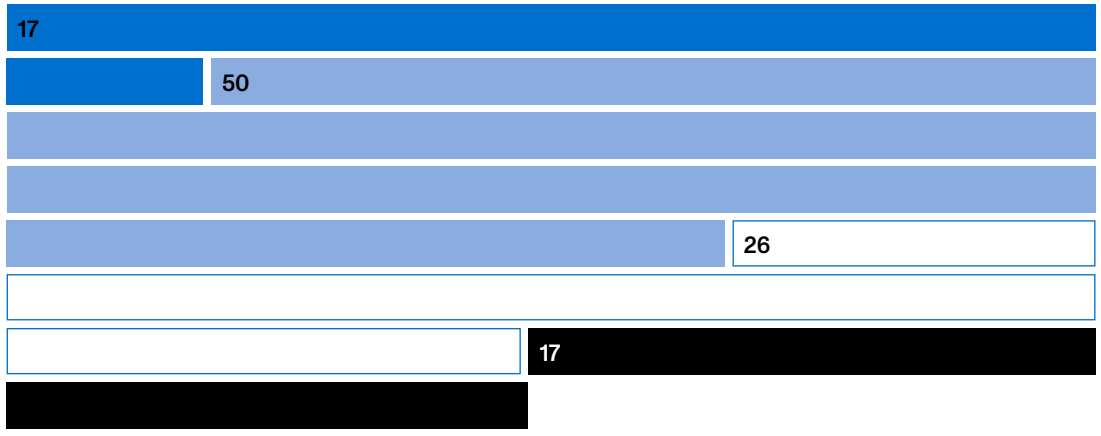
Via Giovanni Enrico Pestalozzi

Via Giacomo Watt

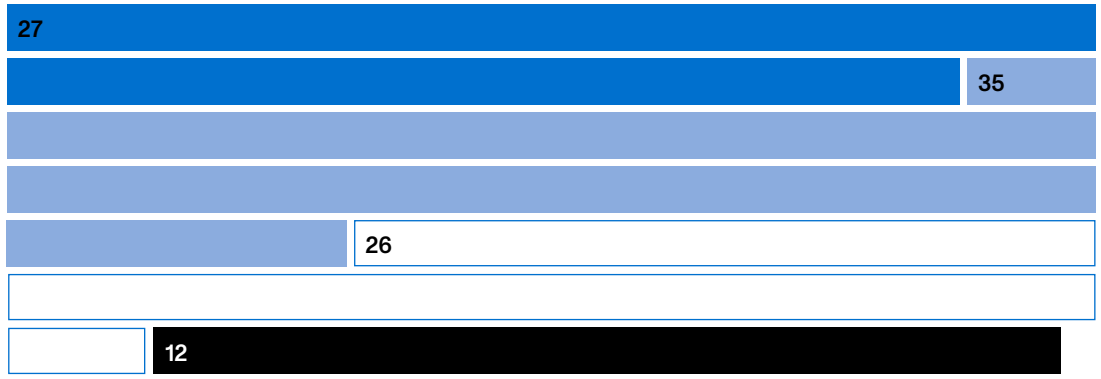
Via Franco Tosi

Via Lodovico il Moro

Restaurants



Coffe bars and pubs



Schools

Museums

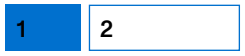
Galleries

Cinemas

Newsstands

Bookshops

Radio and TV stations



Medical centers

Churches

Oratory

Gyms

Football playgrounds

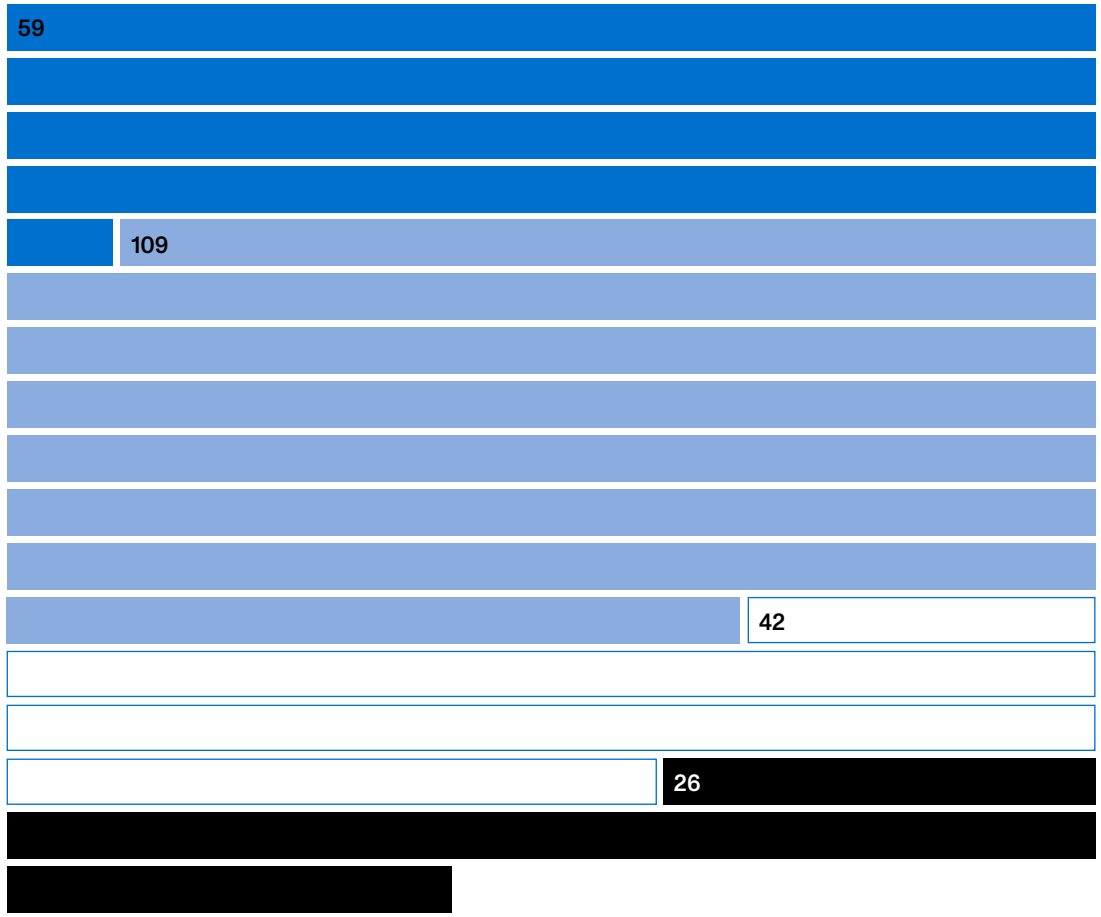
Basket playgrounds

Tennis courts

Laundries

Snack supply shops

All other shops



Swimming pools

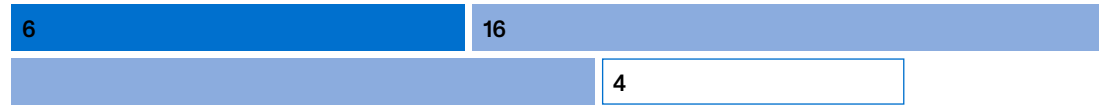
Dumps

Hotels

Garages

Architecture studies

Real estate agencies



Studios

Deposits

Travel agencies

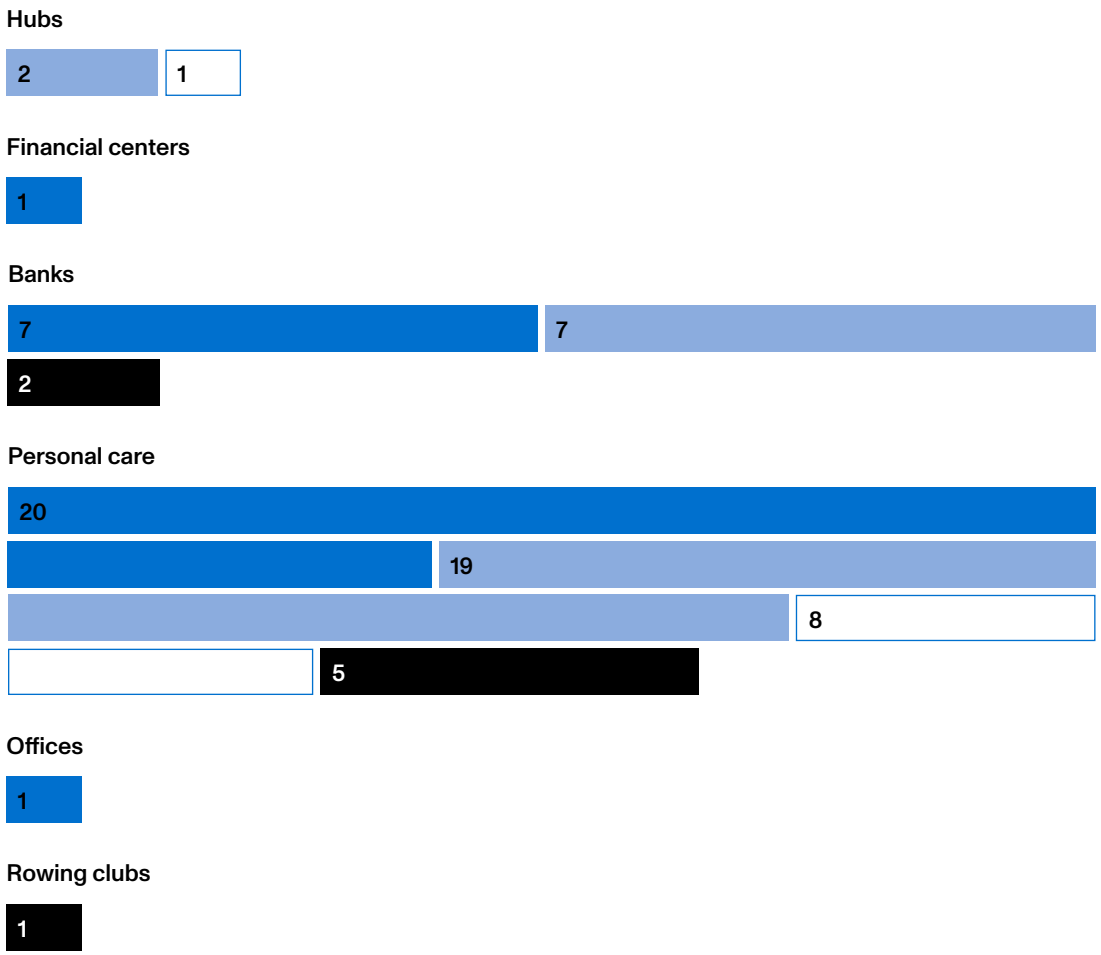
Pharmacies

Post offices

Co-workings

Theaters

Gas stations



The mapping of the commercial services and of its distribution across the 4 quadrants allows a number of broad considerations over the characteristics of each area.

The 2 northern quadrants (NW and NE) appear to have by far the highest concentration of services in nearly all domains, except for laundries and garages, which are dominant in the south-eastern quadrant showing its residential vocation.

Restaurants, pubs and coffee bars are common in both the southern quadrants (SW and SE) and concentrated in proximity of the Naviglio Grande banks because of its potential as an attraction for entertainment and nightlife.

An unexpected high number of real estate agencies is noted in the NE quadrant, suggesting it being the most dynamic in terms of real estate development, followed by the NW quadrant and a growing SE quadrant.

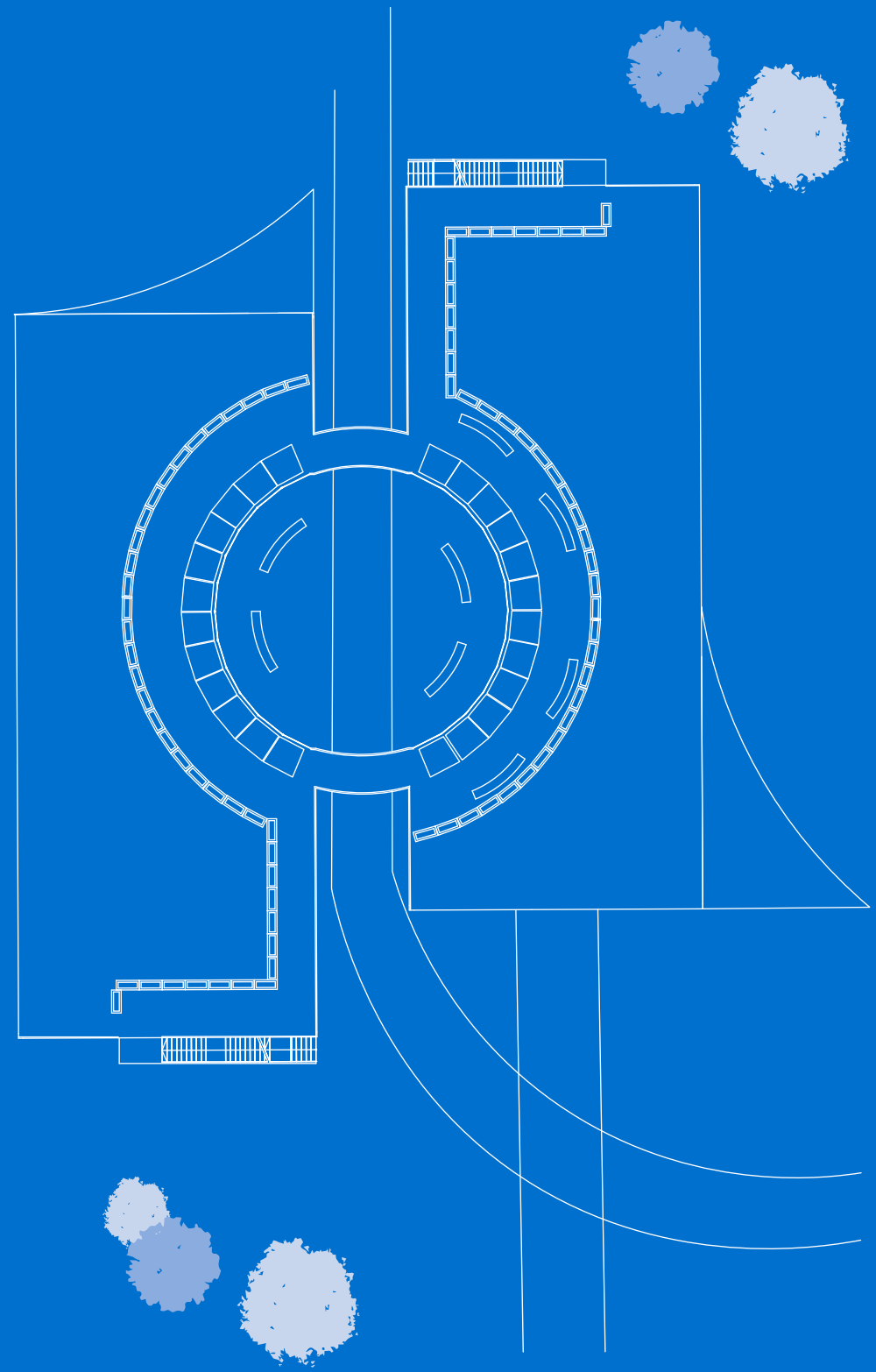
A relatively high number of services related to personal care is also noted in both northern quadrants (NW and NE).

Concept by FC_MT_AMC_LB_

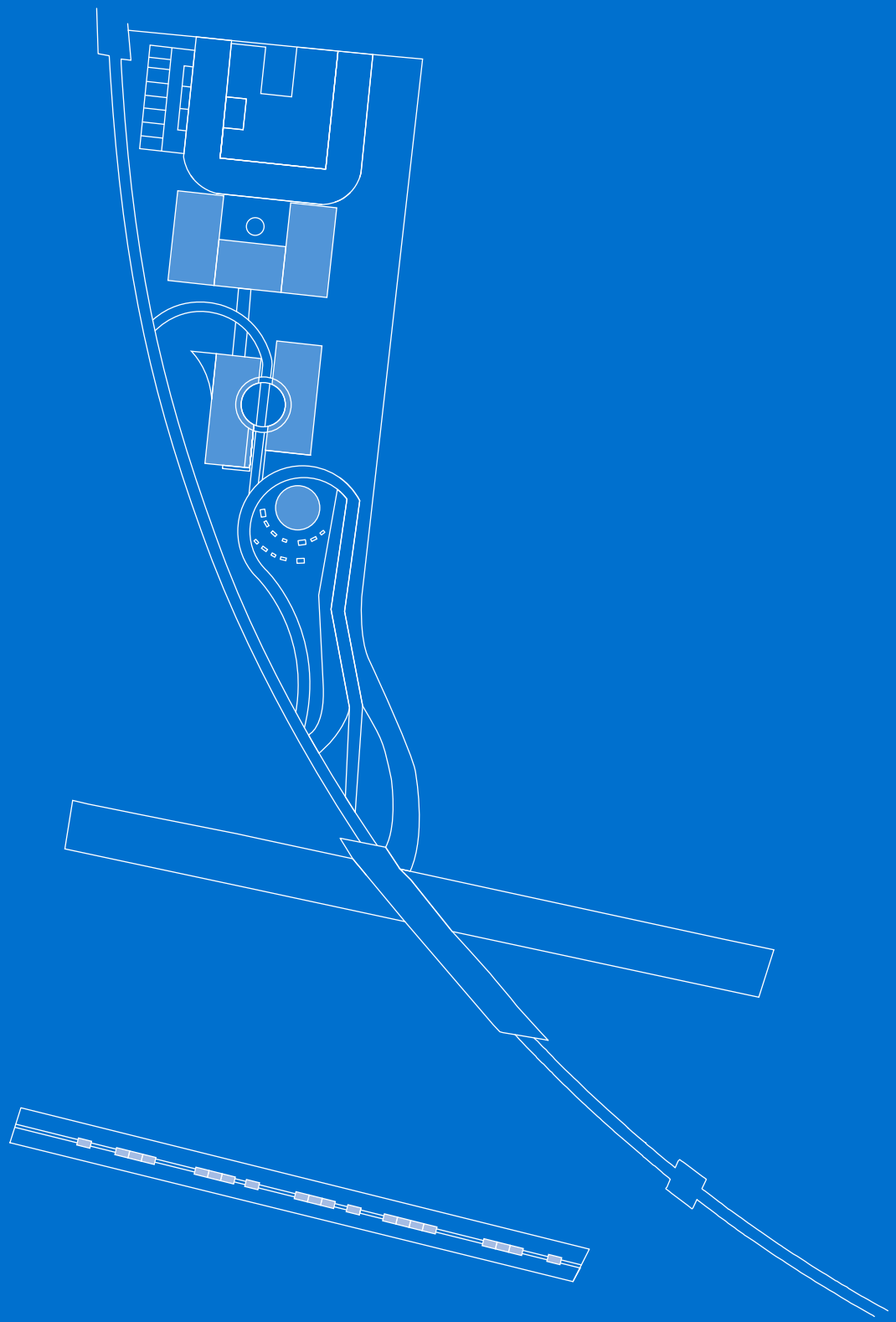
The influence of Bosconavigli in the area lays the foundation for possible business opportunities that deal with values related to design, sustainability, green culture.

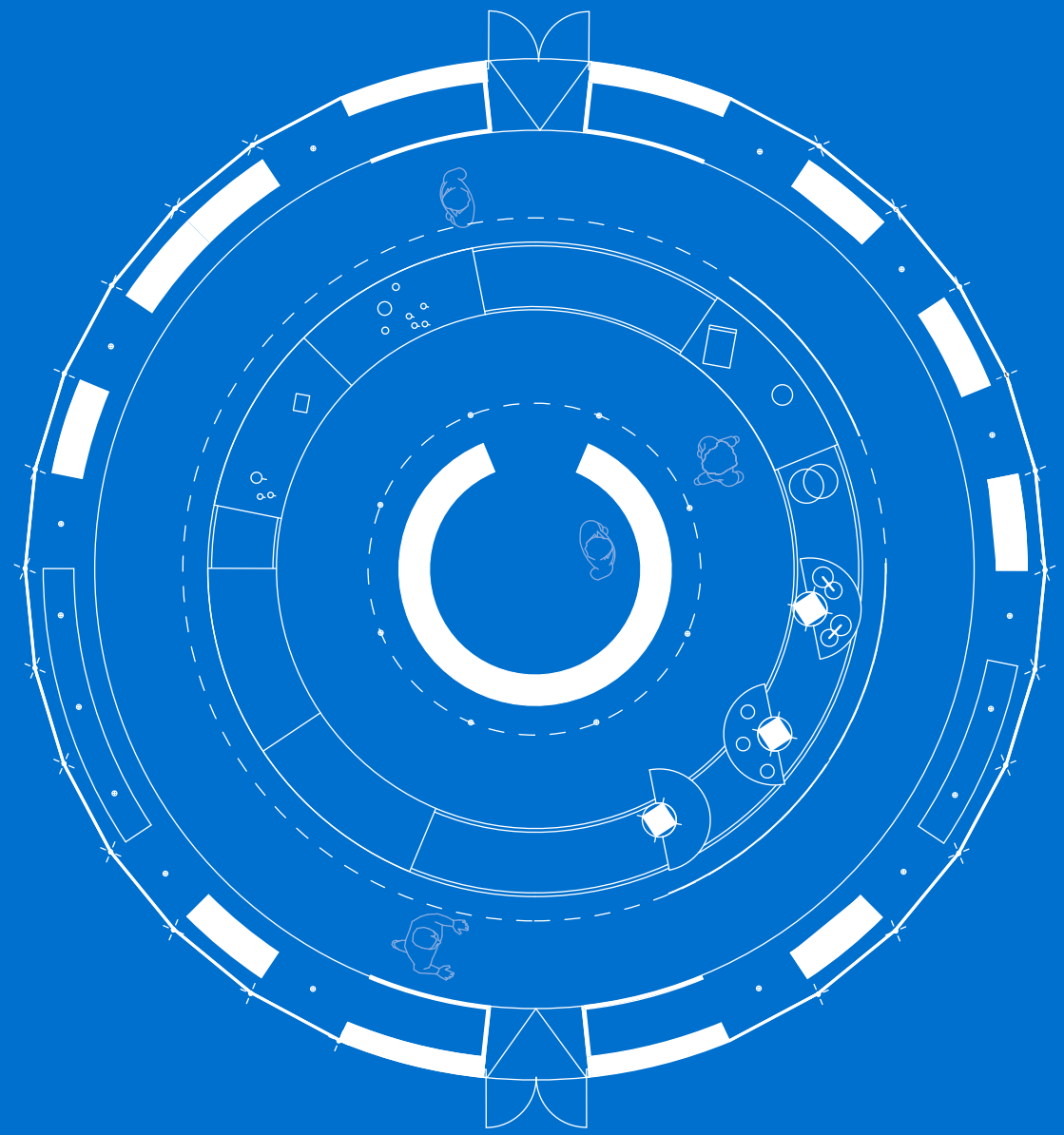
The concept of “Uptitude make and remake” project is a new reality for the city of Milan, a few steps from the Tortona district, symbol of fashion, design and events. Uptitude fits into the context of trade fairs, events and installations, and it offers a service of collection and reuse of all those products which have been already used to create these kind of events. The service offered by this new reality wants to help the trade fair sector which is often faced with only one alternative at the end of the events: disposing all the materials, pieces, used installations, simply because there is no place that offers an upcycling opportunity. With its storage warehouse, Uptitude offers companies a space to leave these objects and decide whether to reuse them in the future. A further option is to activate an upcycling process, and thus give a new life to any object creating, in the factory, a supply item, a work of art or any other item that can be sold or displayed in the dedicated shop. Upcycling has nothing to do with the industrial process of recycling. On the contrary upcycling is the process of transforming waste materials, useless, or unwanted products into new products of greater quality. The only limits to upcycling are one’s imagination and skills.

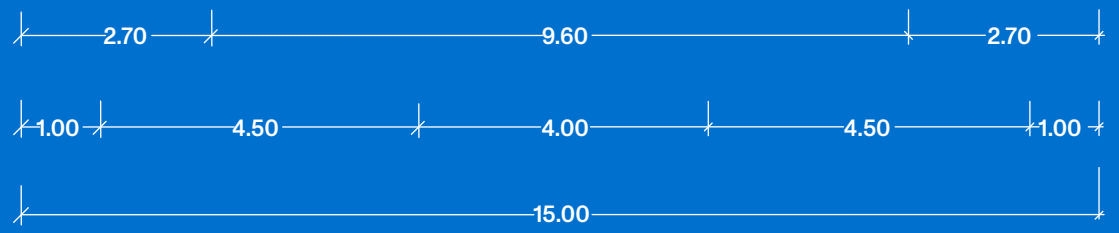
1:250 North ↘ 0 ——— 2,5 m



1:100 North ↙ 0 ——— 1 m







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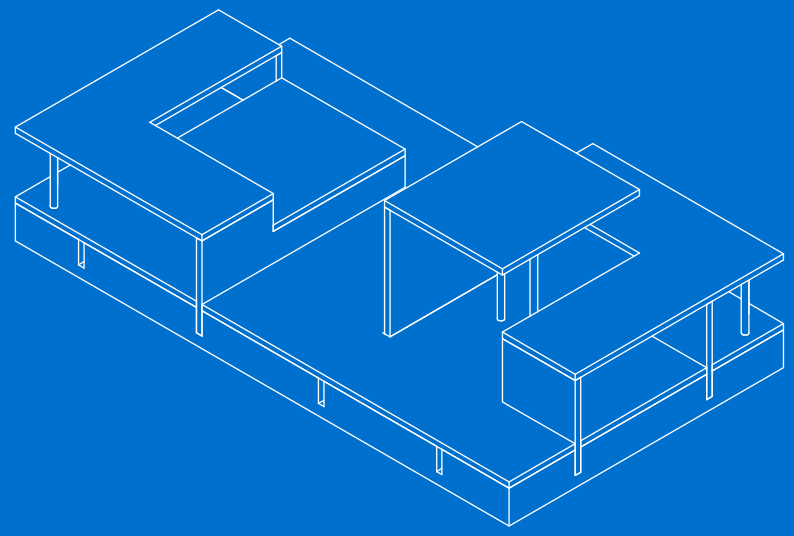
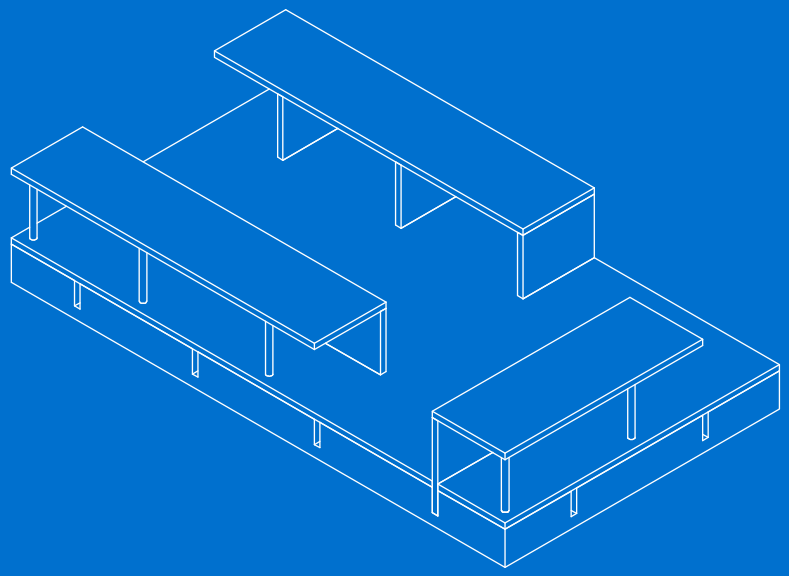
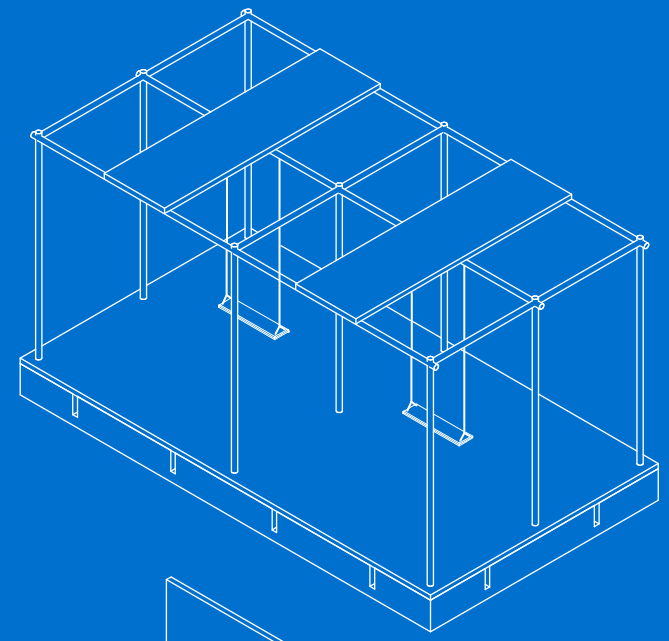
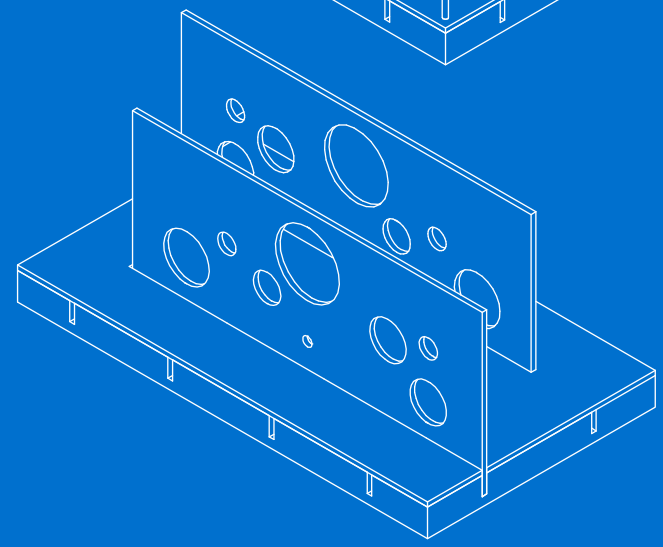
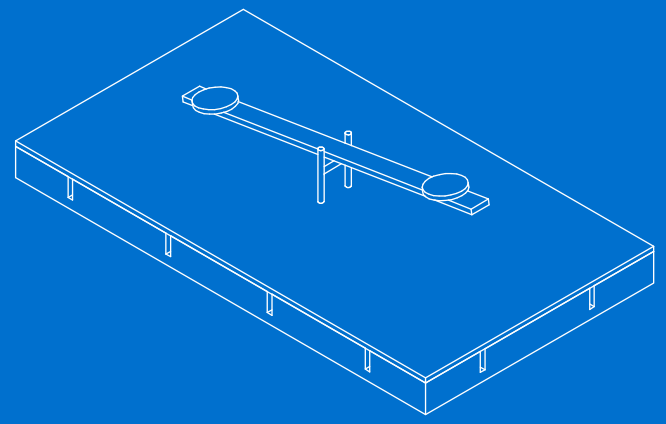










Analysis of balconies and greenery

Open-air private spaces and possible interaction with nature proved to be essential indicators of the contemporary urban quality life. With the intent of classifying open-air private spaces in a densely built urban area, 3 typologies of balconies and 6 typologies of vegetation are identified in the investigated area.

Balconies

In lodge

Overhanging

Terrace

Greeneries

Building façade

Commercial and services

Courtyard

Private property

Wild

Urban public

Ground floor

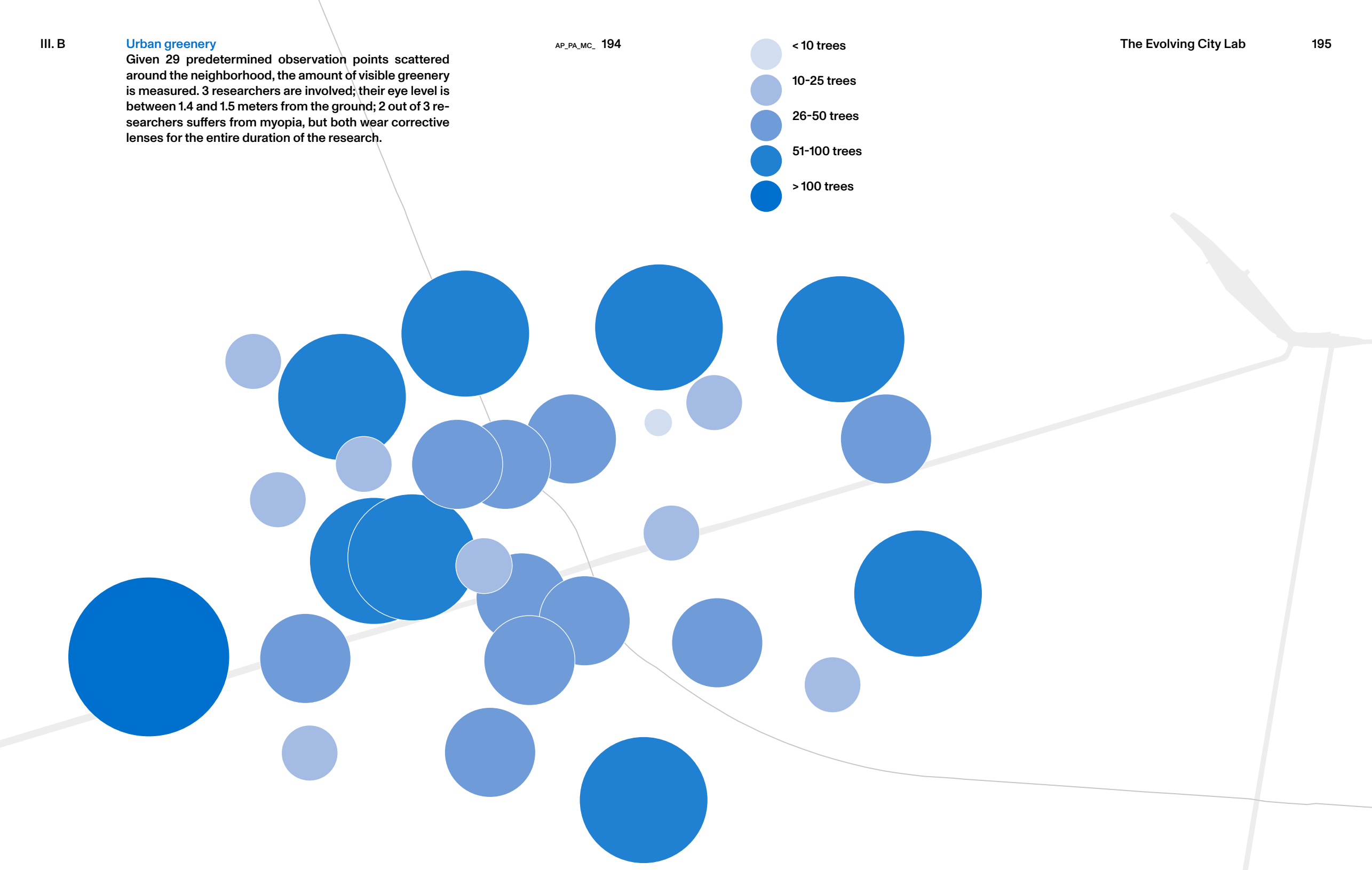
Upper floor

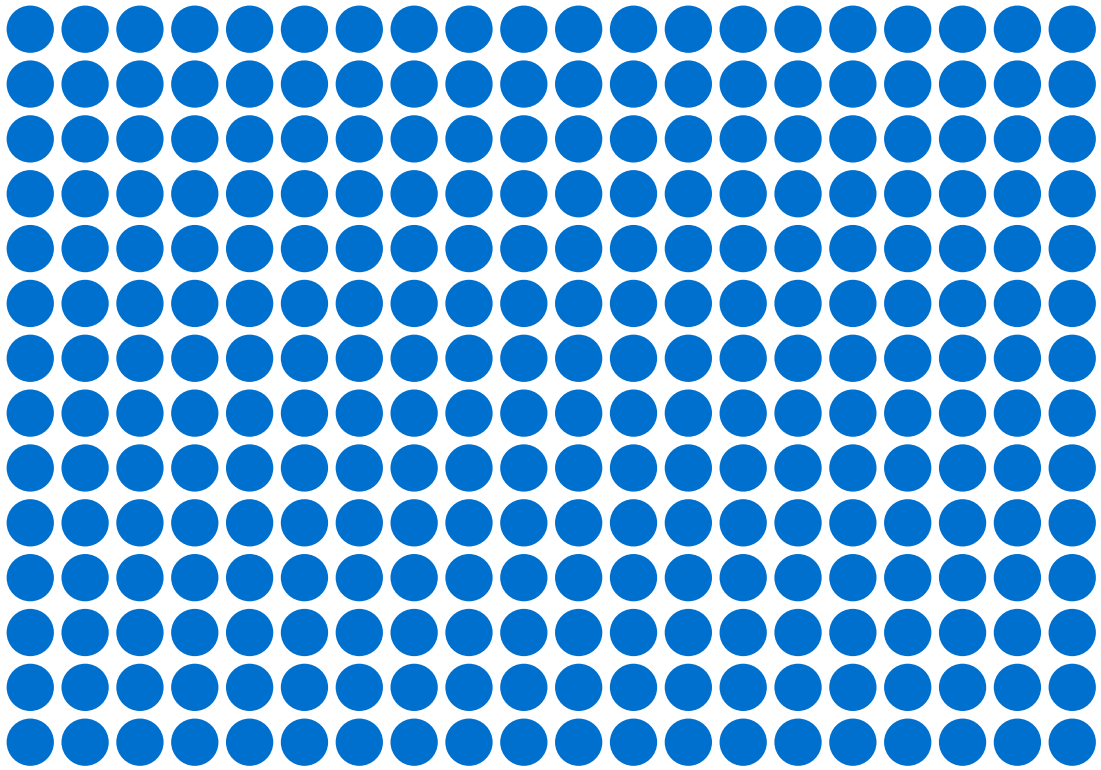
Researchers involved LP_VT_FV_
Visibility Good
Position of the researchers Ground level
Public spaces
Daytime

In-lodge balconies, overhanging balconies and terraces are identified as the 3 open-air private spaces typologies present in the area. All typologies are represented in the 4 quadrants object of the analysis and across the architectural spectrum of buildings. A visual sampling of the different typologies is presented both in variety and quantity.
As per the greenery distribution 6 different options are identified: vegetation spreading over building façades, greenery taken care of by business activities, vegetation in private properties, in courtyards, in public places and ultimately wild or spontaneous. The vast majority of balconies in the neighborhood are overhanging, while vegetation is pretty much evenly distributed between public and private spaces, with a dominance of evergreen species possibly determined by the investigation being undertaken in autumn.

Urban greenery

Given 29 predetermined observation points scattered around the neighborhood, the amount of visible greenery is measured. 3 researchers are involved; their eye level is between 1.4 and 1.5 meters from the ground; 2 out of 3 researchers suffers from myopia, but both wear corrective lenses for the entire duration of the research.



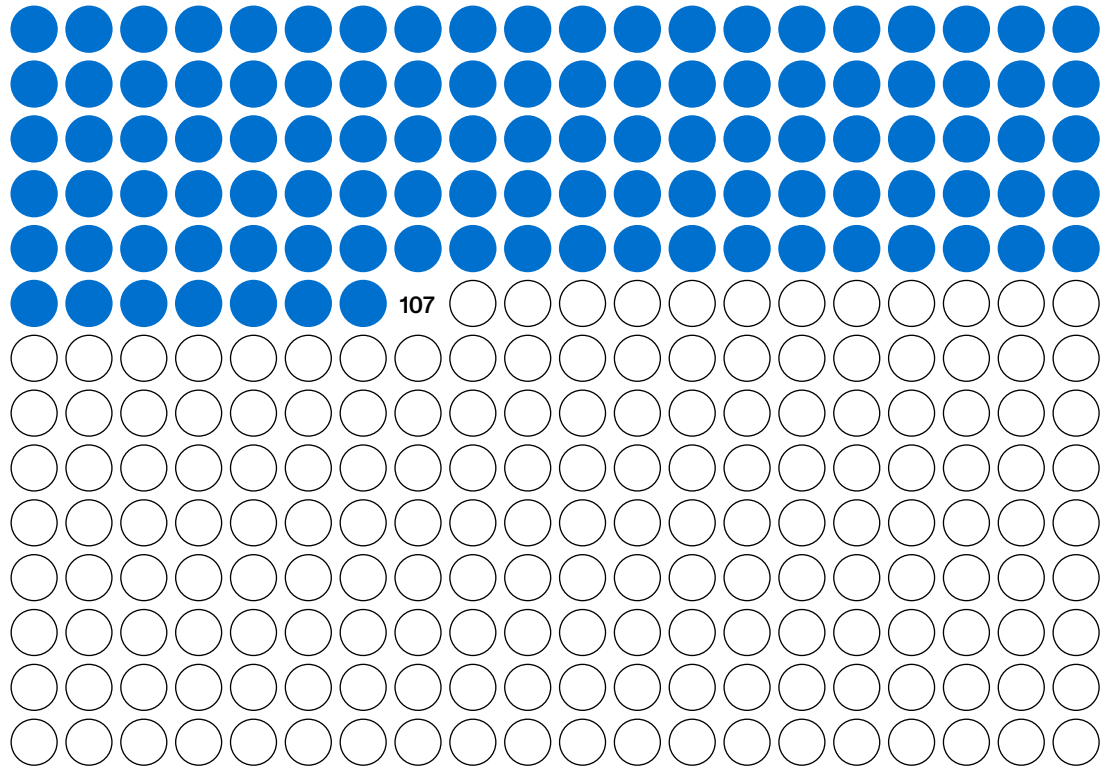


384

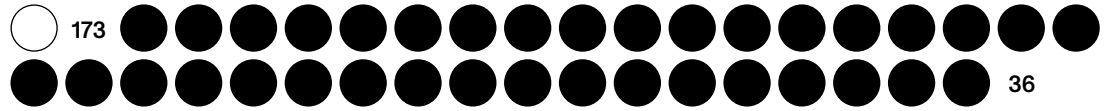
27

40

NW



107



173

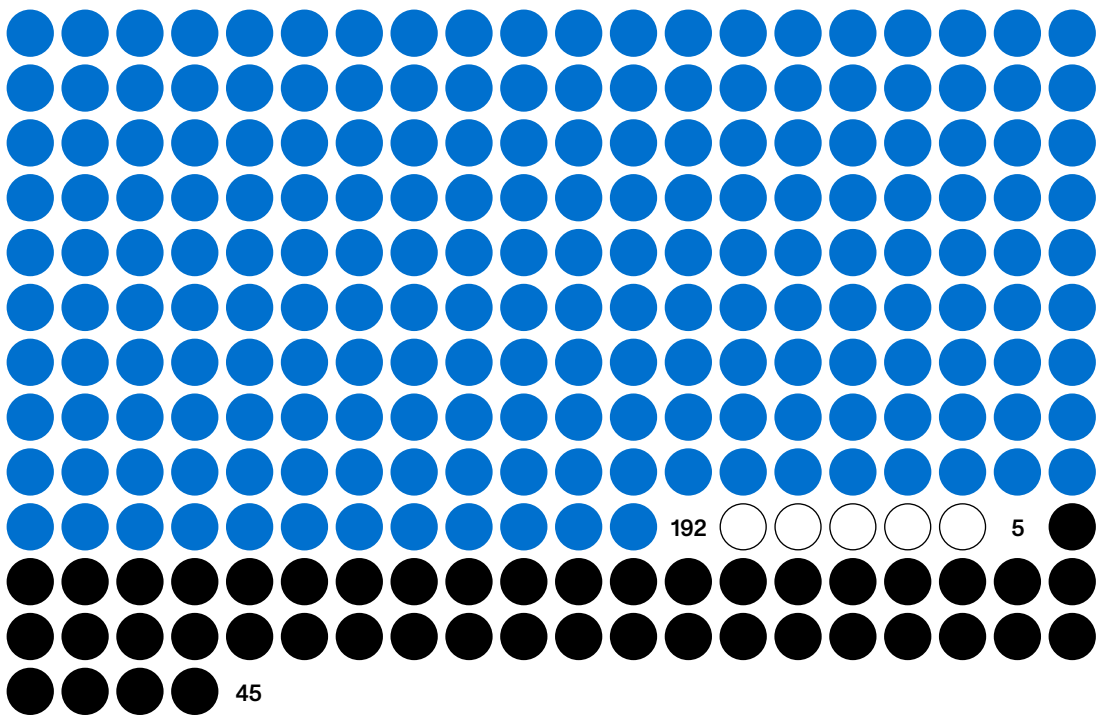
36

NE

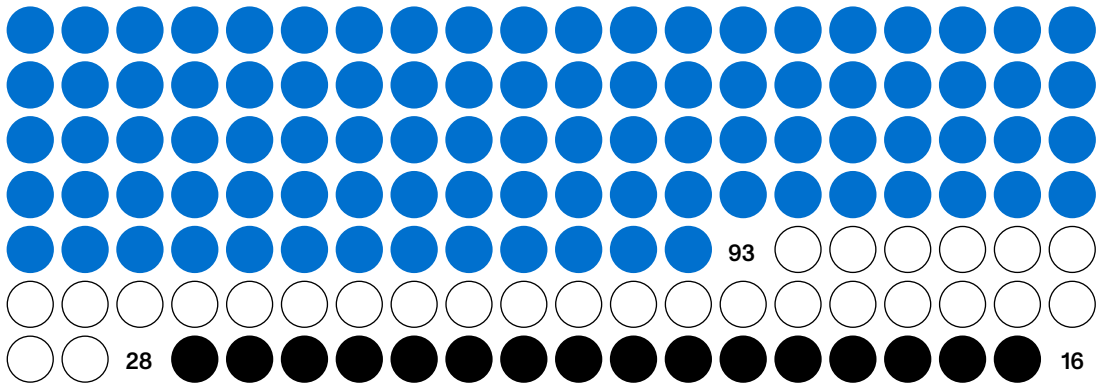
Plants in the ground

Plants in flowerpots, ground floor

Plants in flowerpots, upper floors



SW



SE

Researchers involved AP_PA_MC_
Visibility Good
Position of the researchers 29 predetermined observation points
Ground level
Daytime

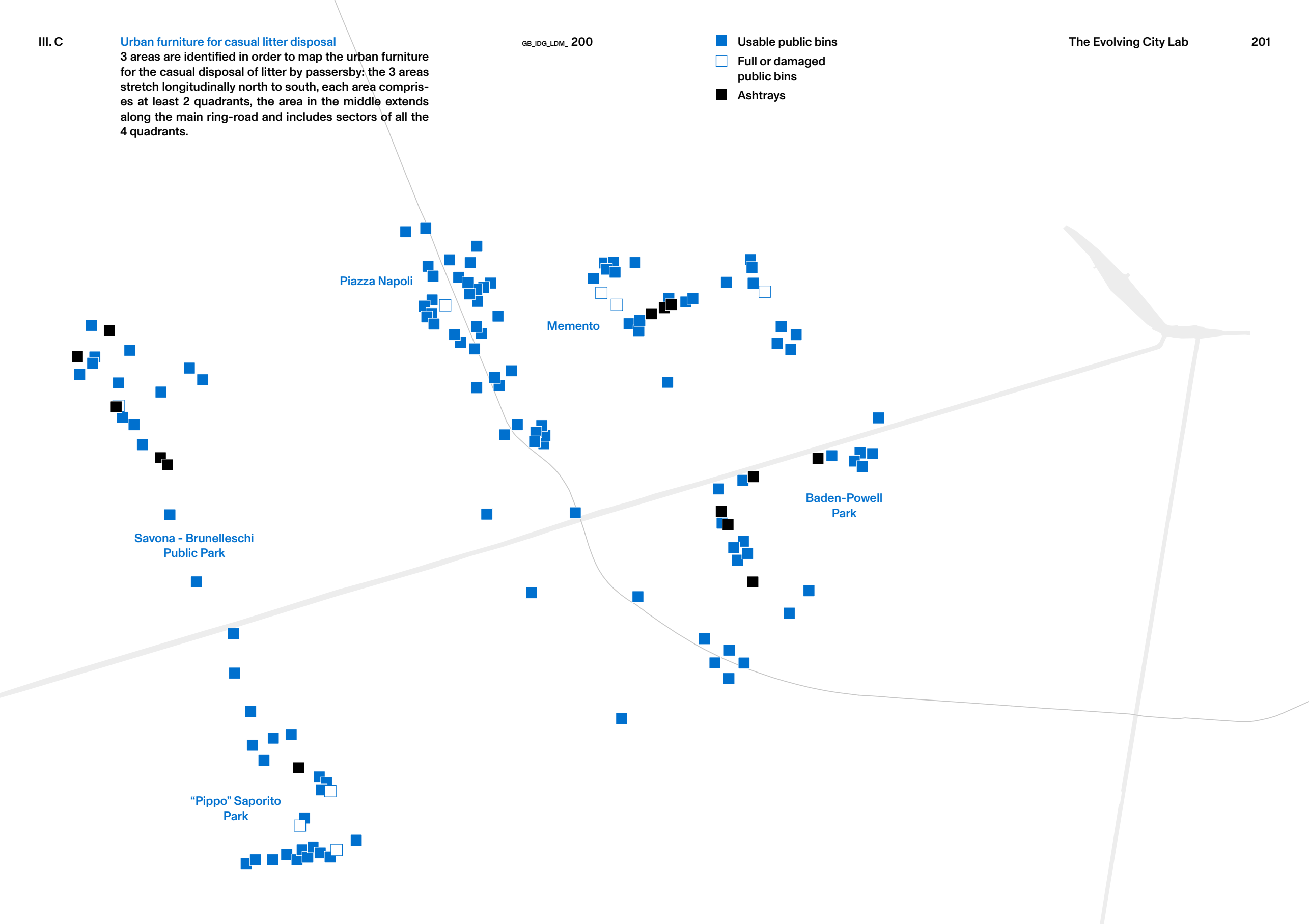
Public landscape is scanned visually in the attempt of measuring the amount of greenery present in each area of the neighborhood. Standing in each of the observation points, the researchers record the amount of trees they can see from their standing point. The visual measurement of greenery at ground level is affected by the average height of buildings in the immediate vicinity of the observation point; researchers are therefore asked to shift their position for a maximum of 10 meters around the predefined observation coordinates in order to maximize their vision scope.

The result shows an uneven “belt” of green patches in the external areas of each quadrant, with a definite concentration of trees in the Foppette area. Greenery is measured when ground-planted as well as when grown in flowerpots, both at ground level or on balconies. The north-western quadrant results by far the one with the highest number of ground planted trees, while the highly gentrified north-eastern quadrant shows the more significant number of greenery in lowerpots at ground level.

Urban furniture for casual litter disposal

3 areas are identified in order to map the urban furniture for the casual disposal of litter by passersby: the 3 areas stretch longitudinally north to south, each area comprises at least 2 quadrants, the area in the middle extends along the main ring-road and includes sectors of all the 4 quadrants.

- Usable public bins
- Full or damaged public bins
- Ashtrays



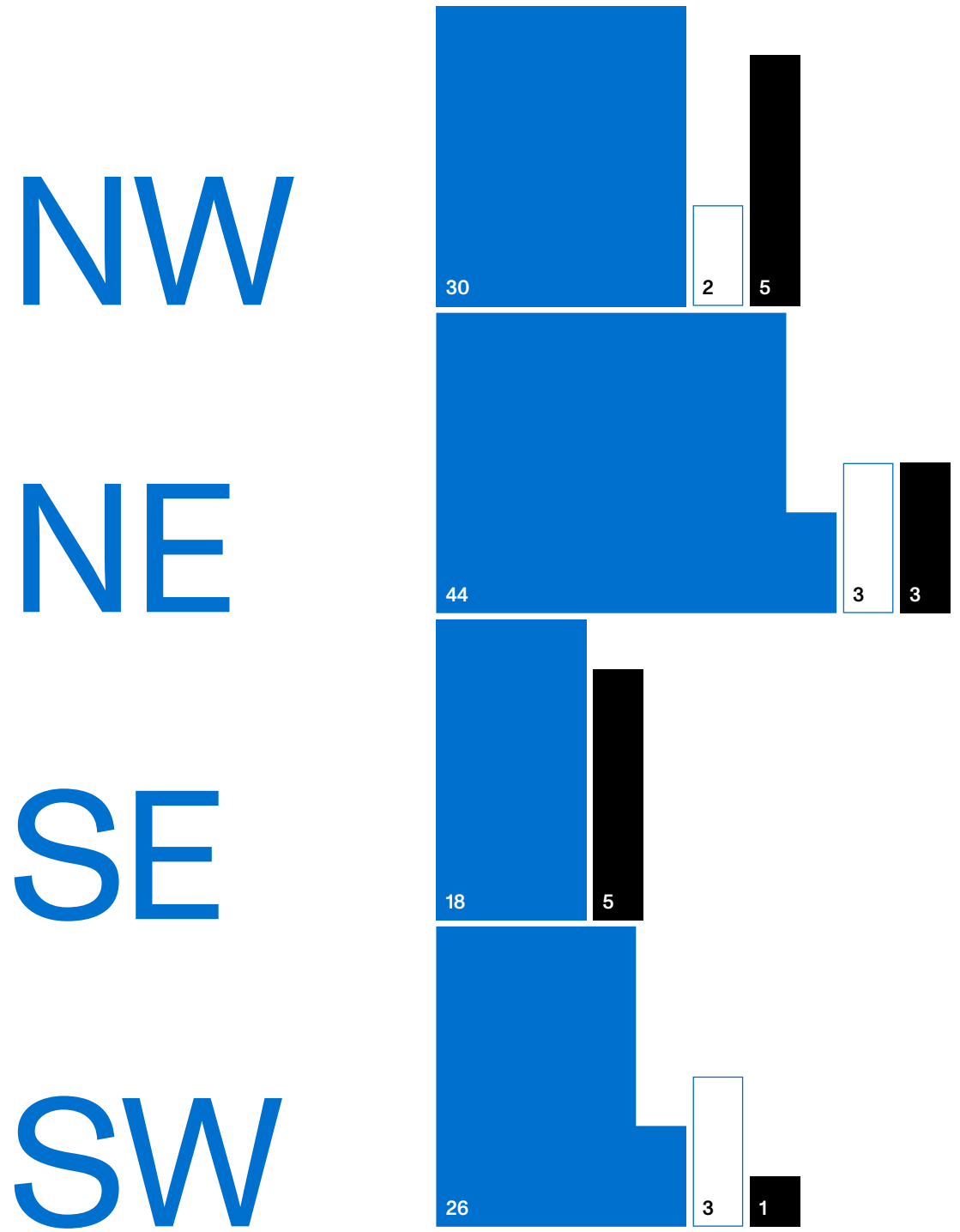
Usable public bins

Full or damaged public bins

Ashtrays

Visibility: Irrelevant due to the short distance of the mapping exercise

Number of the researchers: 3



A census of public urban furniture for the casual disposal of litter by passersby is done according to their specificity and status. Usable public bins are separated from those which are found unusable because being either full or broken; public ashtrays are mapped separately. Multiple elements mapped at a distance minor to 10 meters from each other are merged on the map as a single element (but accounted for as separate elements).

The north-eastern quadrant results clearly as the quadrant with the highest number of available bins (as opposed to the south-eastern quadrant), but accounts also for the more damaged or full ones. Litter bins are concentrated at crossroads across the entire area, but a scarcity of elements is detected in the central area where the ring road and the Naviglio Grande come to a crossing. None of the detected public bins is designed to allow waste sorting.

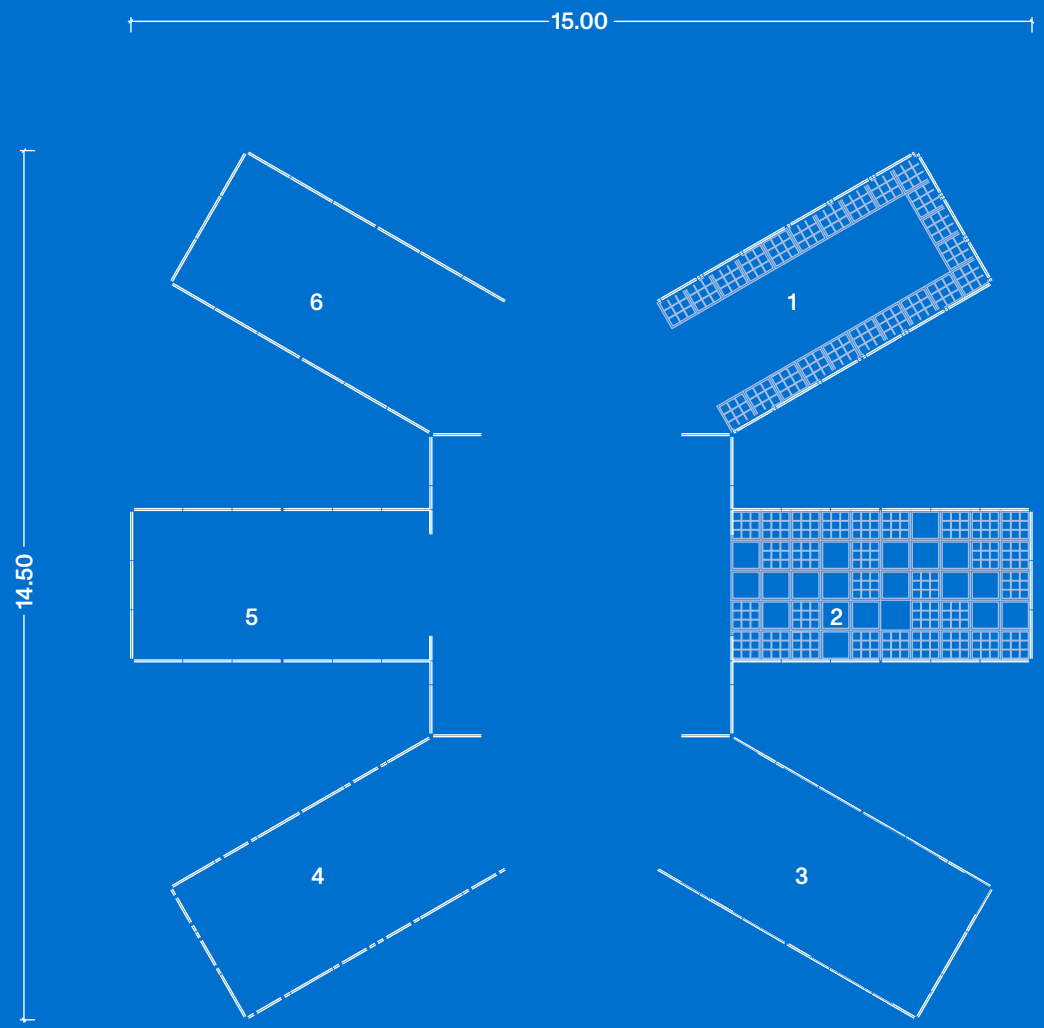
Concept by MG_EM_MP_

Bosconavigli stimulates an elaborate research on biodiversity, while giving green culture a central stage.

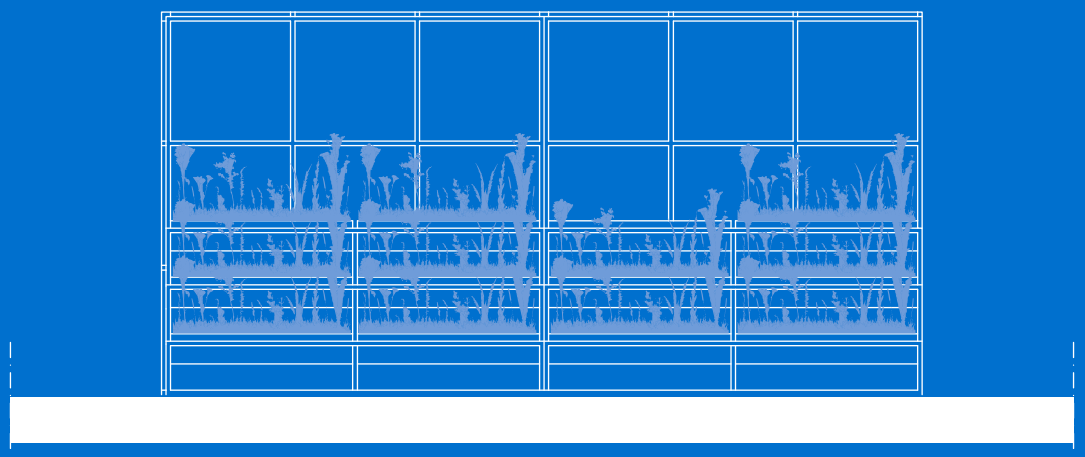
TALEA was created to enhance and preserve the biodiversity of the city of Milan. The idea stems from the process of botanical reproduction which, as the name suggests, means “cutting”. The process consists in cutting a branch from a mother plant, which will then be immersed in water where it will take root and then replanted in soil to repeat its lifecycle. The project is conceived for the Tortona district and located in Largo delle Culture, a roundabout used as a square, a meeting place for the community. In the roundabout a pavilion has been designed consisting of a square corten steel mesh. This acts not only as a square but also as an incubator, as its six wings contain the species of spontaneous greenery of the city of Milan; vegetation samples are divided into five categories: tram tracks, walls, balconies, grates and manholes and pavements. Once a week an event takes place in the pavilion: plant crossing. During the event, thanks to the support of experts, users can bring a spontaneous plant collected around the city and receive a new one in exchange, to take home free of charge.

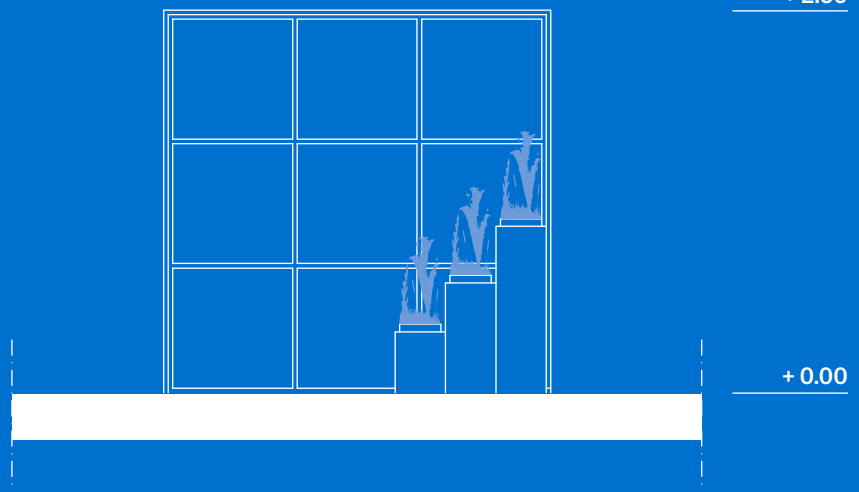
In order to publicize the project, modular systems of assemblable platforms have been designed in order to interact with the central pavilion and – while maintaining the division into categories – take TALEA around Milan. Finally, a mobile app has been designed which, together with a system of signs, allows the user to understand the project, appreciate it and, above all, interact with it.

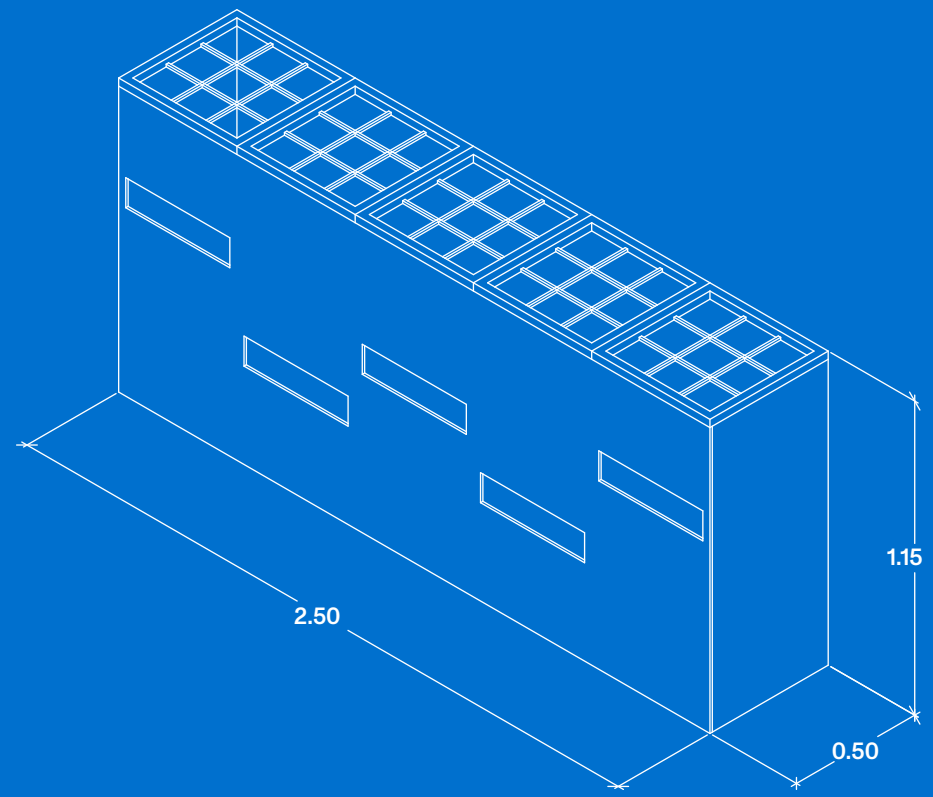
1:100 North ↑ 0 ——— 1 m

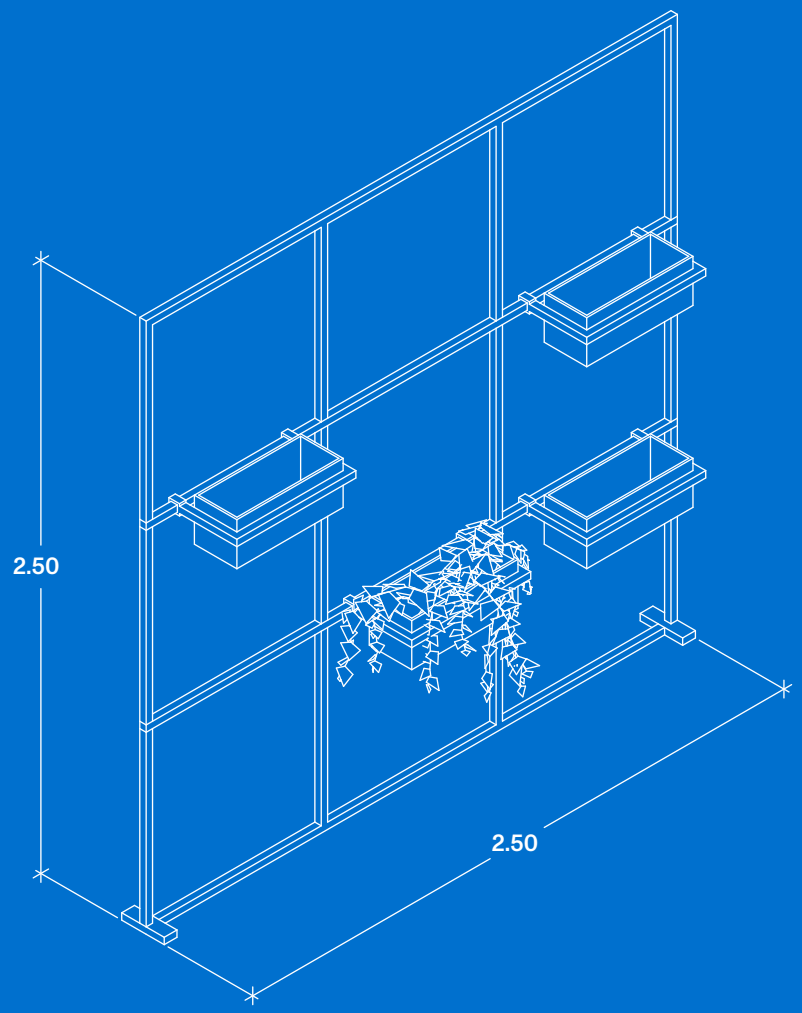


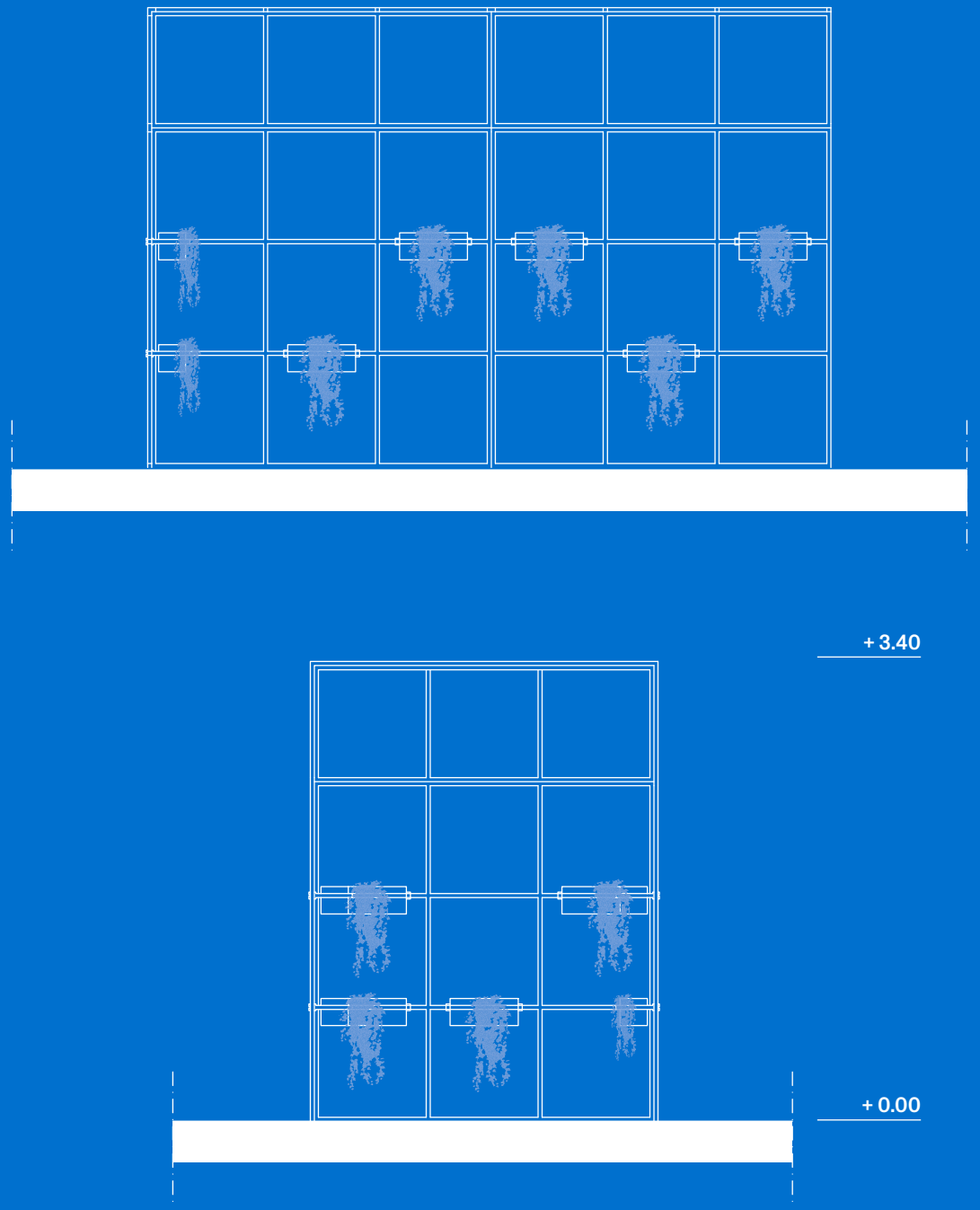
1:50








2.50
2.50

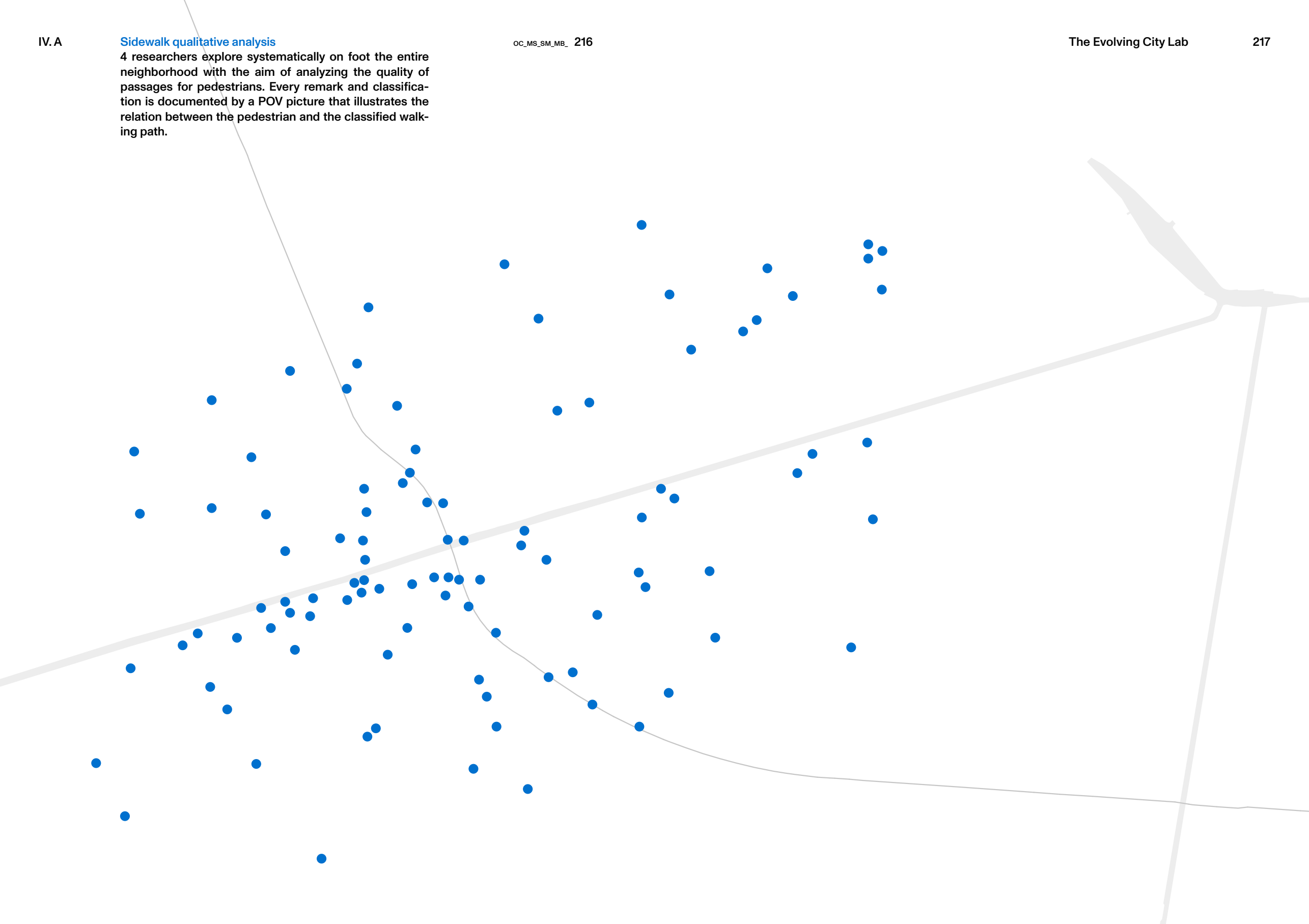

+ 3.40
+ 0.00


EK
24602
EL
59189


0-24

Sidewalk qualitative analysis

4 researchers explore systematically on foot the entire neighborhood with the aim of analyzing the quality of passages for pedestrians. Every remark and classification is documented by a POV picture that illustrates the relation between the pedestrian and the classified walking path.



Pedestrian friendly

Temporary challenging

Bad mainteinance

People's bad behavior

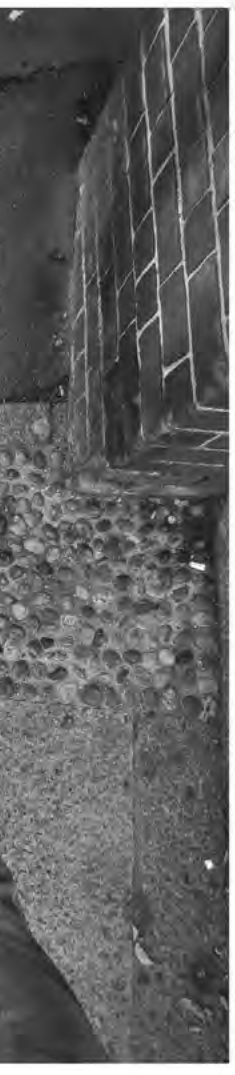
Permanently challenging

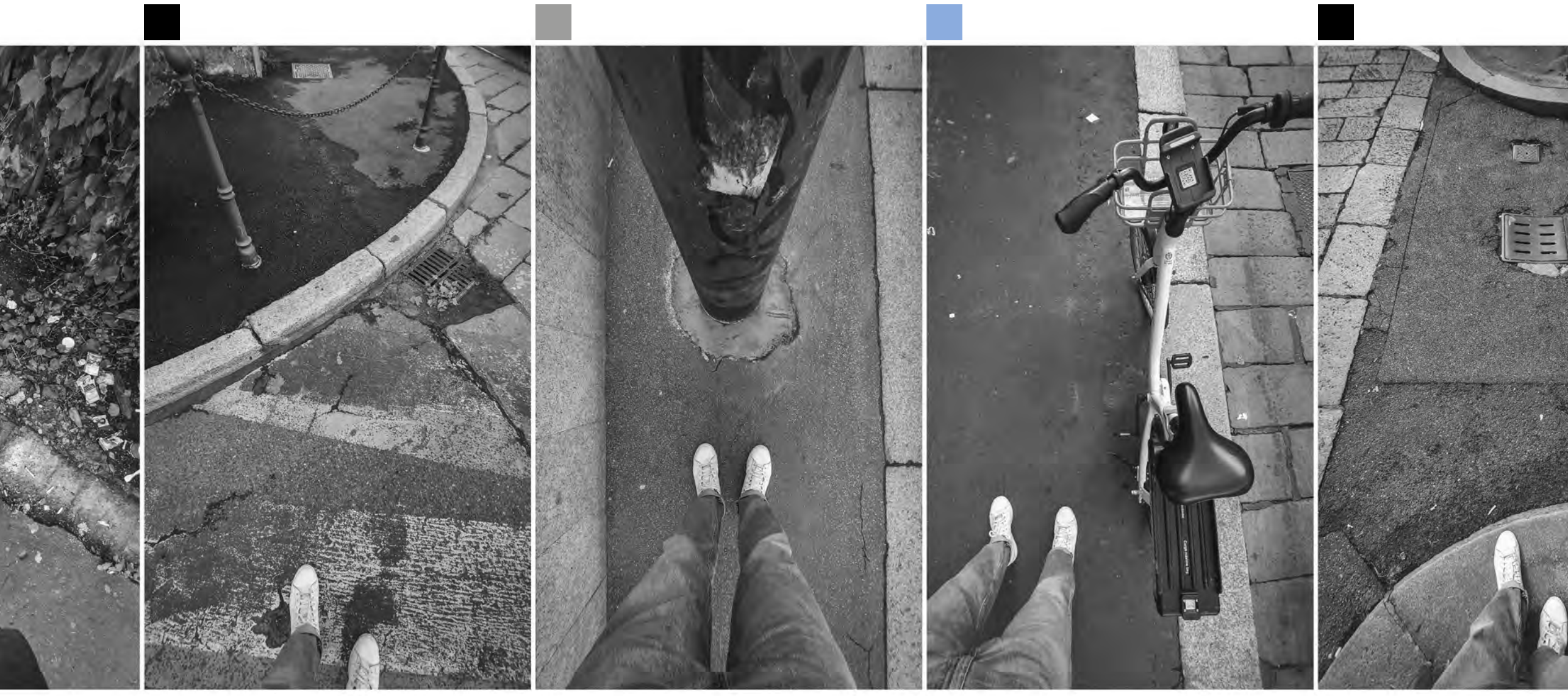
Architectural barriers

Bad sidewalk design

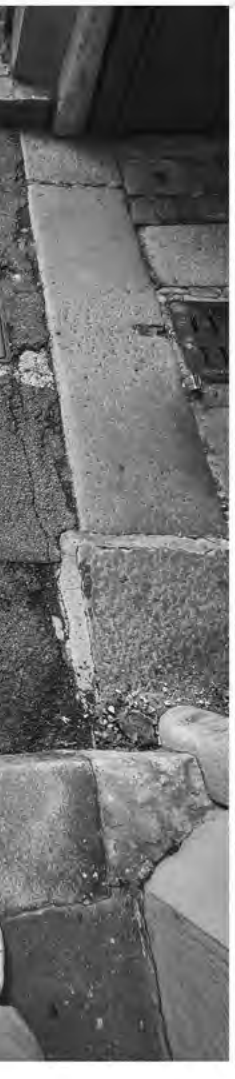
NW

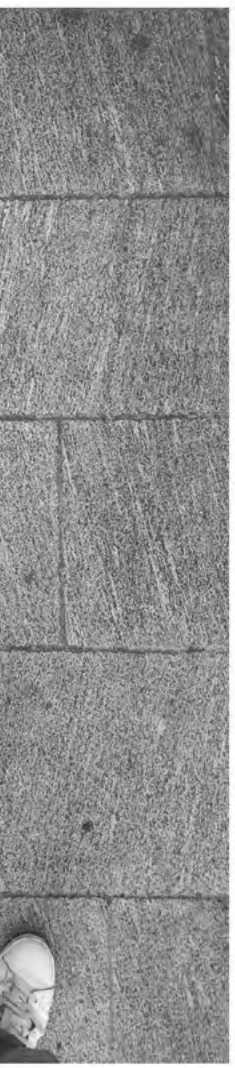
SW



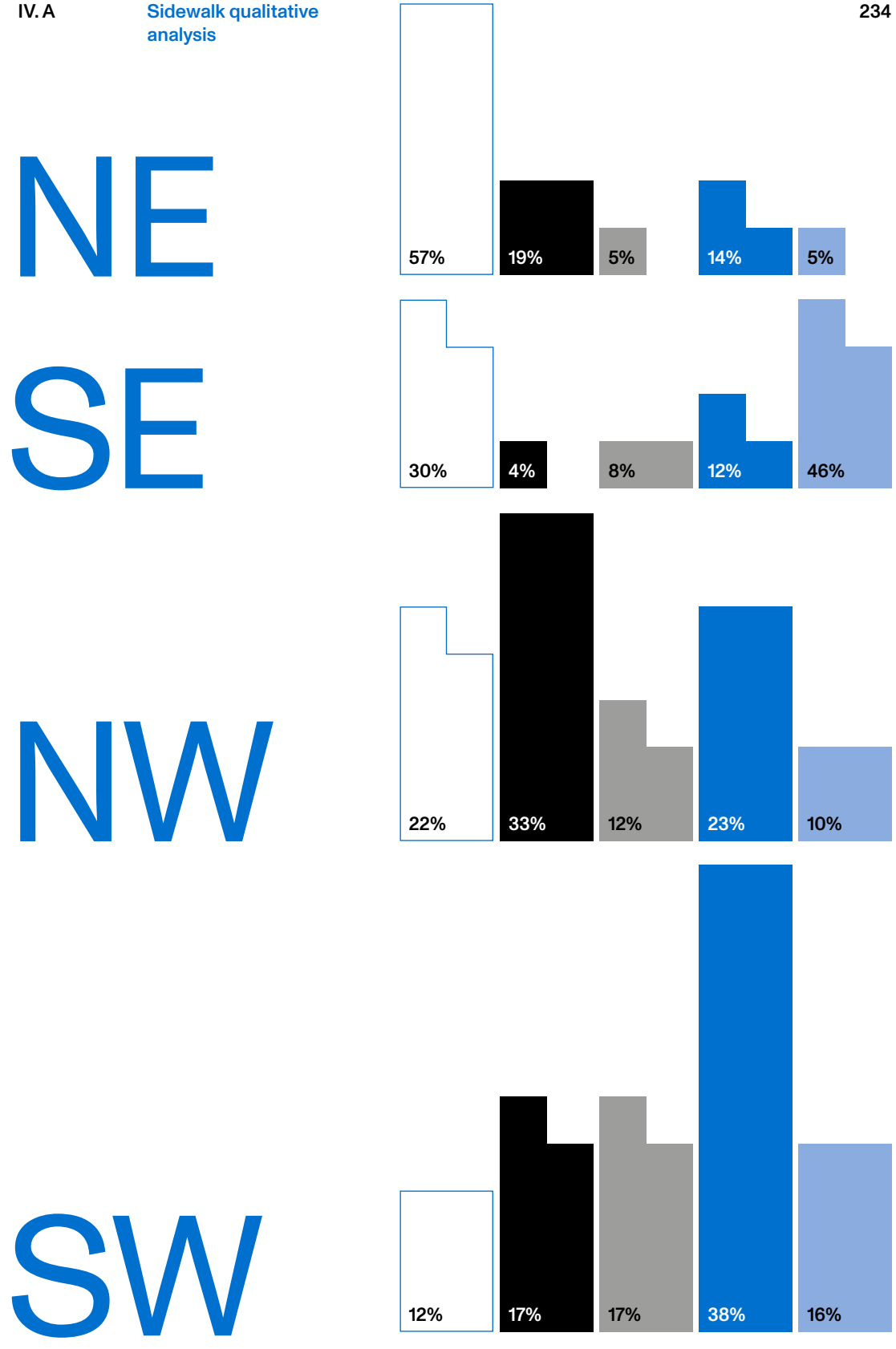


NE





SE



Researchers involved	OC_MS_SM_MB_
Weather conditions	Good, with no rain or water stagnation on the ground
Position of the researchers	Along the analyzed walking paths

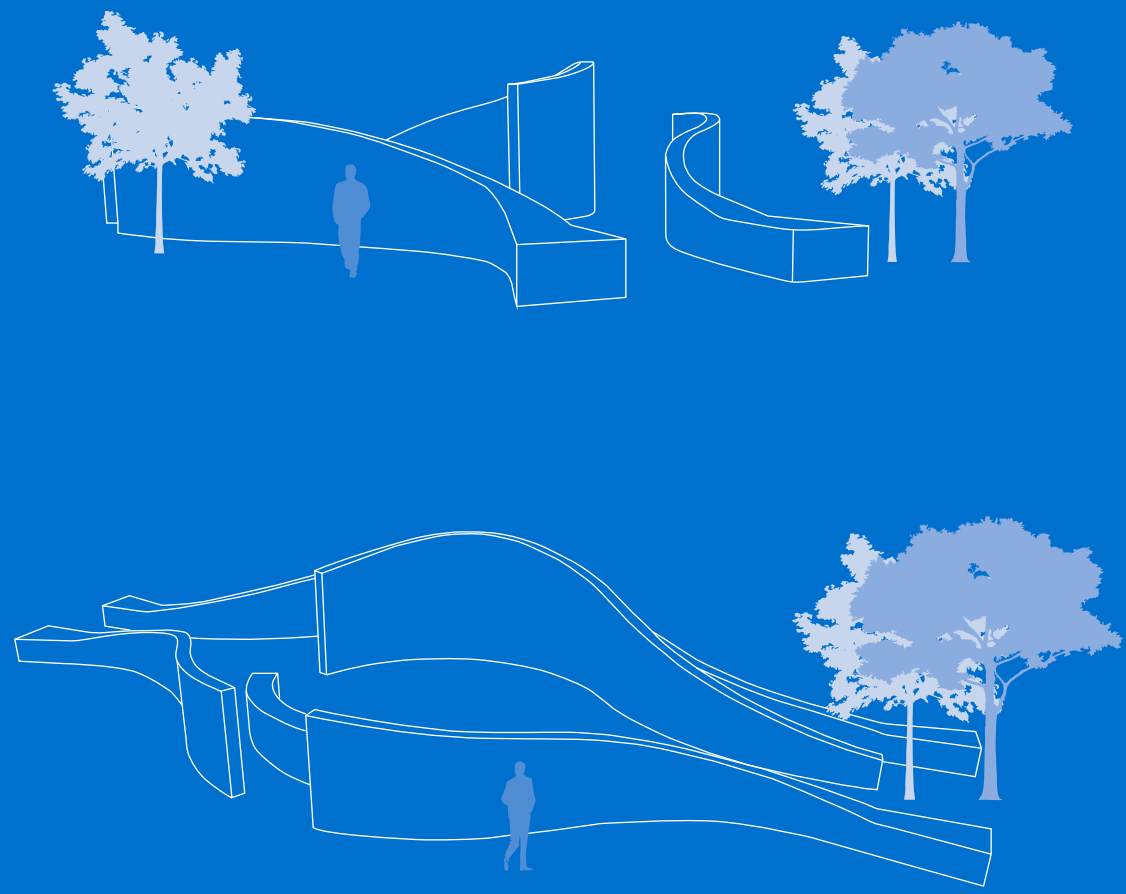
The experience of actual use is adopted as the means to perform a qualitative analysis of the walking paths and sidewalks across the 4 quadrants. The mapped paths are classified in 3 main categories: pedestrian-friendly, temporary challenging for pedestrians and permanently challenging for pedestrians. The latter 2 categories are furthermore divided in subcategories: the cause of temporary challenges for pedestrians are identified as being either bad maintenance and/or bad people's behavior; the detected causes for permanent challenges are architectural barriers and/or poor design.

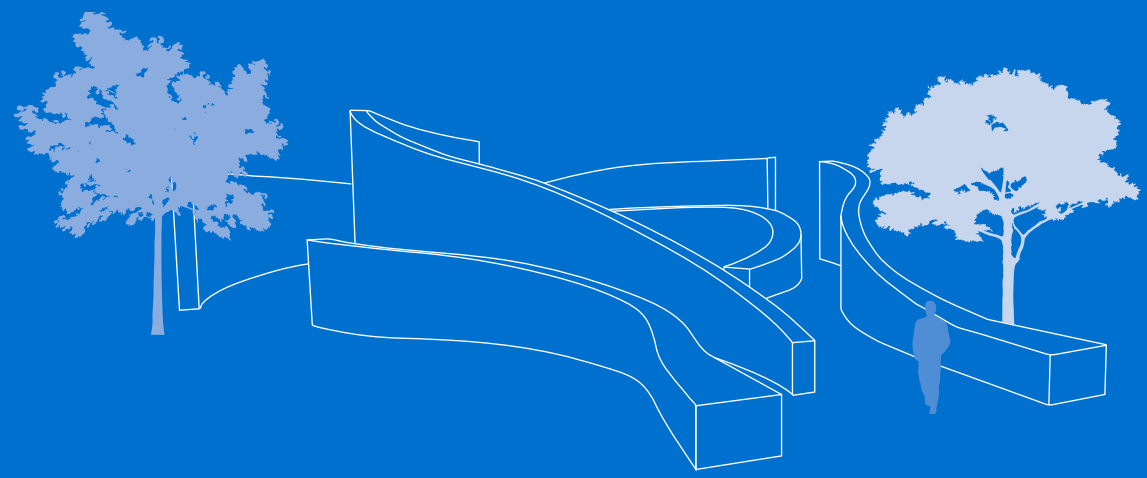
The results of the census show the north-eastern quadrant as being the more pedestrian-friendly by far. Architectural barriers are relevant in the north-western quadrant, and the new Bosconavigli development will represent a unique opportunity for the resolution of such impediments. Bad maintenance is the main cause of discomfort in the south-western quadrant. The south-eastern quadrant is the highest ranked in terms of impediments caused by bad habits of citizens.

Concept by OC_MS_SM_MB_

The project speculates on the potential extension of Bosconavigli through the element of water in a broader area.

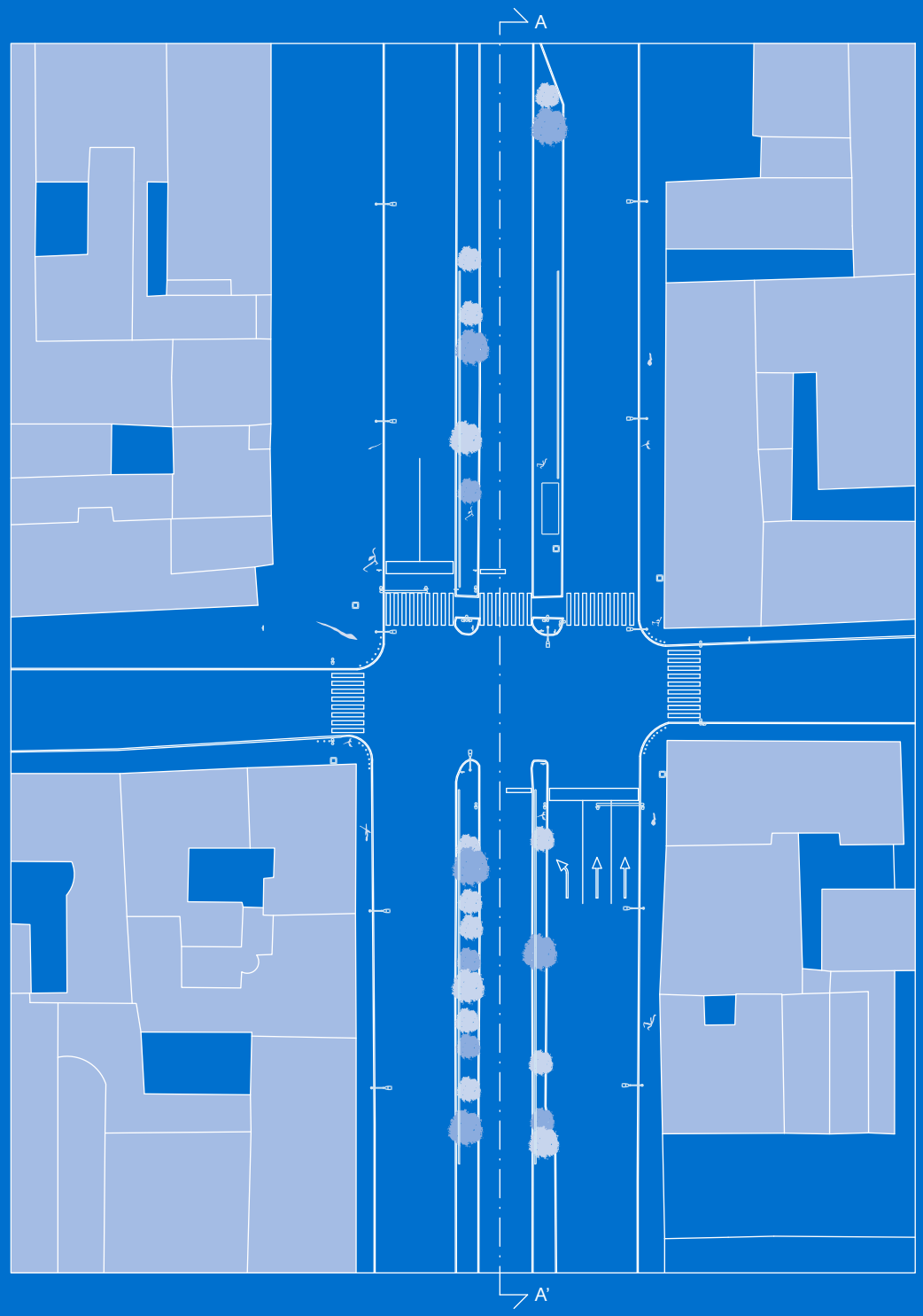
SML concept project aims at celebrating the Milanese tradition of artificial water flows, by extending symbolic canals in the urban landscape. Such purpose is achieved through a system of connections, between the territory and its history but above all between the district and its citizens. The project develops according to a branching process that spreads from the main element of Naviglio Grande to smaller areas. In addition to the three different reading criteria (L, M, S), the project intends to develop different degrees of perception of the canal. Interventions are self-standing but interconnected as in a neuronal network. Water becomes a constant element that connects the city as if flowing out of the Naviglio Grande and flooding the city in order to blend with the inhabitants. The water thus becomes an element of connection between the past – thanks to the relevant history of the Navigli network – and the present, while at the same time engaging a dialogue of connections between the citizens.





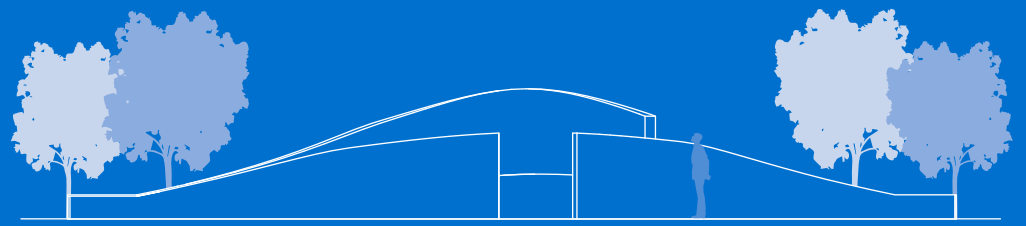
S Plan

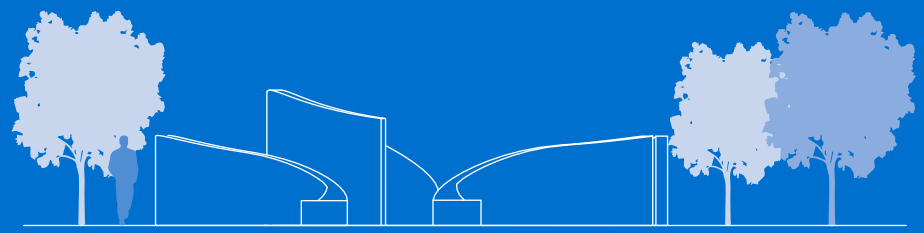
1:500 North ↖ 0 ——— 5 m



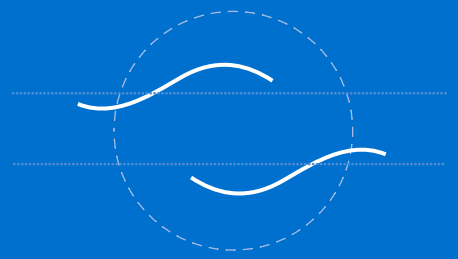
M Elevation

1:200 0 ——— 2 m



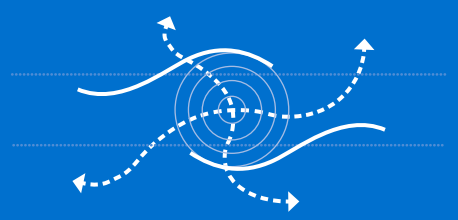


M



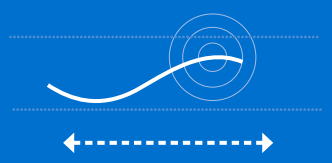
S

Pavillion



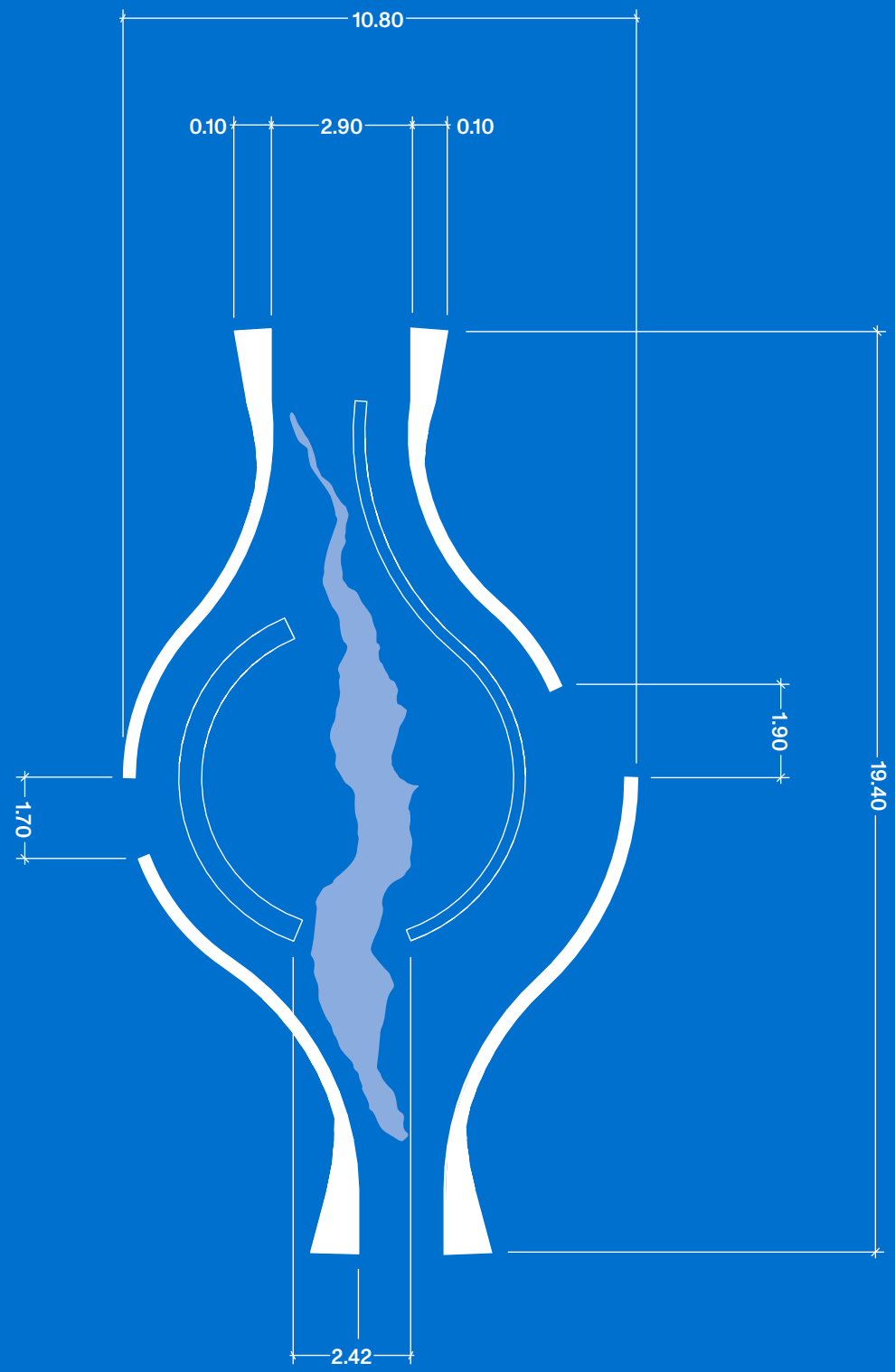
Center of the basin

Urban furniture



Underground canal

1:100 North ↗ 0 ——— 1 m



Public lighting

A continuous path is identified to measure the impact of public lighting at night. The route follows Via Savona entering the north-western quadrant and turning south in Via Tolstoj, it continues bending in Via Pesto and crosses the Naviglio Grande canal ending in Via Pestalozzi in the south-western quadrant.

NE

● Start
Via Savona 57

Crossroad
Via Savona / Via Stendhal

Going straight
Via Savona

Crossroad
Via Savona / Via delle Foppette

Going straight
Via Savona

Crossroad
Via Savona / Viale Carlo Troya

NW

Going straight
Via Savona

Crossroad
Via Savona / Via Tolstoj

Turning left
Via Tolstoj

Turning left
Via Pesto

Turning right
Via San Cristoforo

San Cristoforo Railway Underpass

Crossroad
Via San Cristoforo / Alzaia Naviglio Grande

San Cristoforo Walkway

SW

Crossing
Naviglio Grande

Crossroad
Via Lodovico il Moro

Turning left
Via Lodovico il Moro

Crossroad
Via Lodovico il Moro / Via Pestalozzi


Turning right
Via Pestalozzi









Crossroad
Via Pestalozzi / Via Brugatelli


Going straight
Via Pestalozzi



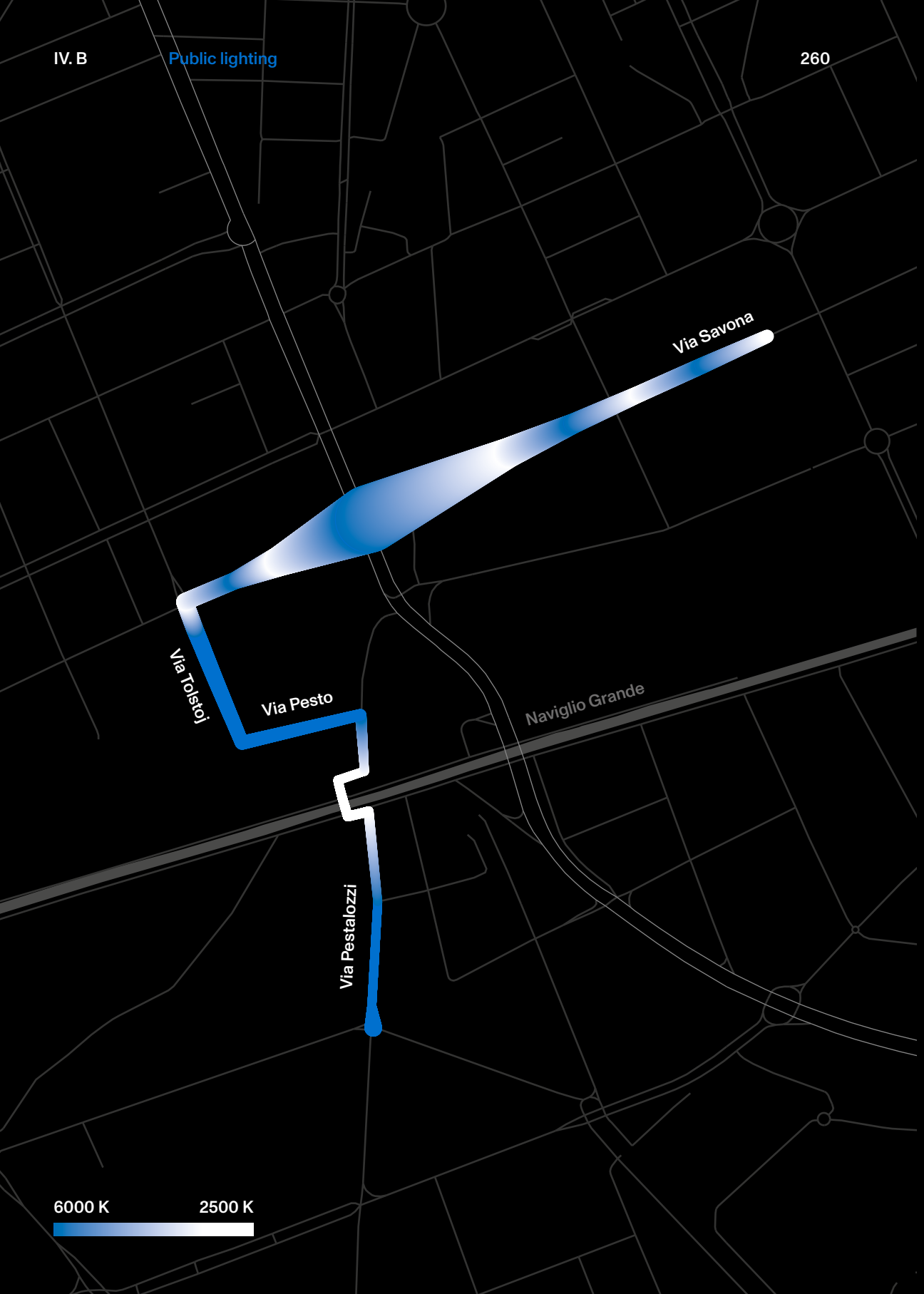







● End

Roundabout Via Pestalozzi

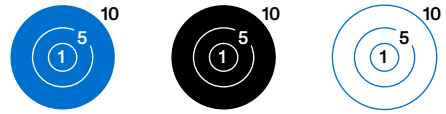


Researchers involved FG_PL_ES_XH_
Weather conditions Partially cloudy
Camera preset parameters WB: 3000
ISO: 1600
S: 1/8 s
A: 5.6

The tool used by 4 researchers to analyze lighting in public spaces at night is a common photographic camera. By predefining aperture, ISO sensibility and shutter speed to a determined set of non modifiable values the camera acts as an accurate measurement tool both of light intensity (brightness) and of its color temperature. A tripod is set at the fixed height of 1.55 meters and stills are taken at regular intervals of 10 steps facing forward all along the route, without changing any of the parameters. The research was conducted in late September between 10:00 pm and 12:15 am. A total of 196 images were taken. The observation of the sequence shows the increasing of light intensity in the proximity of the main artery of the ring road. Alleys that were expected to be under-illuminated result adequately lit and a constant shift between warm dim lighting and more efficient cold lighting is identified along the entire path.

Benches and Wi-Fi availability

Public benches across the neighborhood are mapped and geolocated, registering their availability at the moment of the data collection. 3 researchers, while surveying the area, record the possibility to access free Wi-Fi hotspots. The highest number of benches (both available and in use at the moment of the survey) are concentrated between the Giuseppe Saporito Park and the Sanctuary of Santa Rita da Cascia in the south-western quadrant. Wi-Fi hotspots are evenly distributed in the 4 quadrants but averagely far from the small parks where benches are concentrated.



N. of free benches

N. of busy benches

N. of free Wi-Fi spots

Researchers involved
Time of the survey

GBIDGLDM_
Daytime in weekdays
Early fall 2021

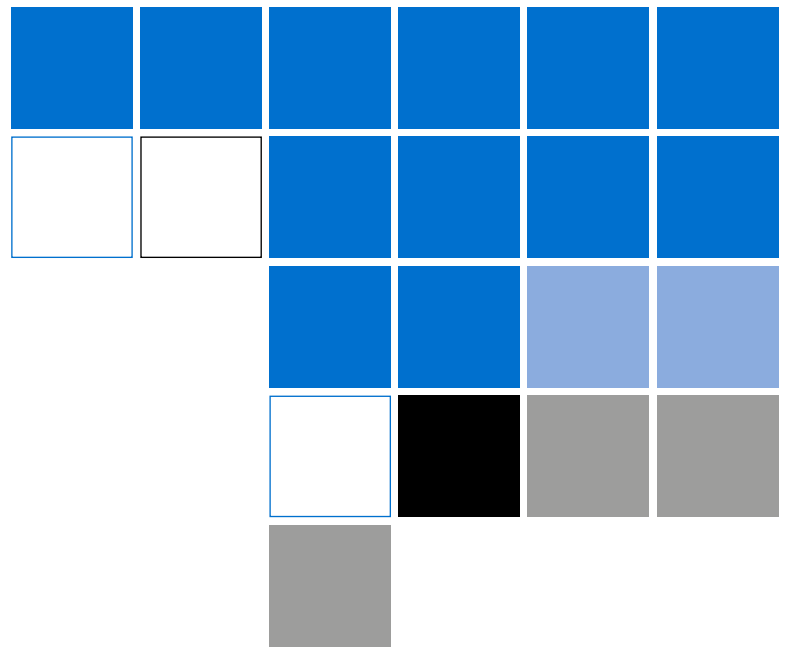
A census of benches and their availability to users is crossed with a mapping of accessible free Wi-Fi hotspots. The intersection highlights not more than a couple of locations suitable for smart working in public space without independent access to the internet.

Perceived presence of law enforcement bodies

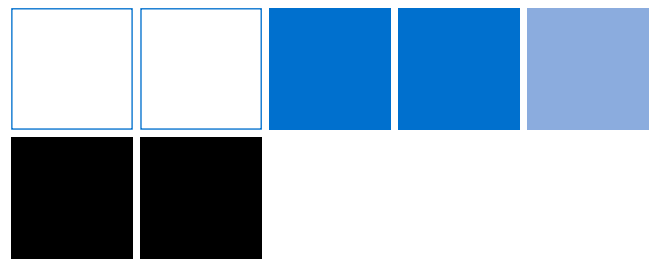
Data relating to the passage of law enforcement personnel in the public space are collected by 4 researchers stationing at predefined locations for regular spans of time. A first collection of data is done during daytime, while a second one is done at night. In either cases atmospheric conditions are favorable to clarity of perspective.

Police
Carabinieri
Vigili urbani
Firefighters
Army
Private security
No one

A Corso Magenta / Via Brisa



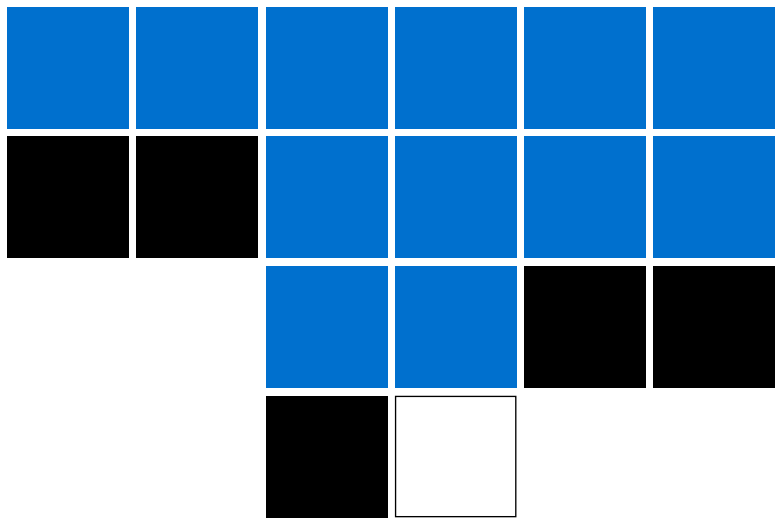
B Bridge of Via Valenza



Researchers involved IGG_LG_SZ_CHH_
Visibility Good
Position of the researchers Ground level
At predefined locations in the position that better guarantees view of passersby

25 minutes 1 hour

C Romolo Railway Station



D Largo delle Culture

E Recycling area*

F Via Lodovico il Moro / Via Cassala

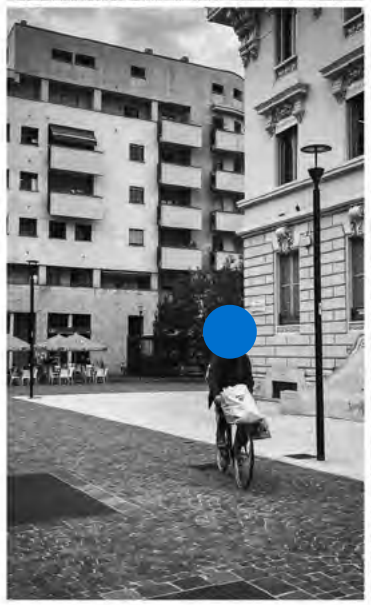
6 different locations scattered around the city are chosen to sample the public perception of presence of law enforcement bodies in the public space. 2 observation points are located outside the quadrants object of the investigation and are chosen as benchmarks of a central city location (A) and of a main commuting station hub (C). Locations labelled B, D, E, and F are located one per quadrant starting from the south-eastern quadrant and moving counterclockwise.

Overall the neighborhood object of the analysis displays a low visible presence of law enforcement bodies if compared with the 2 benchmark locations, thus suggesting a high perception of security in the area. Location D, at the center of the highly requalified north-eastern quadrant displays no visible presence of law enforcement personnel. Army presence of both Esercito and Carabinieri is detected in location E, possibly due to the presence of a waste recycling facility due to be dismantled.

Nice to meet you

4 researchers explore the neighborhood and classify through images the people encountered by chance in public space. The survey is carried out in daytime during working days in early fall 2021. The visual survey shows how people were found concentrated in small park areas or along the Naviglio Grande banks rather than in commercial areas.



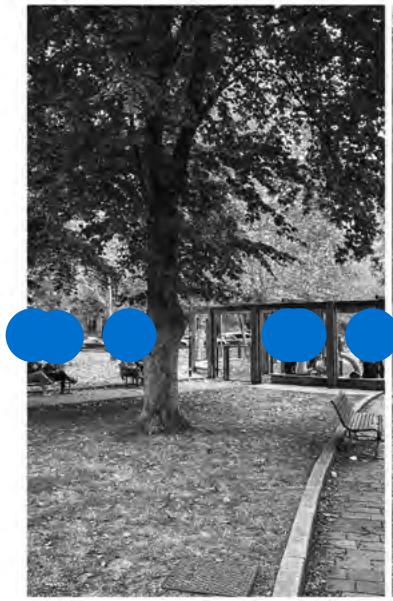








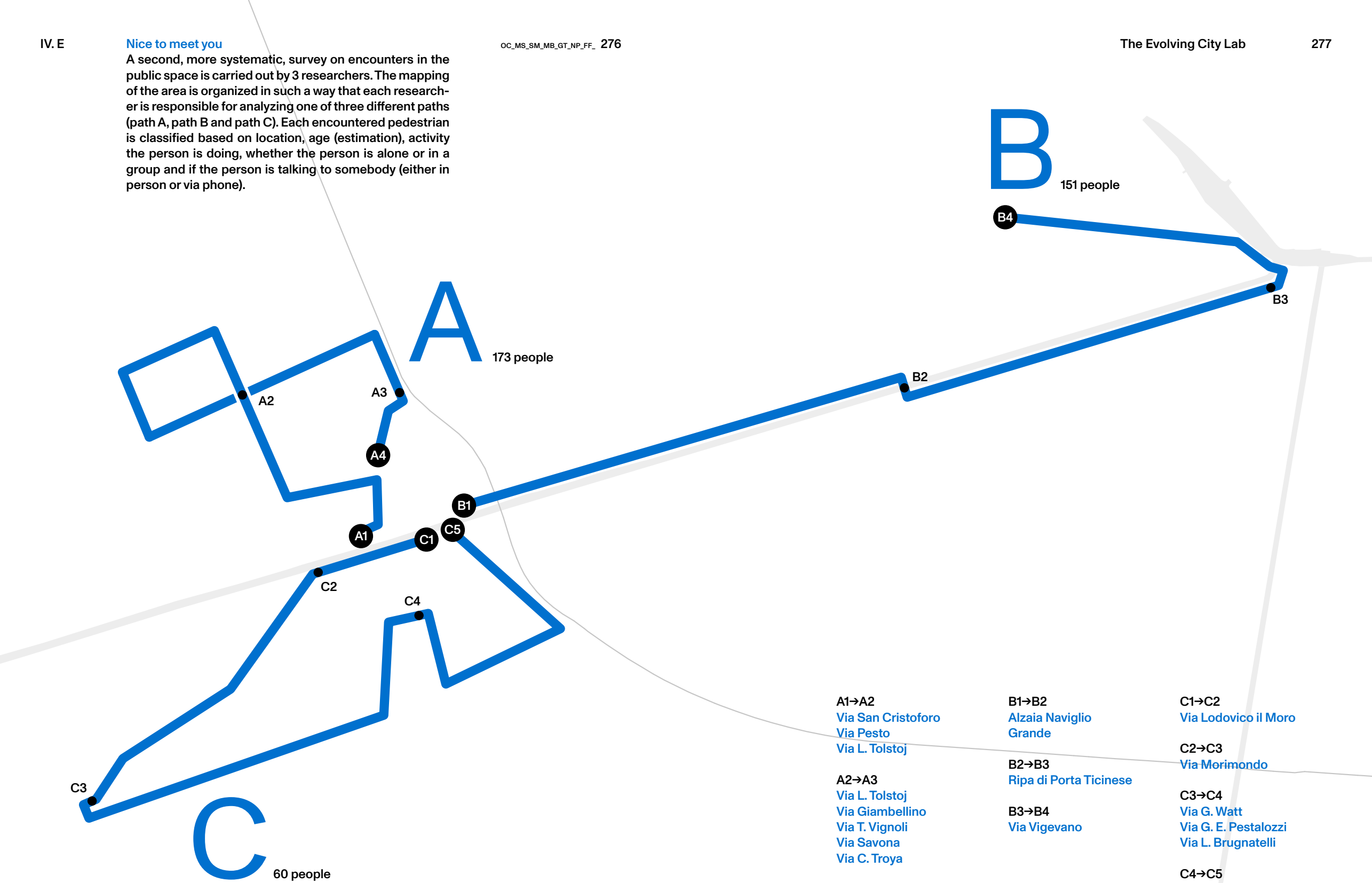
La Bicicletta
La Bicicletta
RICAMBI · ACCESSORI




ILANO 1890

Nice to meet you

A second, more systematic, survey on encounters in the public space is carried out by 3 researchers. The mapping of the area is organized in such a way that each researcher is responsible for analyzing one of three different paths (path A, path B and path C). Each encountered pedestrian is classified based on location, age (estimation), activity the person is doing, whether the person is alone or in a group and if the person is talking to somebody (either in person or via phone).



A1→A2
Via San Cristoforo
Via Pesto
Via L. Tolstoj

A2→A3
Via L. Tolstoj
Via Giambellino
Via T. Vignoli
Via Savona
Via C. Troya

A3→A4
Via San Cristoforo

B1→B2
Alzaia Naviglio Grande

B2→B3
Ripa di Porta Ticinese

B3→B4
Via Vigevano

C1→C2
Via Lodovico il Moro

C2→C3
Via Morimondo

C3→C4
Via G. Watt
Via G. E. Pestalozzi
Via L. Brugnatelli

C4→C5
Via A. Ponti
Via D. Bussola
Via Malaga

Path A

What's your age?	What are you doing?	Who are you with?	Are you talking to somebody?
Adult	Walking	Alone	Phone
Adult	Walking	Group	Person
Adult	Walking	Group	Person
Child	Walking	Group	Person
Child	Walking	Group	Person
Adult	Walking	Alone	Silent
Adult	Walking	Alone	Silent
Adult	Standing	Alone	Silent
Adult	Standing	Alone	Person
Adult	Standing	Group	Person
Adult	Walking	Group	Person
Adult	Standing	Alone	Silent
Adult	Standing	Group	Phone
Adult	Standing	Group	Phone
Child	Standing	Group	Person
Child	Standing	Group	Person
Child	Standing	Group	Person
Adult	Walking	Group	Phone
Adult	Walking	Group	Phone
Adult	Standing	Alone	Silent
Child	Walking	Alone	Silent
Adult	Walking	Group	Silent
Adult	Walking	Group	Silent
Child	Walking	Group	Person
Child	Walking	Group	Person
Adult	Walking	Alone	Silent
Adult	Walking	Group	Phone
Adult	Walking	Group	Silent
Adult	Walking	Alone	Silent
Child	Walking	Group	Person
Adult	Walking	Group	Person
Adult	Walking	Alone	Phone
Child	Walking	Group	Silent
Adult	Walking	Group	Silent
Child	Walking	Group	Person
Adult	Walking	Group	Person
Adult	Walking	Group	Person
Adult	Elder Walking	Alone	Silent
Adult	Walking	Group	Person
Adult	Walking	Group	Person
Child	Walking	Group	Silent
Adult	Walking	Group	Silent
Child	Walking	Group	Person

Child	Walking	Group	Person		
Adult	Walking	Group	Person		
Child	Standing	Group	Person		
Adult	Standing	Group	Person		
Child	Sitting	Group	Silent		
Adult	Standing	Group	Person		
Adult	Standing	Group	Person		
Adult	Walking	Alone		Phone	
Adult	Walking	Group	Person		
Adult	Walking	Group	Person		
Elder	Sitting	Group	Person		
Elder	Sitting	Group	Person		
Elder	Sitting	Group	Person		
Elder	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Child	Sitting	Group	Person		
Adult	Walking	Group	Silent		
Child	Walking	Group	Silent		
Adult	Sitting	Group	Silent		
Adult	Sitting	Group	Silent		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Child	Sitting	Group	Person		
Adult	Sitting	Group	Silent		
Adult	Sitting	Group	Silent		
Child	Sitting	Group	Silent		
Adult	Sitting	Group	Person		
Adult	Walking	Alone		Phone	
Adult	Sitting	Alone	Silent		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Adult	Sitting	Group	Person		
Adult	Walking	Alone		Phone	
Adult	Elder Walking	Alone	Silent		
Adult	Elder Walking	Alone	Silent		
Adult	Elder Walking	Alone	Silent		
Adult	Walking	Group	Person		
Adult	Walking	Group	Person		
Child	Standing	Alone		Phone	
Adult	Elder Walking	Alone	Silent		
Adult	Walking	Group	Silent		
Child	Sitting	Group	Silent		

Child					Sitting		Group		Person	
Child					Sitting		Group		Person	
	Adult				Sitting			Silent		
	Adult				Sitting				Person	
	Adult				Sitting				Person	
	Adult				Sitting		Group		Person	
	Adult				Sitting		Group		Person	
Child			Walking				Group	Silent		
Child			Walking				Group	Silent		
	Adult		Walking				Group	Silent		
	Adult				Sitting		Group		Person	
	Adult				Sitting		Group		Person	
		Elder	Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking				Group		Person	
	Adult		Walking				Group		Person	
	Adult		Walking			Alone				Phone
		Elder	Walking			Alone		Silent		
	Adult			Standing			Group		Person	
	Adult			Standing			Group		Person	
	Adult			Standing			Group		Person	
	Adult		Walking				Group		Person	
	Adult		Walking				Group		Person	
		Elder	Walking			Alone		Silent		
	Adult			Standing		Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone				Phone
	Adult		Walking			Alone				Phone
	Adult			Standing		Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult				Sitting		Group	Silent		
	Adult				Sitting		Group	Silent		
Child			Walking				Group		Person	
Child			Walking				Group		Person	
	Adult			Standing			Group			Phone
	Adult			Standing			Group	Silent		
	Adult				Sitting		Group		Person	
	Adult				Sitting		Group		Person	
	Adult				Sitting	Alone				Phone
	Adult			Standing		Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult			Standing		Alone		Silent		
	Adult		Walking			Alone		Silent		Phone
	Adult			Standing		Alone		Silent		
	Adult			Standing		Alone		Silent		
	Adult			Standing		Alone		Silent		
	Adult				Sitting	Alone				Phone
	Adult				Sitting	Alone				Phone
	Adult			Standing			Group		Person	
	Adult			Standing			Group		Person	
	Adult		Walking			Alone		Silent		

	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult				Sitting		Group		Person	
	Adult				Sitting		Group		Person	
	Adult				Sitting		Group		Person	
		Elder			Sitting		Group		Person	
		Elder			Sitting		Group		Person	
	Adult			Standing		Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult			Standing		Alone		Silent		
	Adult		Walking				Group		Person	
	Adult		Walking				Group		Person	
		Elder	Walking				Group		Person	
		Elder	Walking				Group		Person	
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		

Path B

What's your age?			What are you doing?			Who are you with?		Are you talking to somebody?		
	Adult		Walking				Group		Person	
	Adult		Walking				Group		Person	
	Adult		Walking			Alone				Phone
	Adult		Walking				Group		Person	
	Adult		Walking				Group		Person	
Child			Walking				Group		Person	
	Adult		Walking				Group		Person	
	Adult		Walking				Group			Phone
	Adult		Walking				Group		Person	
	Adult		Walking			Alone		Silent		
	Adult		Walking			Alone		Silent		
	Adult		Walking				Group		Person	
	Adult		Walking			Alone				Phone
		Elder	Walking			Alone		Silent		
		Elder	Walking			Alone		Silent		
		Elder	Walking			Alone		Silent		
		Elder	Walking			Alone		Silent		
		Elder	Walking			Alone				Phone
	Adult		Walking			Alone				Phone
Child			Walking				Group		Person	
		Elder	Walking			Alone		Silent		
	Adult		Walking				Group		Person	

	Adult		Walking			Group		Person
		Elder	Walking			Group		Phone
	Adult		Walking		Alone		Silent	
		Elder		Sitting	Alone		Silent	
	Adult		Walking			Group	Silent	
	Adult		Walking		Alone			Phone
	Adult		Walking		Alone		Silent	
	Adult		Walking			Group	Silent	
	Adult		Walking		Alone		Silent	
	Adult		Walking		Alone			Phone
	Adult			Sitting	Alone			Phone
	Adult			Standing		Group		Phone
	Adult			Sitting		Group		Person
	Adult		Walking		Alone		Silent	
	Adult		Walking		Alone		Silent	
	Adult		Walking		Alone		Silent	
Child			Walking			Group		Person
		Elder	Walking			Group		Person
	Adult		Walking			Group		Phone
		Elder	Walking		Alone		Silent	
		Elder		Standing	Alone			Phone
	Adult		Walking		Alone			Phone
	Adult		Walking		Alone		Silent	
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone		Silent	
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone		Silent	
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
		Elder		Standing	Alone			Phone
	Adult		Walking			Group		Phone
	Adult		Walking		Alone		Silent	Phone
	Adult		Walking			Group		Person
	Adult		Walking			Group		Person
	Adult		Walking			Group		Phone
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone		Silent	
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult		Walking			Group		Phone
	Adult		Walking			Group		Person Phone

		Elder	Walking		Alone		Silent	
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone		Silent	
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
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	Adult			Sitting		Group		Person
	Adult			Sitting	Alone		Silent	
	Adult			Sitting	Alone			Phone
	Adult			Sitting	Alone			Phone
	Adult			Sitting	Alone		Silent	
		Elder		Standing	Alone		Silent	
	Adult			Sitting	Alone			Phone
		Elder		Sitting		Group	Silent	
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
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	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
		Elder		Sitting		Group	Silent	
	Adult			Sitting		Group		Phone
	Adult			Sitting	Alone			Phone
	Adult			Sitting		Group		Person
	Adult		Walking		Alone			Phone
	Adult		Walking			Group		Person
	Adult		Walking			Group	Silent	
	Adult			Sitting		Group		Person
	Adult			Sitting	Alone			Phone
	Adult		Walking		Alone		Silent	
	Adult		Walking			Group		Person
	Adult		Walking		Alone			Phone
		Elder	Walking		Alone		Silent	
	Adult		Walking		Alone		Silent	
	Adult		Walking			Group		Phone
	Adult		Walking			Group		Phone
	Adult		Walking		Alone			Phone
	Adult		Walking			Group		Person

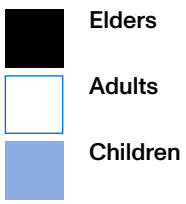
	Adult			Walking					Group			Person		
	Adult					Sitting			Group			Person		
	Adult					Sitting			Group			Person		
	Adult					Sitting		Alone			Silent			
	Adult					Sitting			Group			Person		
	Adult			Walking					Group					Phone
	Adult			Walking				Alone			Silent			
	Adult			Walking				Alone			Silent			
	Adult			Walking				Alone						Phone
	Adult			Walking				Alone						Phone
	Adult			Walking					Group			Person		
	Adult			Walking				Alone						Phone
		Elder		Walking				Alone			Silent			
		Elder		Walking				Alone			Silent			
	Adult			Walking				Alone			Silent			
Child				Walking					Group			Person		
	Adult					Standing			Group					Phone
	Adult					Standing		Alone						Phone
	Adult					Standing		Alone						Phone

Path C

What's your age?			What are you doing?			Who are you with?			Are you talking to somebody?		
		Elder			Sitting		Group			Person	
		Elder			Sitting		Group			Person	
Child					Sitting		Group			Person	
	Adult				Standing		Group			Person	
Child					Standing		Group			Person	
	Adult			Walking			Group			Person	
		Elder		Walking			Group			Person	
Child				Walking		Alone			Silent		
		Elder		Walking		Alone			Silent		
		Elder		Walking			Group		Silent		
	Adult			Walking		Alone					Phone
	Adult			Walking			Group				Phone
	Adult			Walking			Group		Silent		
	Adult			Walking			Group				Phone
	Adult			Walking		Alone			Silent		
	Adult			Walking		Alone			Silent		
	Adult			Walking			Group			Person	
	Adult			Walking			Group			Person	
	Adult			Walking			Group			Person	
	Adult			Walking			Group			Person	
	Adult			Walking			Group				Phone
	Adult			Walking			Group			Person	

	Adult			Walking					Group			Person		
	Adult			Walking					Group		Silent			
	Adult					Standing			Group		Silent			
Child						Standing			Group			Person		
	Adult			Walking					Group			Person		
Child				Walking					Group			Person		
	Adult						Sitting		Group			Person		
		Elder					Sitting	Alone				Person		
		Elder					Sitting	Alone				Person		
Child							Sitting	Alone				Person		
	Adult			Walking					Group			Person		
		Elder		Walking					Group					Phone
		Elder		Walking					Group					Phone
		Elder		Walking					Group			Person		
	Adult			Walking					Group			Person		
Child				Walking					Group			Person		
Child				Walking					Group			Person		
	Adult			Walking					Group			Person		
	Adult			Walking					Group			Person		
	Adult			Walking					Group		Silent			
Child				Walking					Group			Person		
Child				Walking					Group			Person		
	Adult						Sitting		Group			Person		
		Elder					Sitting		Group			Person		
		Elder					Sitting	Alone			Silent			
	Adult						Sitting	Alone						Phone
	Adult			Walking				Alone			Silent			
	Adult			Walking				Alone						Phone
	Adult			Walking				Alone						Phone
Child				Walking					Group		Silent			
Child				Walking					Group		Silent			
	Adult			Walking					Group		Silent			
	Adult			Walking				Alone						Phone
	Adult			Walking					Group					Phone
	Adult			Walking								Person		
	Adult			Walking				Alone						Phone
		Elder			Standing			Alone			Silent			
	Adult							Alone			Silent			

What's your age?



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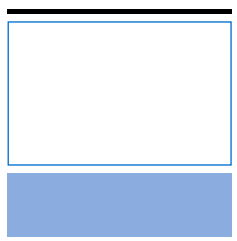

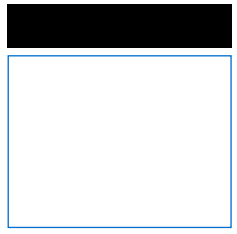

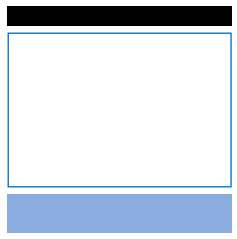

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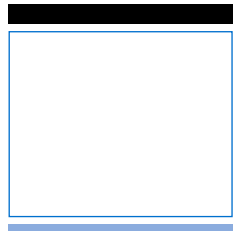

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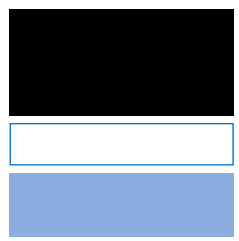
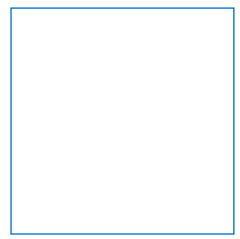
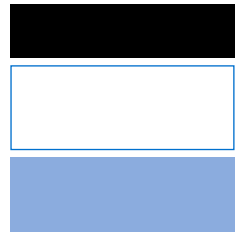
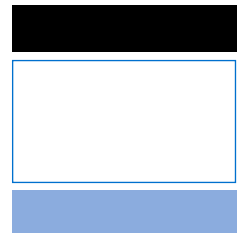
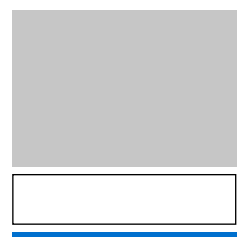


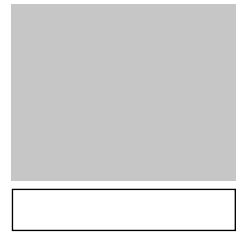


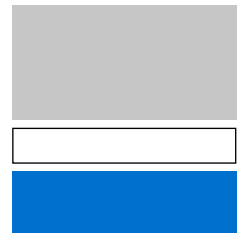


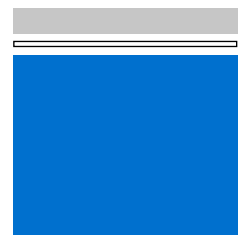


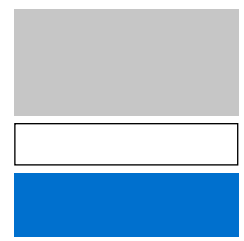
What are you doing?

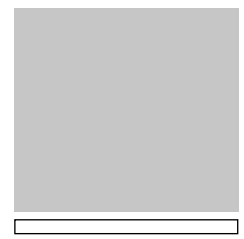


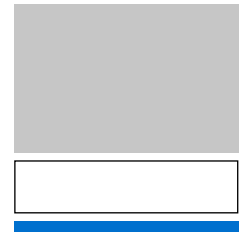


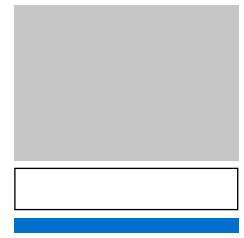




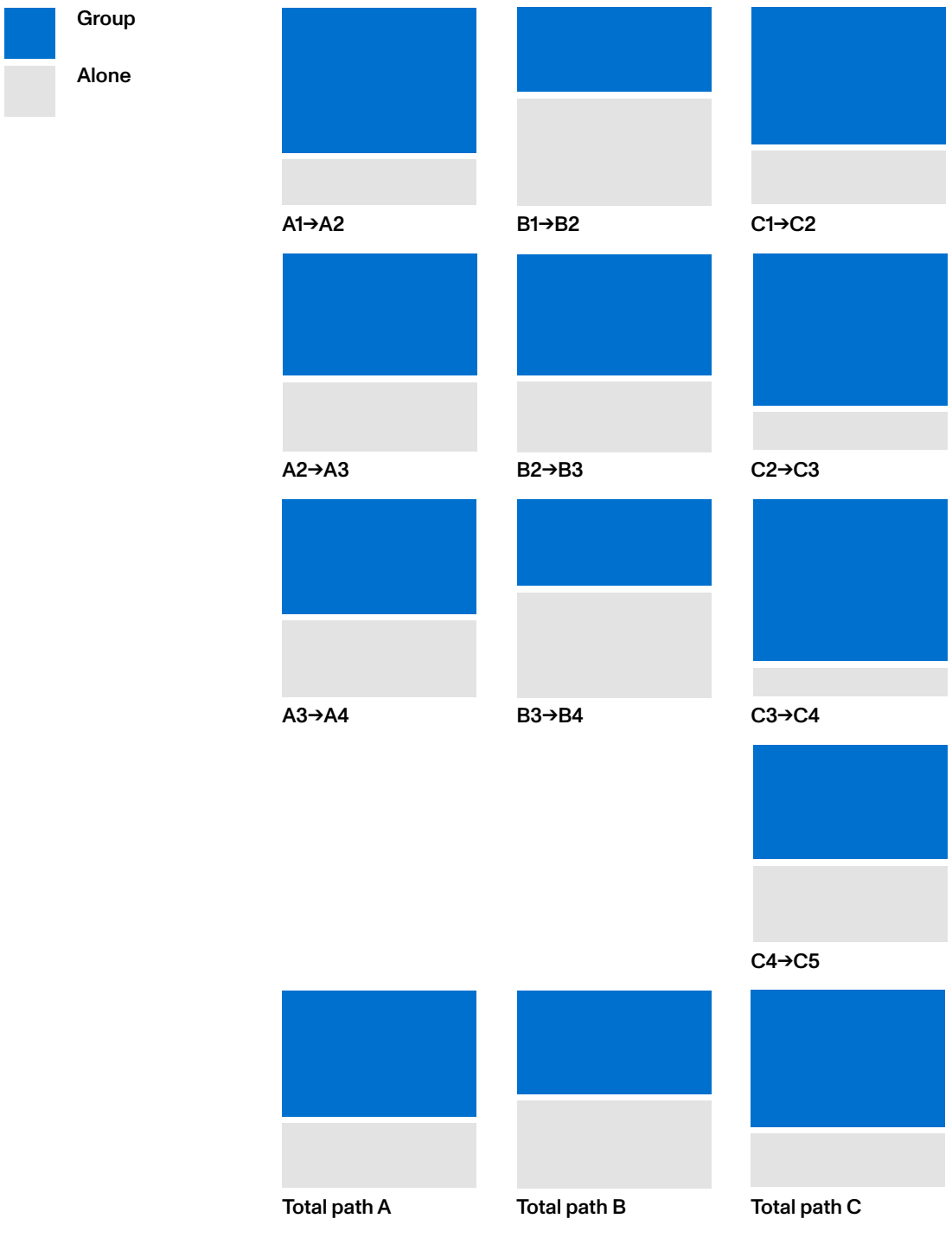




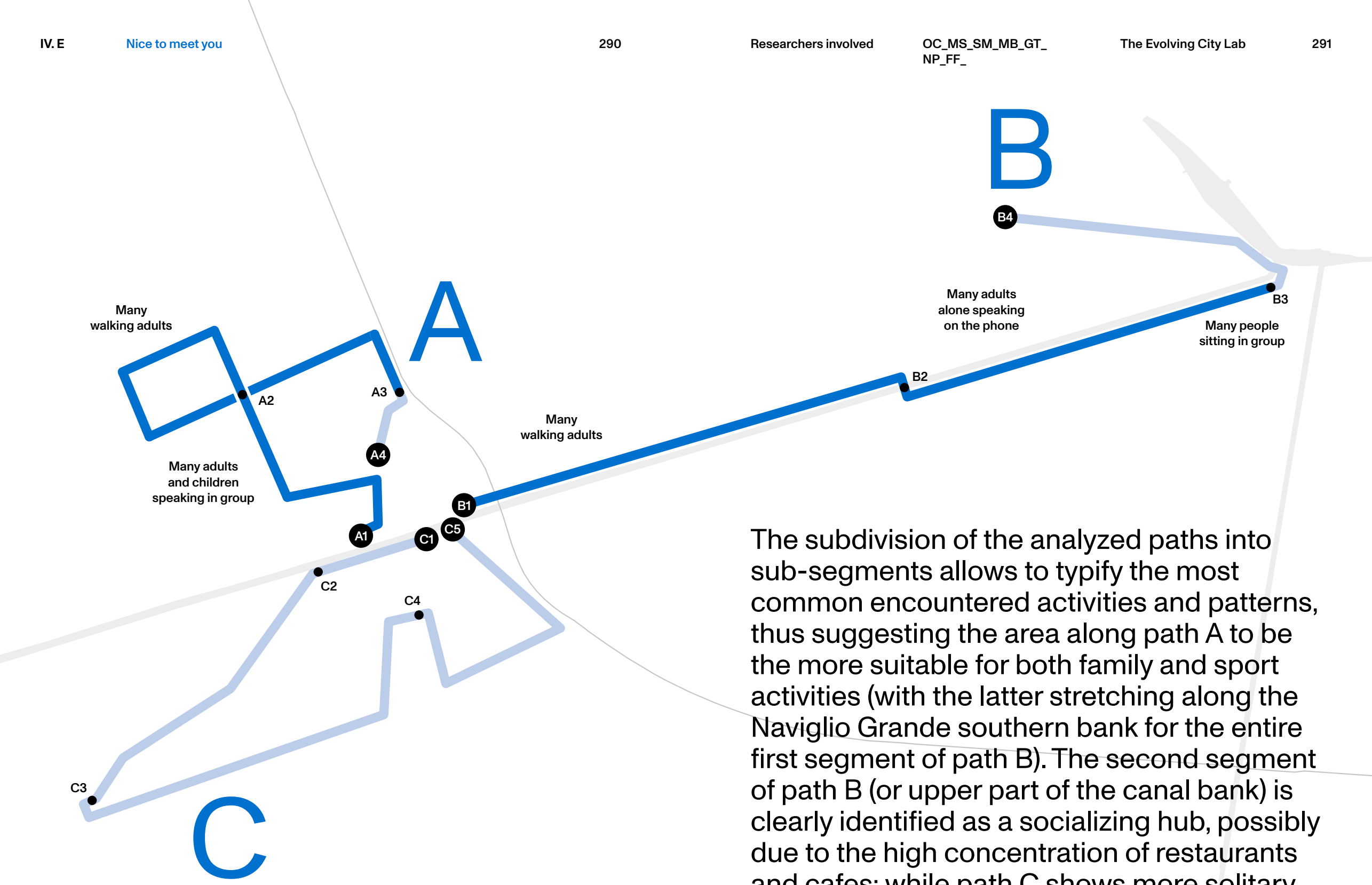




Who are you with?



Are you talking to somebody?



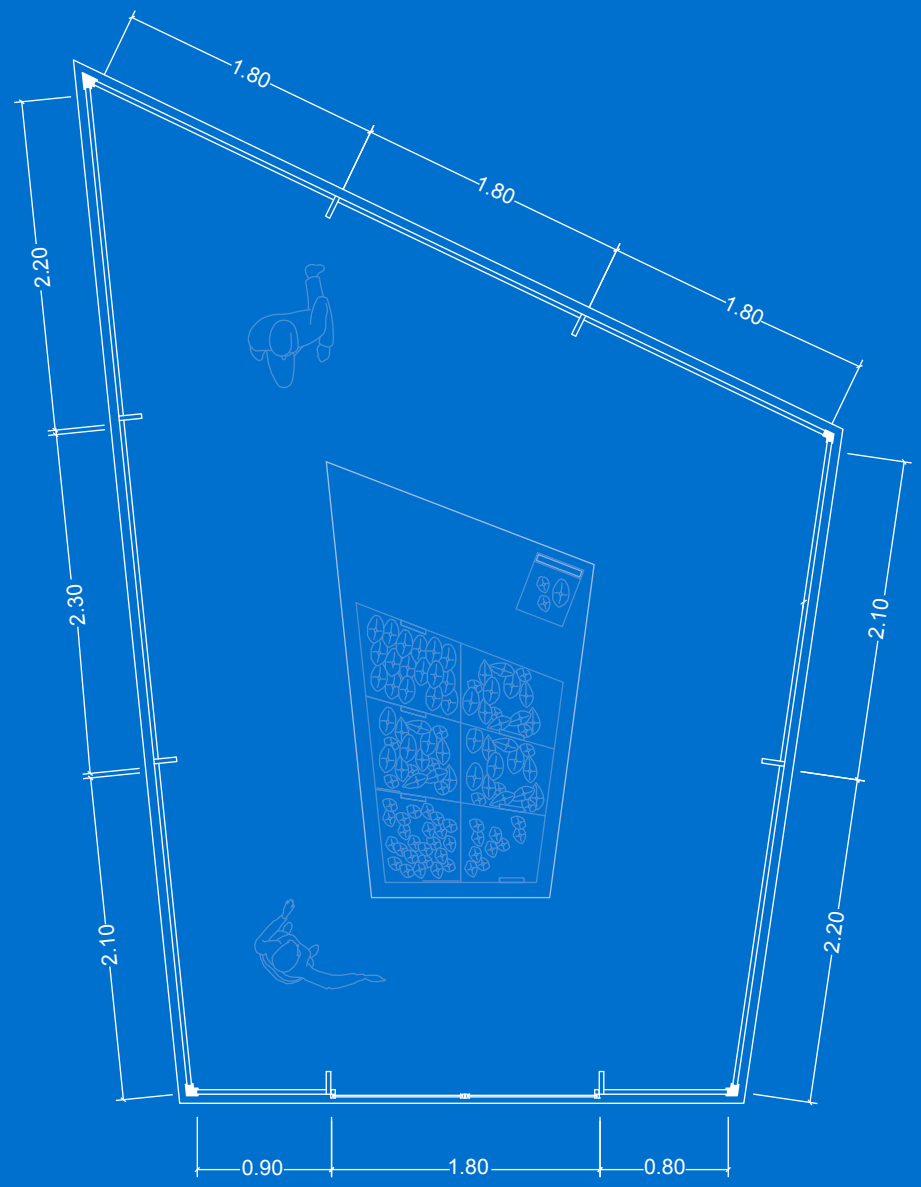
The subdivision of the analyzed paths into sub-segments allows to typify the most common encountered activities and patterns, thus suggesting the area along path A to be the more suitable for both family and sport activities (with the latter stretching along the Naviglio Grande southern bank for the entire first segment of path B). The second segment of path B (or upper part of the canal bank) is clearly identified as a socializing hub, possibly due to the high concentration of restaurants and cafes; while path C shows more solitary activities being carried out.

Concept by GB_IDG_LDM_

Following on the system of values conveyed by Bosconavigli, the concept project aims at the requalification of the area through a possible rebalancing of services.

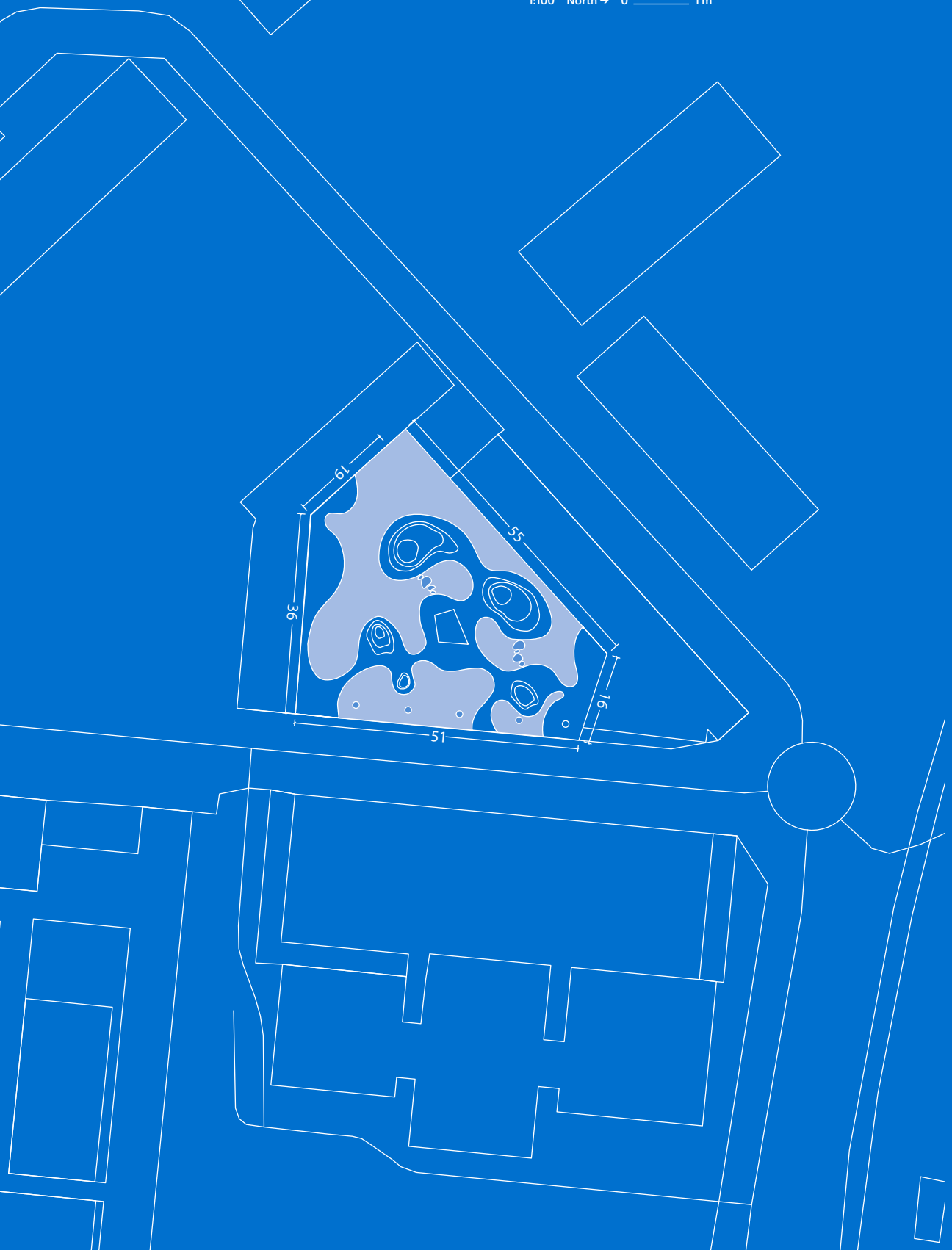
The urban structure is a network of interconnected nodes comparable to the system of an organism in continuous evolution. Our analysis has been concentrated in the area of San Cristoforo along the Naviglio Grande up to the area of the IULM university along the Lambro Morto canal. In this portion of the territory we have identified an inhomogeneous mesh in which different neighborhood vitalities generate unbalanced densities. Our concept derives from this investigation, based on the correspondence of the three degrees of dynamic freedom of the urban fabric – dense, sparse and inconsistent – to the three states of aggregation – solid, liquid and gaseous. Our project therefore aims to synchronize the dynamic imbalances of the area through three processes of state change – crystallization, fluidization and vaporization. Crystallization in our intervention is expressed through prismatic modules; fluidization through organically shaped walkways associated with the presence of water; and vaporization through ephemeral phenomena of steam and light.

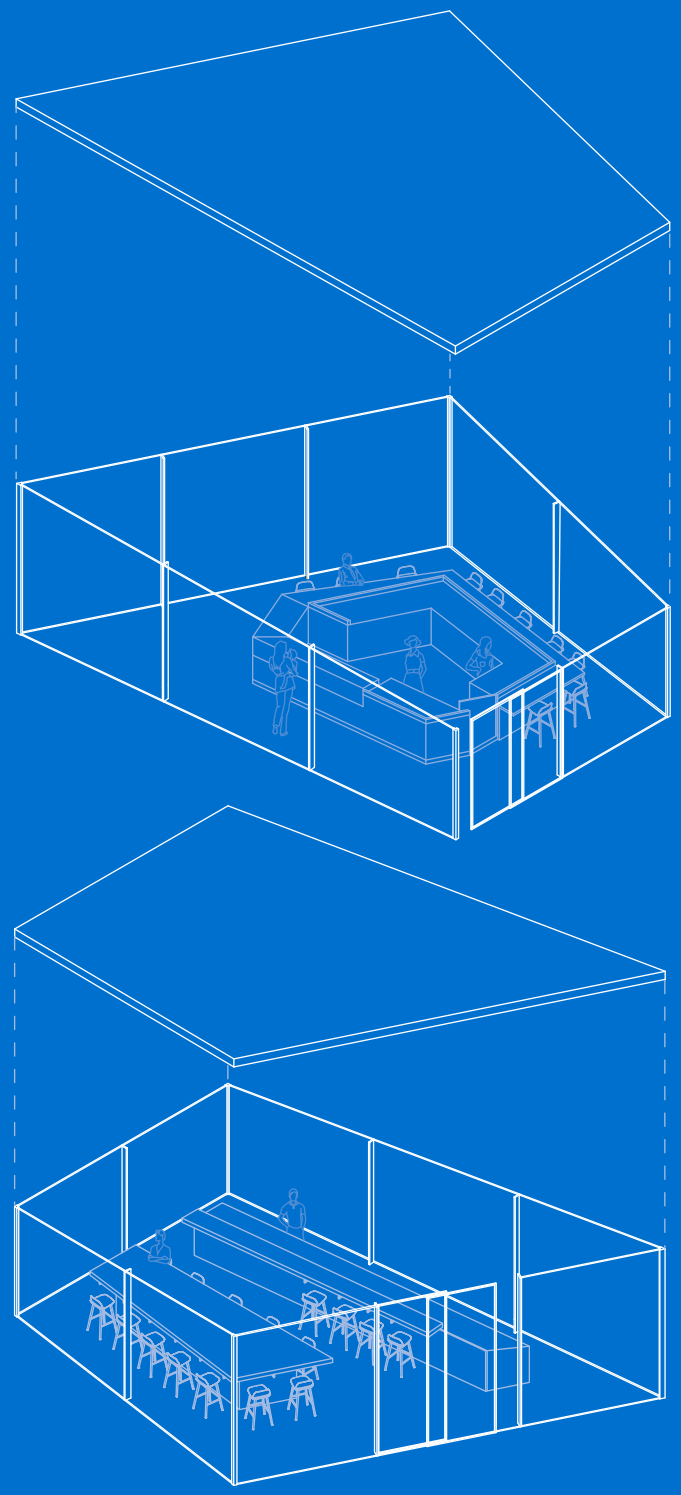
1:50 0 0,5 m



IULM plan

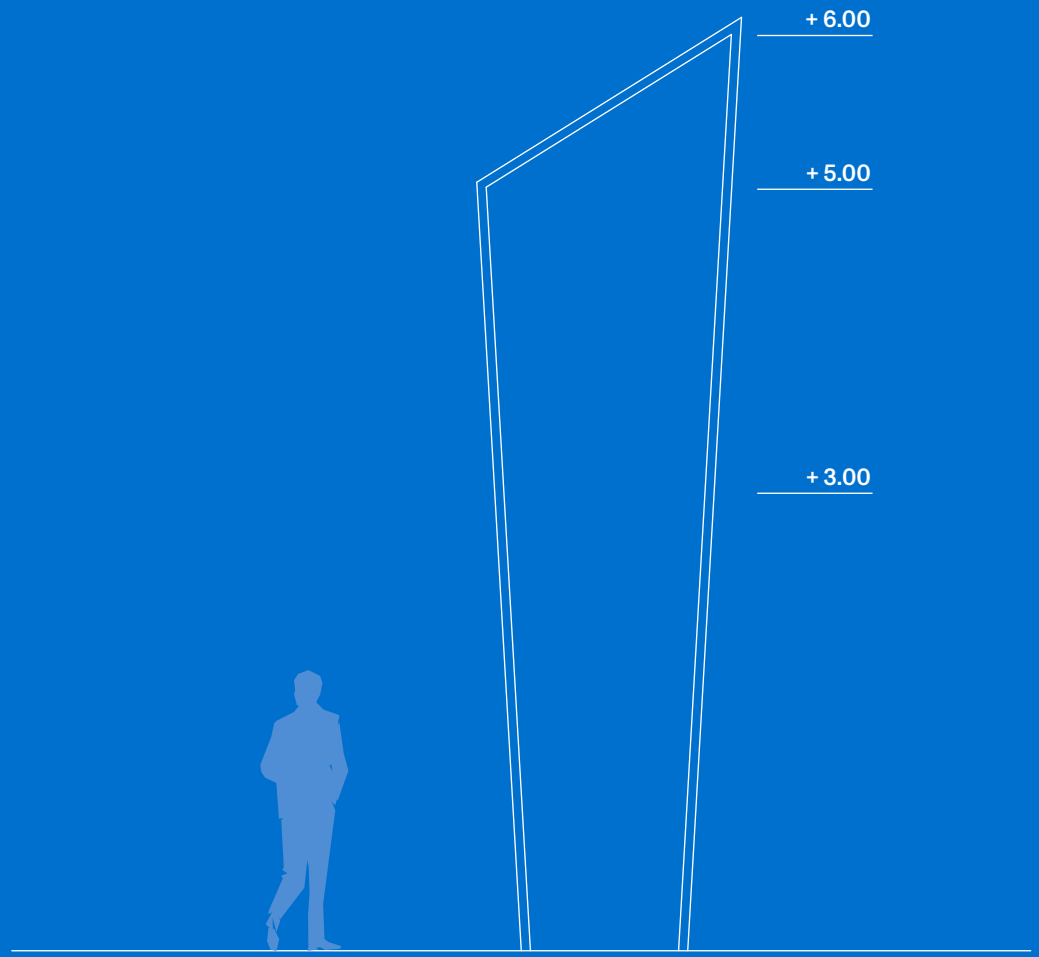
1:100 North → 0 ——— 1 m





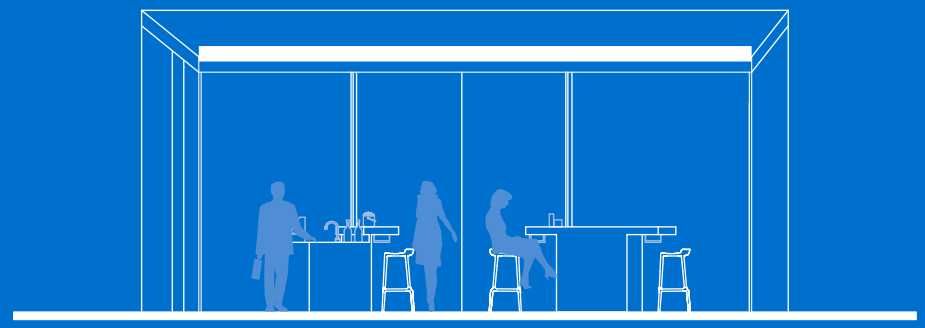
Totem

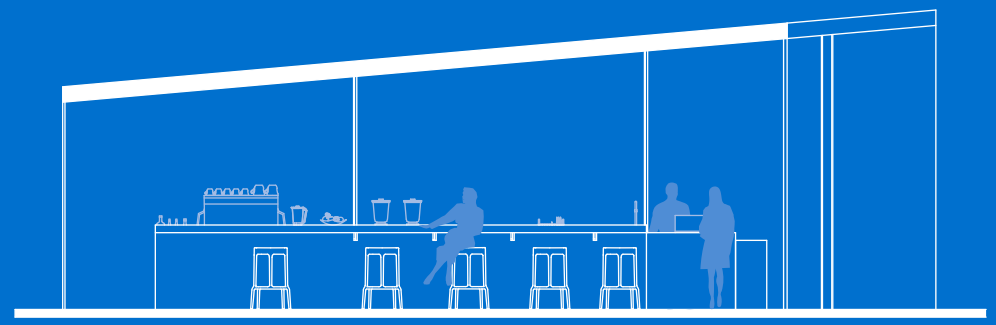
1:50 0 0,5 m



Kiosk

1:100 0 1 m





Security and accessibility

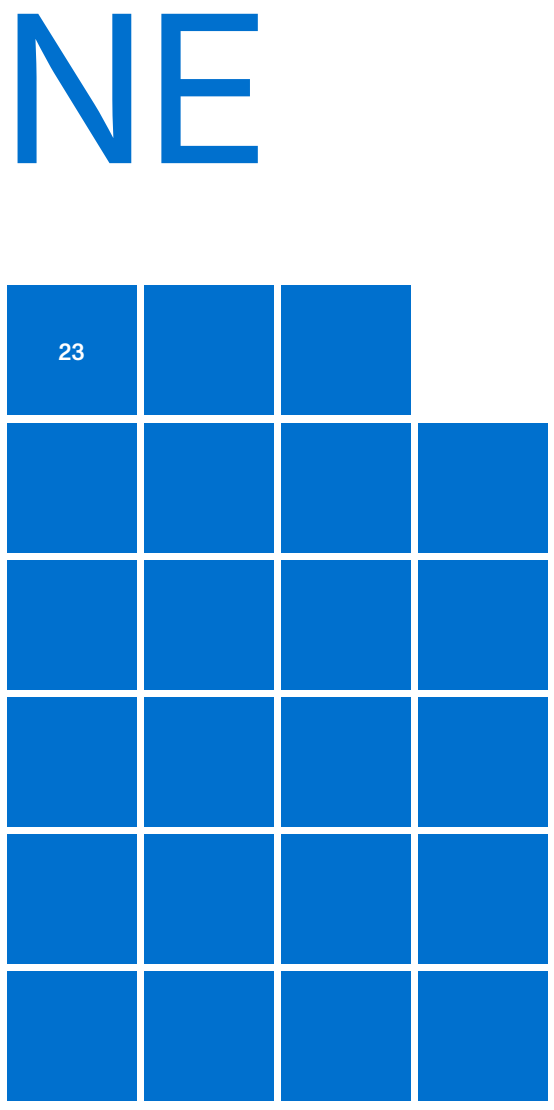
The sampling process in the neighborhood is done by pre-identifying 3 areas of investigation that cross the neighborhood with a NNW to SSE inclination. The areas covered are parallel one to the other, mirroring the ring road to its west and east. The object of the ground observation and mapping are CLS and plastic jerseys, the classic bollard locally named “panettone”, and access ramps to public places for disabled people.

Jersey

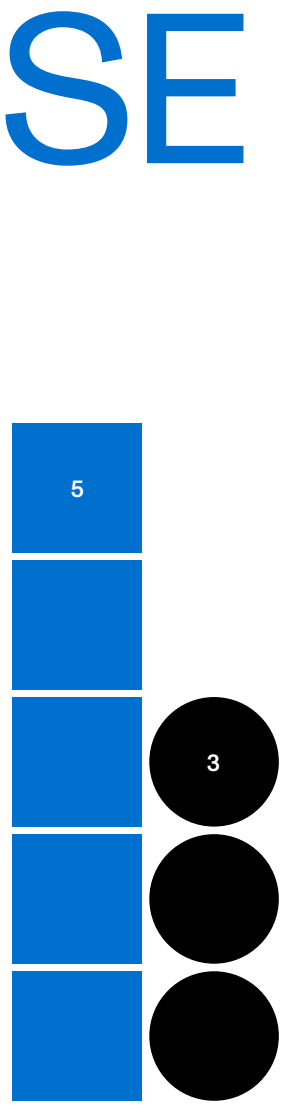
“Panettone” bollard

Ramp
for disabled people

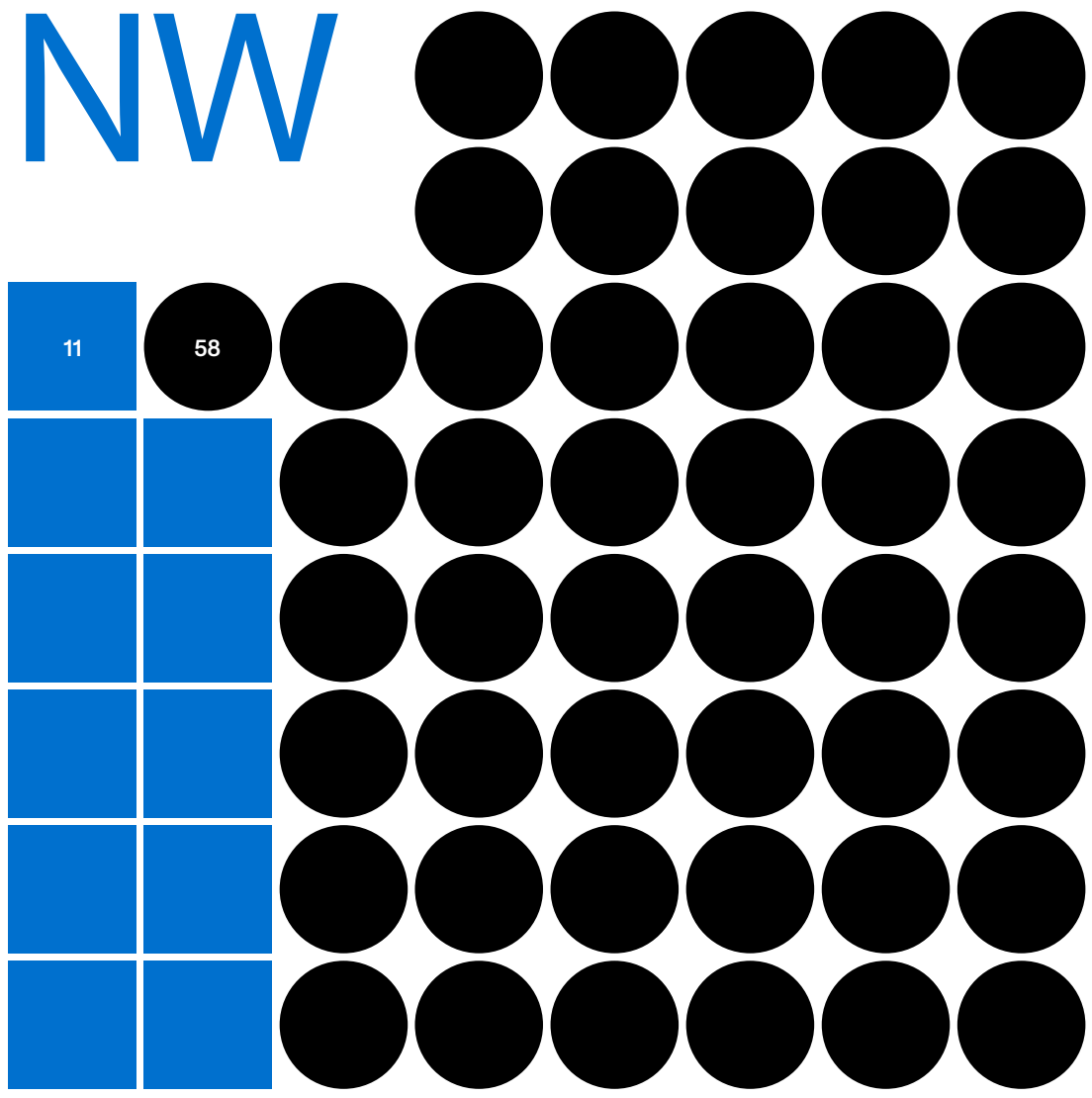
NE

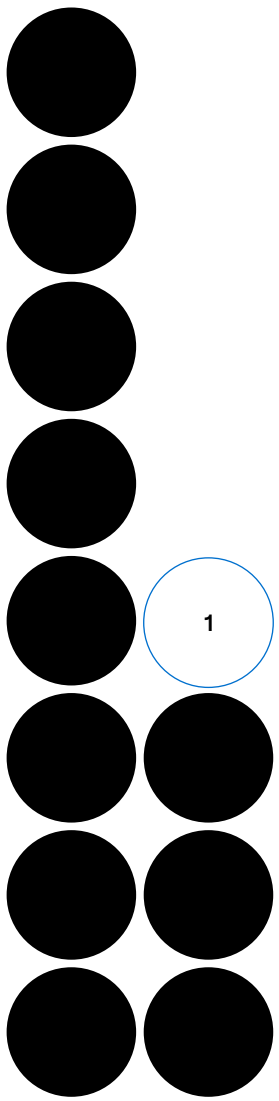


SE

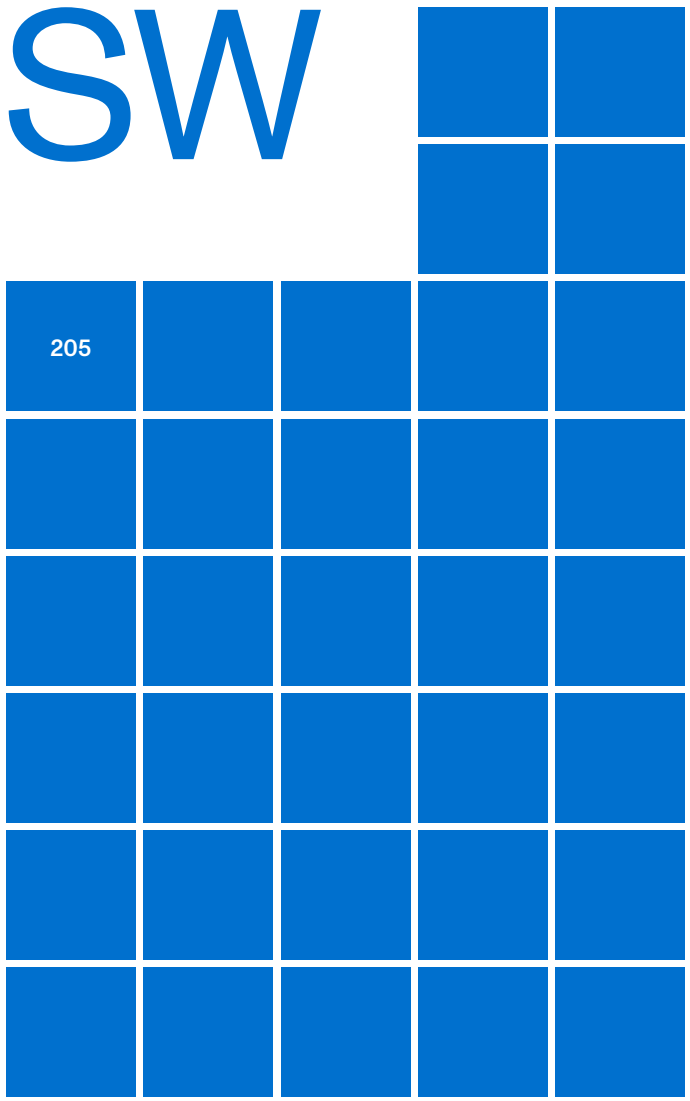


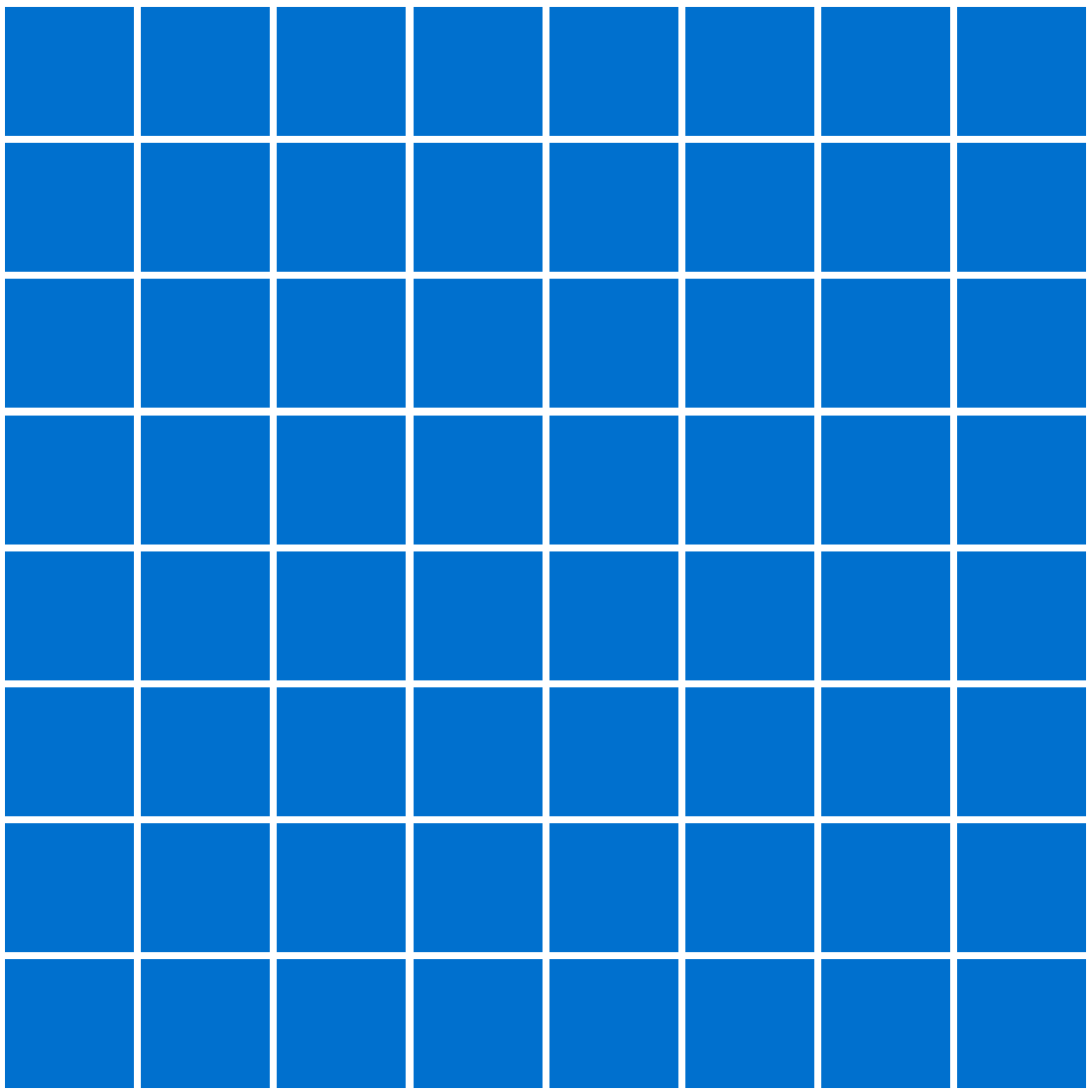
NW

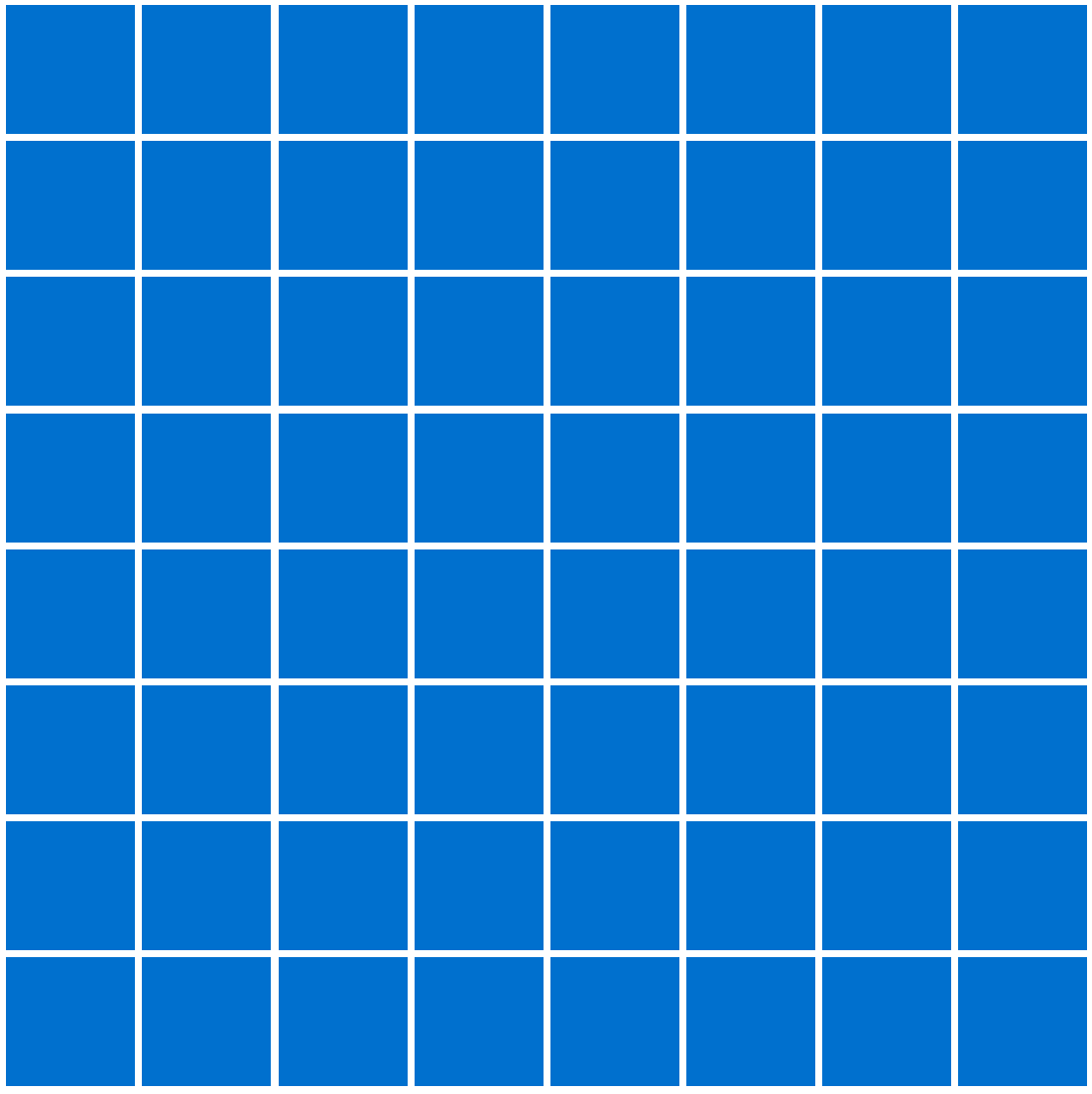


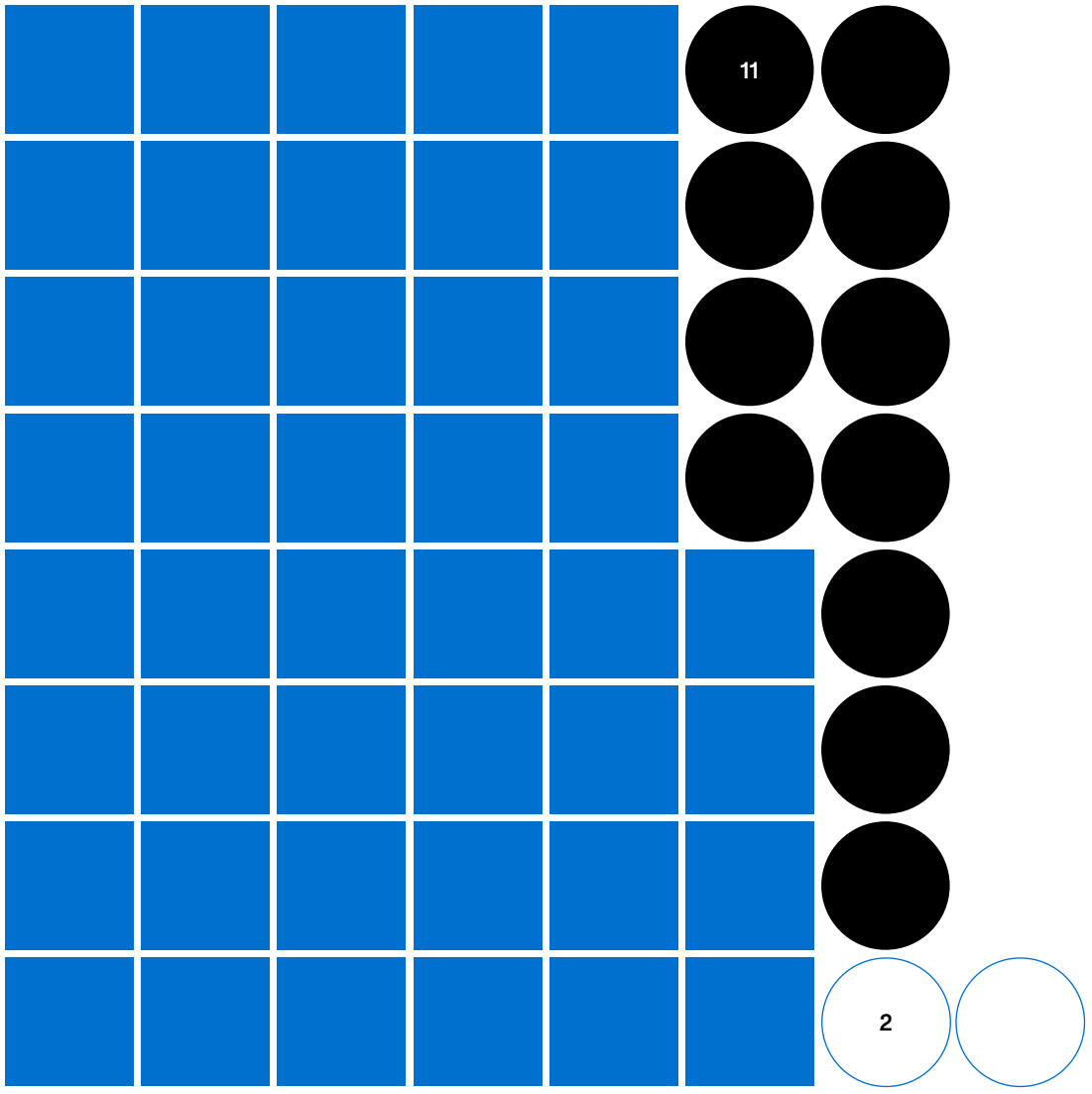


SW








11
2

N. of CLS/ Plastic jerseys

N. of “panettone” bollards

Ramp for disabled people

Researchers involved

GB_IDG_LDM_

Maintenance
Piazza
Simone Bolivar

Maintenance
Piazza Pietro Frattini
and Via Lorenteggio

Security
Parking area

Security
Roads crossing
Via Gentile Bellini
Via Vespri Siciliani

Security
Near Gino Capponi
high schools,
Giro giro tondo
kindergarden

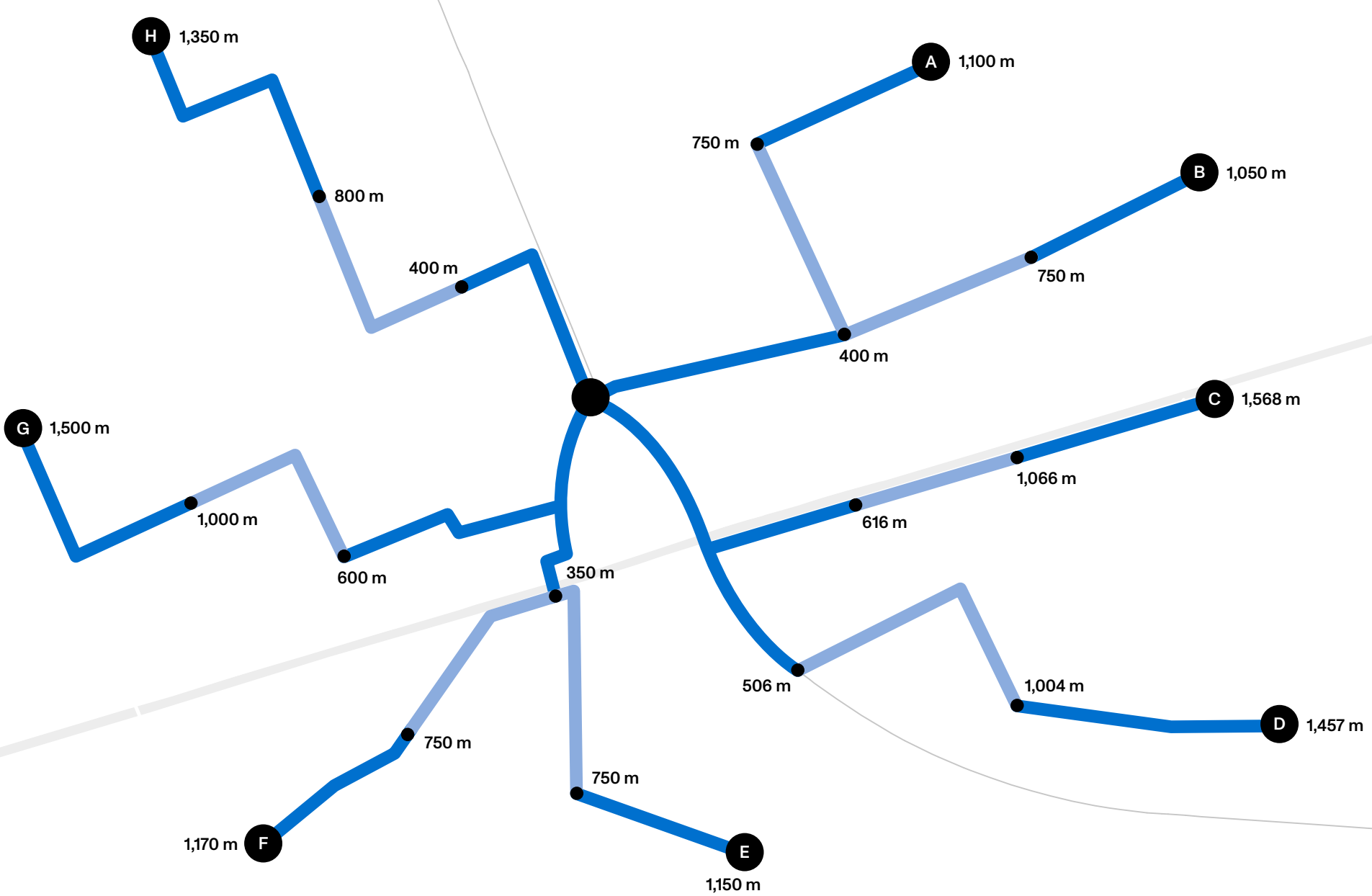
Anti-terrorism
Square in front
of a bank

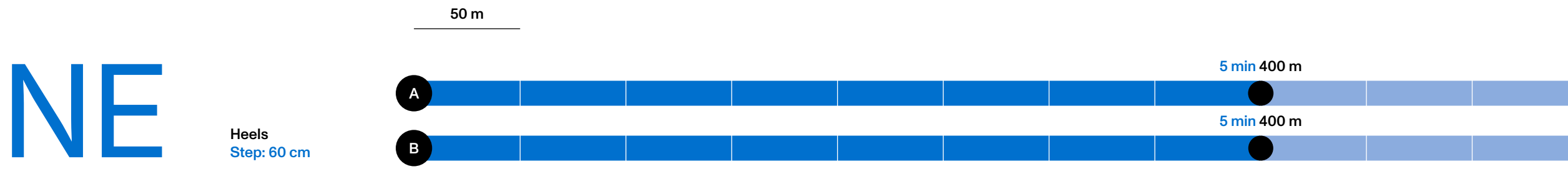
Anti-terrorism
Square in front
of the Shrine
of Santa Rita
da Cascia

Accessibility in terms of ramps for disabled people is very low in the entire area, with a very limited number of access ramps located in the north-western and in the south-western quadrants. Bollards and jerseys are concentrated in 5 main spots covering the 2 western quadrants and the north-eastern one. The largest number of plastic jerseys are located in the northern part of the neighborhood for maintenance activities ongoing at the time of the survey. Few very specific locations (a Catholic church, a school, a bank) in the southern part of the area show the use of physical barriers for security reasons.

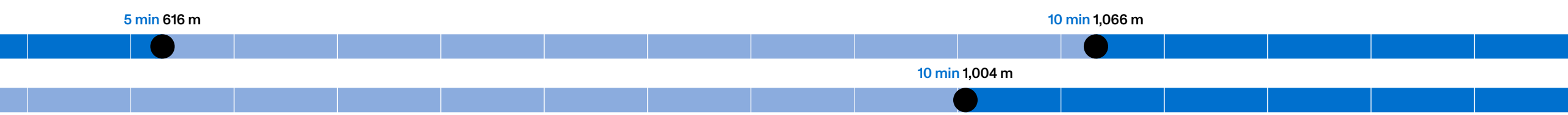
The 15-minute city

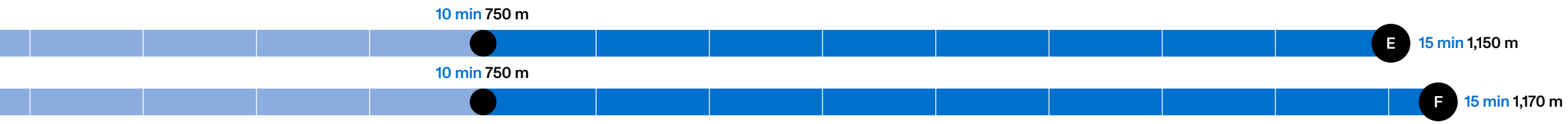
8 different paths are investigated by 4 researchers using their own body as a measurement tool: researcher 1, walking paths A & B, has an average step length of 60 cm and wears heels; researcher 2, walking paths C & D, has an average step length of 80 cm and wears boots; researcher 3, walking paths E & F, has an average step length of 60 cm and wears sneakers; researcher 4, walking paths G & H, has an average step length of 75 cm and wears flat shoes.



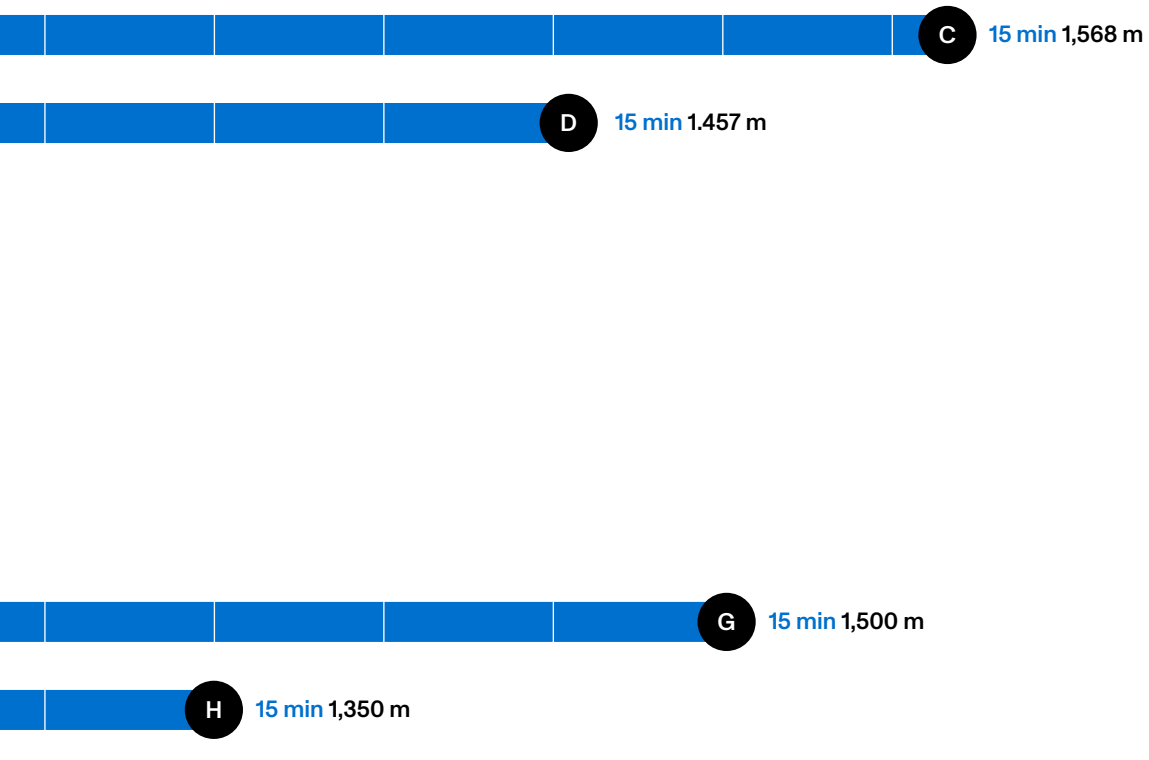

50 m
NE
Heels
Step: 60 cm
A
5 min 400 m
B
5 min 400 m
SE
Boots
Step: 80 cm
C
D
5 min 506 m
SW
Sneakers
Step: 60 cm
E
5 min 350 m
F
5 min 350 m
NW
Flat shoes
Step: 75 cm
G
H
5 min 400 m


10 min 750 m
A
15 min 1,100 m
10 min 750 m
B
15 min 1,050 m


5 min 616 m
10 min 1,066 m
10 min 1,004 m


10 min 750 m
E
15 min 1,150 m
10 min 750 m
F
15 min 1,170 m


5 min 600 m
10 min 1,000 m
10 min 800 m



The “15-minute city” theory proposed by Carlos Moreno is investigated here by considering the building site of the new residential complex Bosconavigli as a new center of a polycentric urban area. 4 researchers walk in opposite directions and register the extension of the clusters constituted by 5 minutes walking distances. All researchers walk at regular pace.

The 5 minutes segments walked by a specific researcher show minor differences in length, thus indicating the absence of significant barriers or slopes. The overall extension of the 15-minute city measured around Bosconavigli in the 4 quadrants stretches from a minimum of 1,1 kilometers (to the north-east) to a maximum of nearly 1,6 kilometers (to the south-east).

Concept by AP_PA_MC_

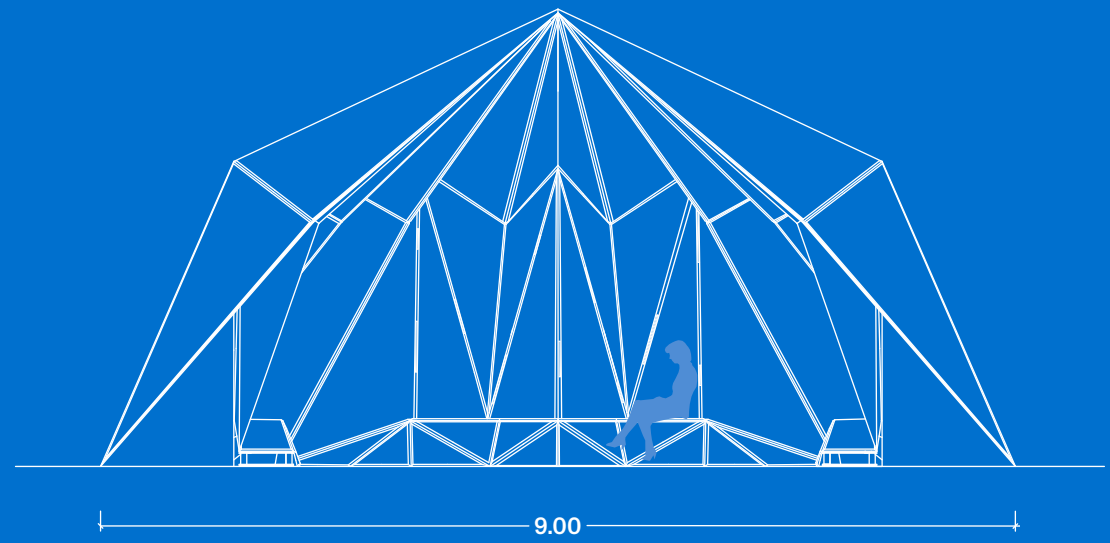
The quiet atmosphere of Bosconavigli inspired the designers to create noiseless areas in the most sonically critical parts of the neighborhood.

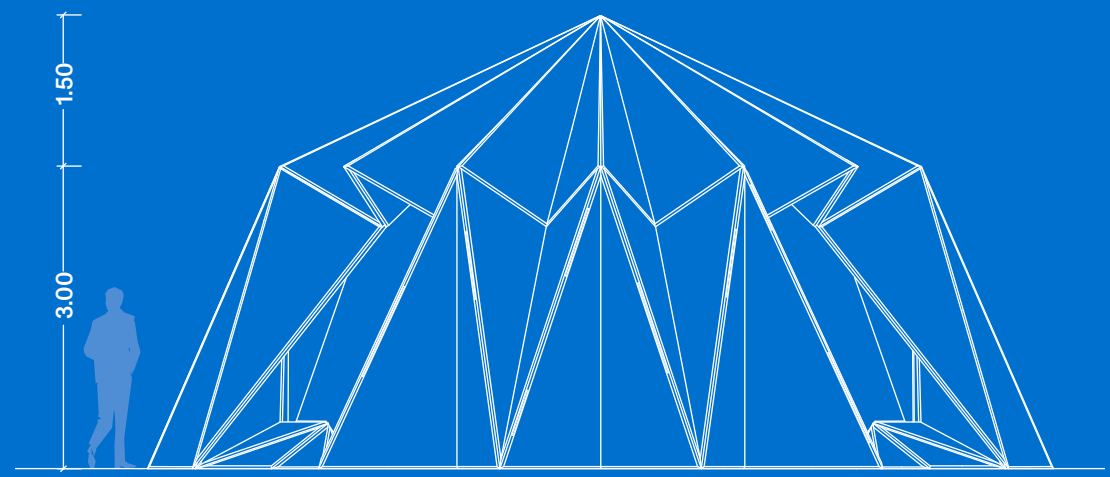
Seijaku / sei-ja-ku / [from Japanese]: Silence, calm and serenity in the midst of activity; a calm state of mind within chaos.

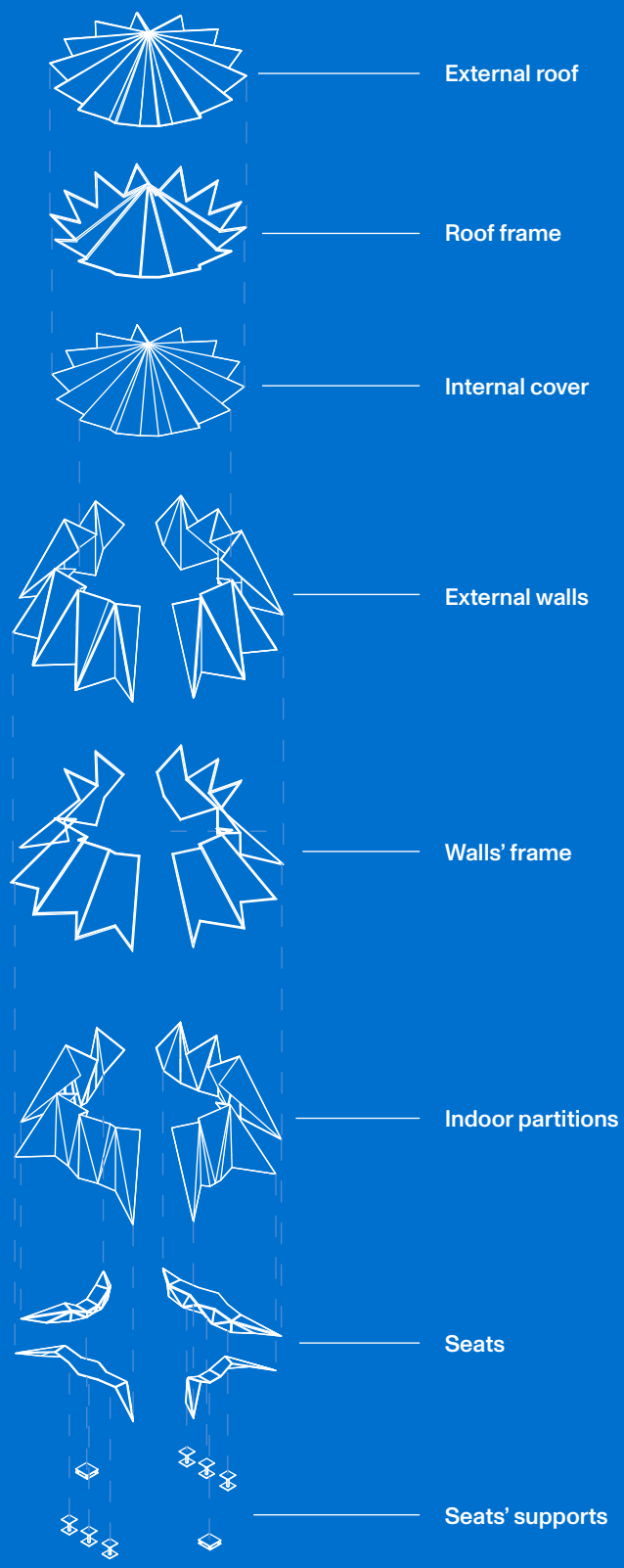
The concept project consists of a pavilion for urban use based on the principles of zen philosophy in which the central theme is the profound search for silence. Developing from the spherical shape that recalls the idea of a bubble that envelops and at the same time isolates from external noise, the projects summarizes the concept of quiet in an origami shape, a Japanese technique that consists of folding paper to increase its resistance. The basic spherical shape is folded into 14 slices and the surfaces are expanded to increase the acoustic insulation of the structure. Subsequently the sphere is horizontally cut in two parts, reducing its height to avoid the rumble inside. Finally four openings are created to allow the passage inside.

The structure has different functions: externally, through sound absorbing panels, it is possible to reduce noise in the proximity of the structure while internally it is possible to isolate oneself, moving away from the chaotic city. It is also possible to cross the pavilion while walking, paying attention to how the perception of sound changes in the urban context, leading the user to reflect on the problem of noise pollution in the city. Inside the pavilion, on the other hand, the stop is prolonged for a certain period of time where the user can take advantage of the seats, taking a moment for himself, to rest. A path on the asphalt in shades from red to yellow will indicate the level of noise present in the city. In addition to leading users from Piazza Bolivar to Piazza Frattini, it will guide them from the subway exit to Seijaku Pavilions.

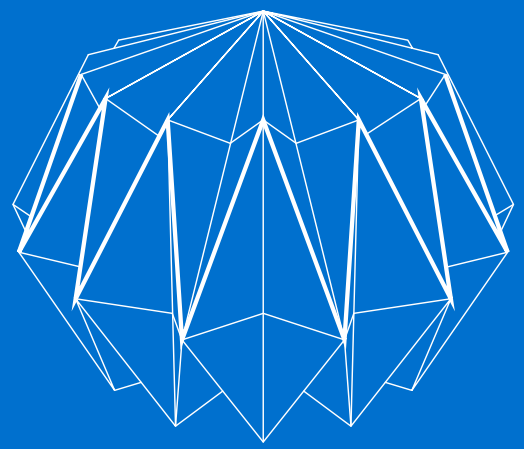
1:100 0 1 m



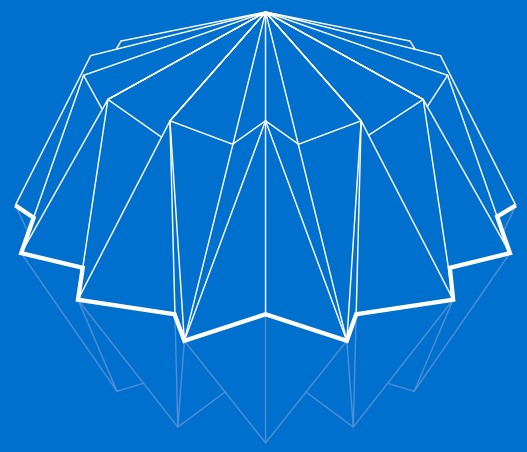




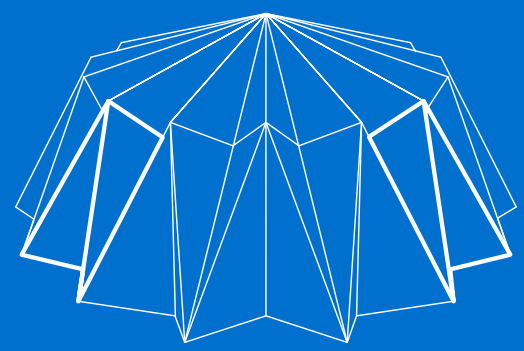
Basic shape



Folded shape



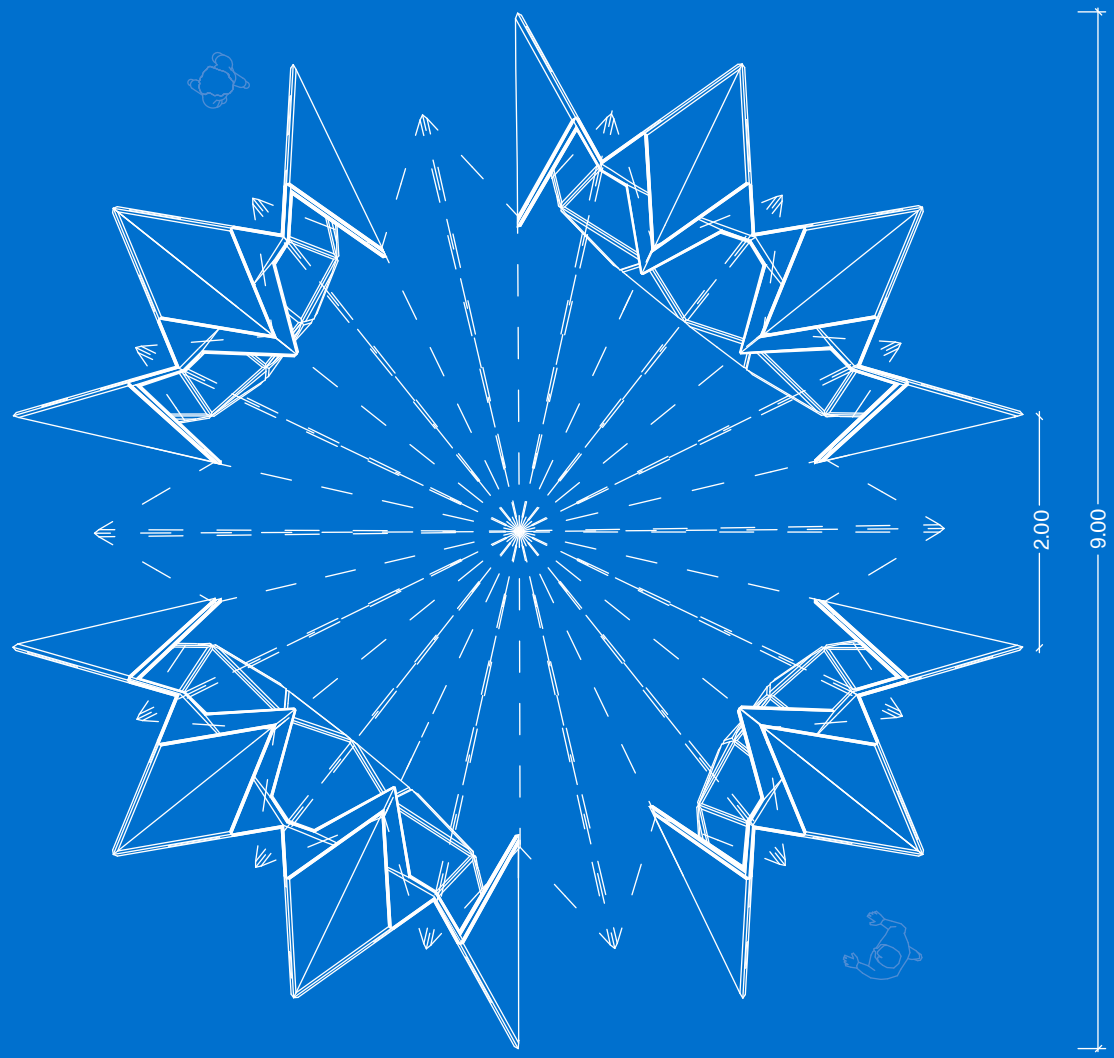
Split



Subtraction

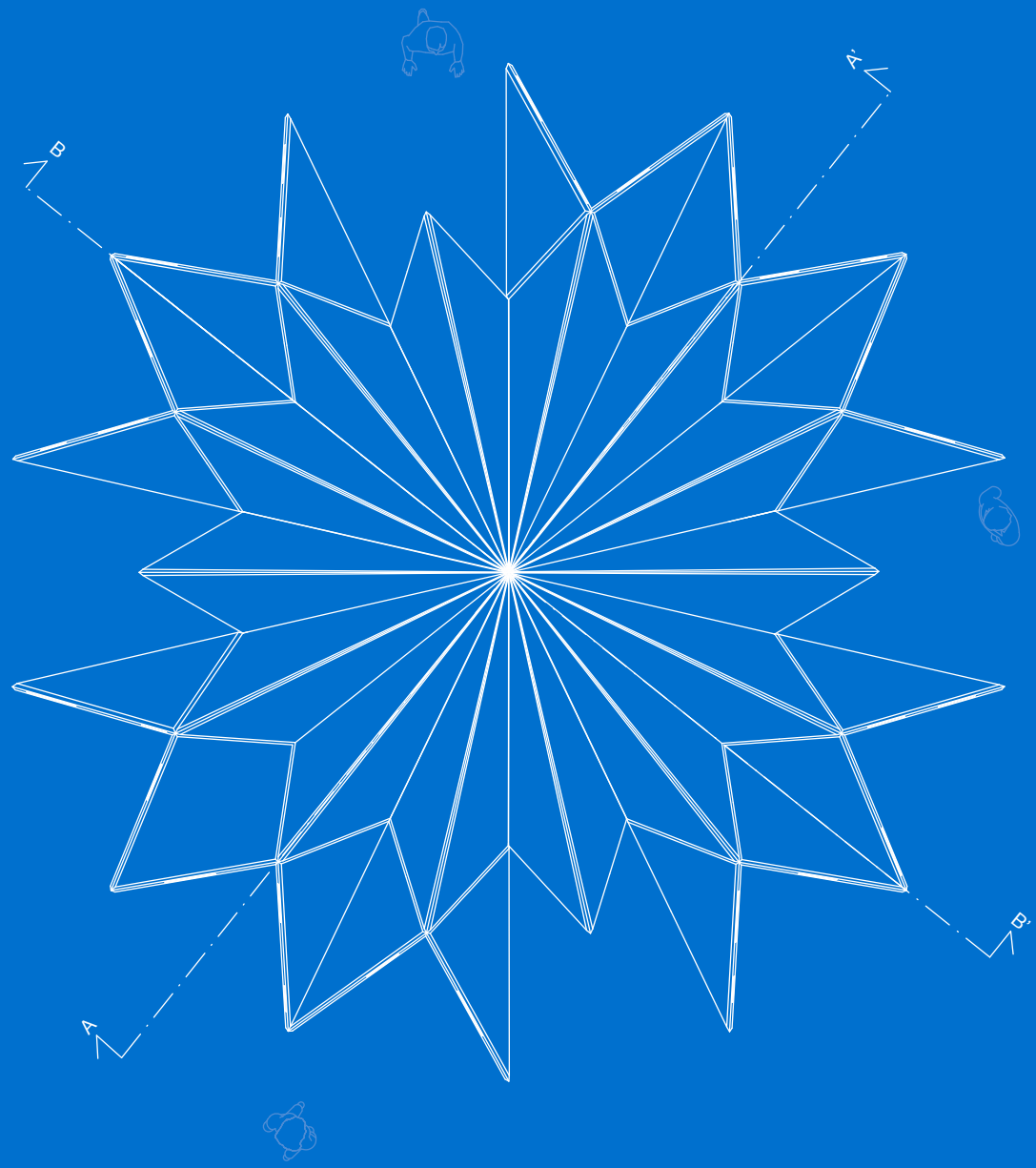
Plan

North ↗ 0 ——— 0,5 m



Top view

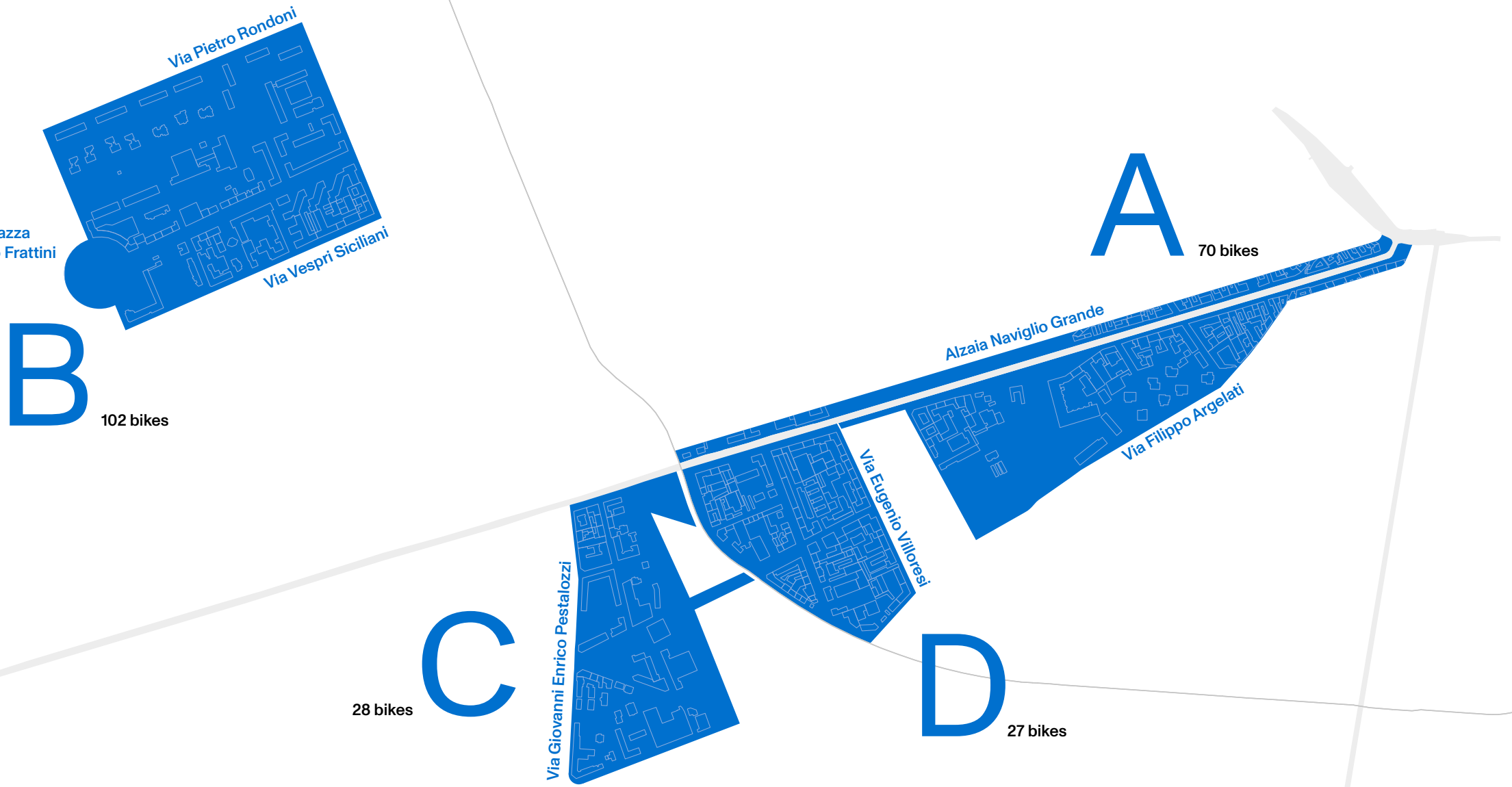
1:50 North ↗ 0 ——— 0,5 m




THE
ANCE·DUMBU
ARISK VANDALS·FUCK
FARMACIA DINAMICA
FARMACIA DINAMICA
CIA
PIE MILANO

Bicycle census

The census is carried out in early fall during a mild climate day, so as to depict the distribution and use of bicycles in the neighborhood in conditions that would suggest its maximum diffusion. 4 different areas are considered by the research, as highlighted below. All bicycles encountered are registered along with their specific characteristics.



A

Seat type	Breaking system	Gear	Handle	Accessories	Locking system
Normal	Anterior	Traditional	Traditional	Child seat	Not locked
Normal	Normal	Normal	Traditional		Simple lock
Normal	Anterior	Traditional	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Racing	Baggage rack	Simple lock
Normal	Anterior	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Bloster
Normal	Anterior	Traditional	Traditional	Baggage rack	Bloster
Normal	Normal	Normal	Traditional	Child seat	Simple lock
Design	Normal	Normal	Traditional	Baggage rack	
Normal	Normal	Normal	Traditional	Baggage rack	
Normal	Normal		Minimalist	Baggage rack	
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional + Minimalist	Baggage rack	Bloster
Design	Anterior	Traditional		Baggage rack	Double lock
Normal	Anterior	Normal	Traditional	Baggage rack	Double lock
Design	Anterior	Traditional	Racing	Baggage rack	Bloster
Design	Anterior	Traditional	Minimalist	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Child seat	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	
Normal	Normal	Normal	Traditional	Child seat	Simple lock
Design	Normal	Normal	Traditional	Child seat	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Design	Anterior	Traditional	Minimalist	Baggage rack	Double lock
Design	Anterior	Traditional	Racing	Baggage rack	Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Minimalist	Baggage rack	Simple lock
Design	Anterior	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock + Bloster
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Anterior	Traditional	Minimalist		Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock

B

Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal		Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Design	Anterior	Traditional	Racing	Baggage rack	Not locked + Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Anterior	Traditional	Traditional	Baggage rack	Not locked + Double lock
Normal	Anterior	Traditional	Minimalist	Baggage rack	Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal		Traditional	Baggage rack	Bloster
Normal	Normal		Traditional	Baggage rack	Simple lock
Normal	Normal		Traditional	Baggage rack	Simple lock
Normal	Normal		Traditional	Baggage rack	Simple lock
Normal	Normal		Traditional	Baggage rack	Simple lock
Normal	Normal		Traditional	Child seat	Simple lock
Normal	Normal		Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Not locked
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Minimalist		Simple lock
Design	Normal		Traditional		Simple lock
Normal	Normal	Normal	Minimalist		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Child seat	Not locked
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Design	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Minimalist		Simple lock
Normal	Normal	Traditional	Minimalist	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Bloster
Design	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional		Bloster
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Bloster
Design	Normal	Normal	Traditional		Bloster
Design	Only anterior	Fixed gear	Minimalist		Bloster
Normal	Normal	Normal	Traditional		Double lock
Normal	Normal	Normal	Traditional		Double lock
Normal	Normal	Normal	Traditional	Child seat	Double lock
Normal	Normal	Traditional	Traditional		Double lock

Normal	Normal	Normal	Traditional		Bloster
Normal	Normal	Traditional	Traditional	Baggage rack	Bloster
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Not locked
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Design	Normal	Traditional	Traditional		Simple lock
Design	Normal	Traditional	Racing		Double lock
Design	Normal	Traditional	Traditional		Simple lock
Design	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Design	Normal	Normal	Traditional		Bloster + Double lock
Normal	Normal	Traditional	Traditional		Bloster
Design	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Bloster
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Normal	Minimalist		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Minimalist	Baggage rack	Bloster
Normal	Normal	Traditional	Minimalist		Bloster
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Bloster
Normal	Normal	Traditional	Traditional		Simple lock
Design	Normal	Traditional	Racing		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Design	Normal	Traditional	Minimalist		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Design	Normal	Normal	Traditional		Bloster
Normal	Normal	Traditional	Traditional		Simple lock
Design	Normal	Normal	Minimalist		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Minimalist		Bloster
Normal	Normal	Normal	Traditional		Simple lock
Design	Normal	Normal	Minimalist		Bloster
Design	Normal	Normal	Minimalist	Baggage rack	Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Double lock
Normal	Normal	Traditional	Traditional		Simple lock
Design	Normal	Traditional	Traditional	Baggage rack	Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Design	Normal	Traditional	Traditional		Bloster
Normal	Normal	Traditional	Traditional		Bloster
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock

Normal	Normal	Traditional	Racing		Bloster
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Double lock
Normal	Normal	Traditional	Traditional		Not locked + Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock

C

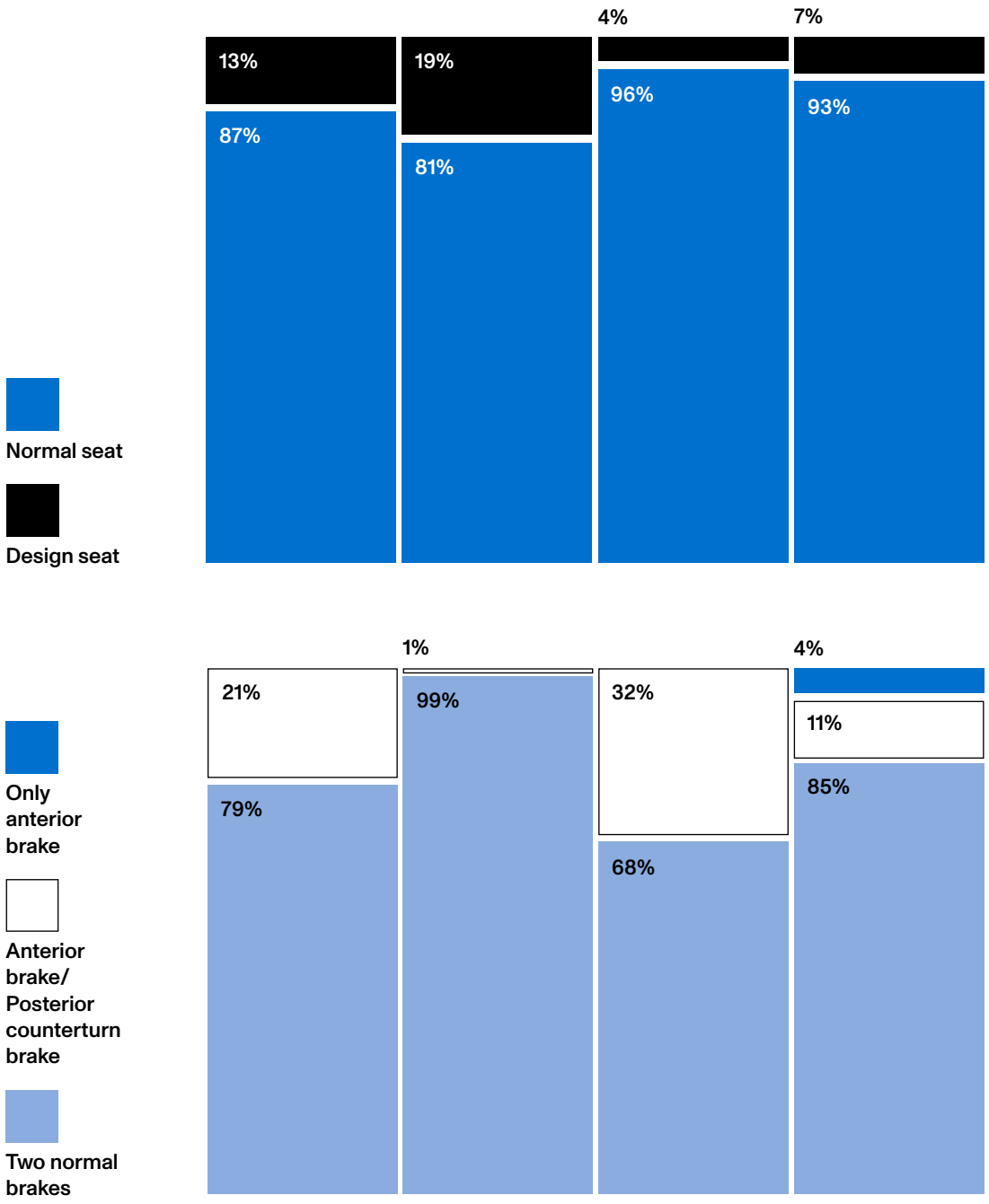
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Double lock
Normal	Normal	Integrated	Traditional		Simple lock
Normal	Normal	Integrated	Traditional	Child seat	Double lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional	Baggage rack	Simple lock
Normal	Anterior	Traditional	Traditional	Baggage rack	Simple lock
Normal	Anterior	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Double lock
Normal	Normal	Normal	Traditional		Double lock
Normal	Anterior	Integrated	Traditional		Simple lock
Normal	Anterior	Integrated	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Anterior	Integrated	Minimalist		Simple lock
Design	Anterior	Traditional	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Anterior	Traditional	Minimalist		Simple lock
Normal	Anterior	Traditional	Minimalist	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Anterior	Traditional	Minimalist		Bloster
Normal	Normal	Normal	Traditional		Simple lock

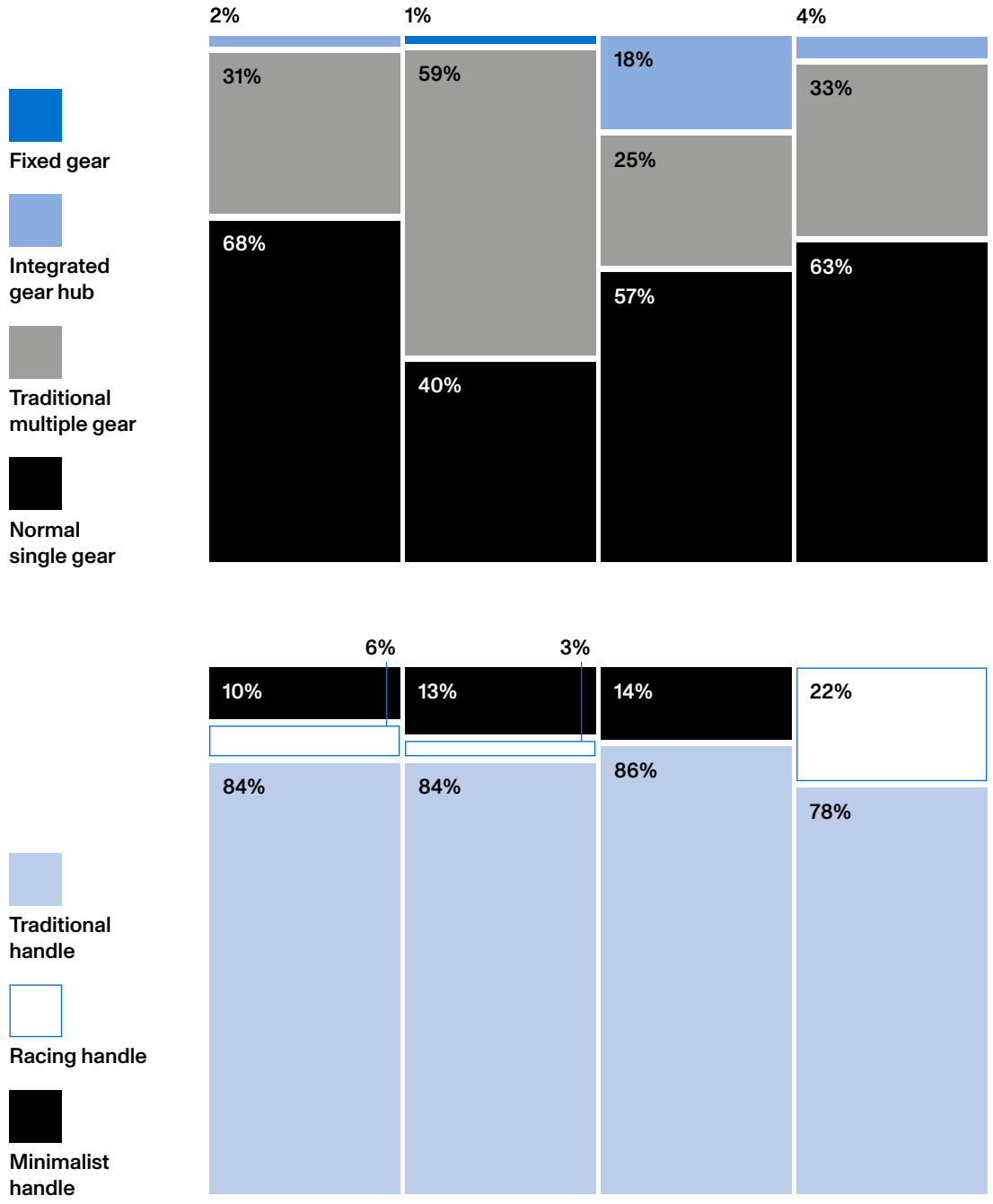
D

Normal	Normal	Traditional	Traditional	Baggage rack	Not locked
Design	Normal	Normal	Traditional		Simple lock
Normal	Only anterior	Integrated	Racing	Baggage rack	Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Double lock
Normal	Normal	Normal	Traditional		Bloster
Normal	Anterior	Traditional	Racing	Baggage rack	Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Bloster
Normal	Normal	Normal	Traditional		Double lock
Normal	Normal	Traditional	Racing		Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Bloster

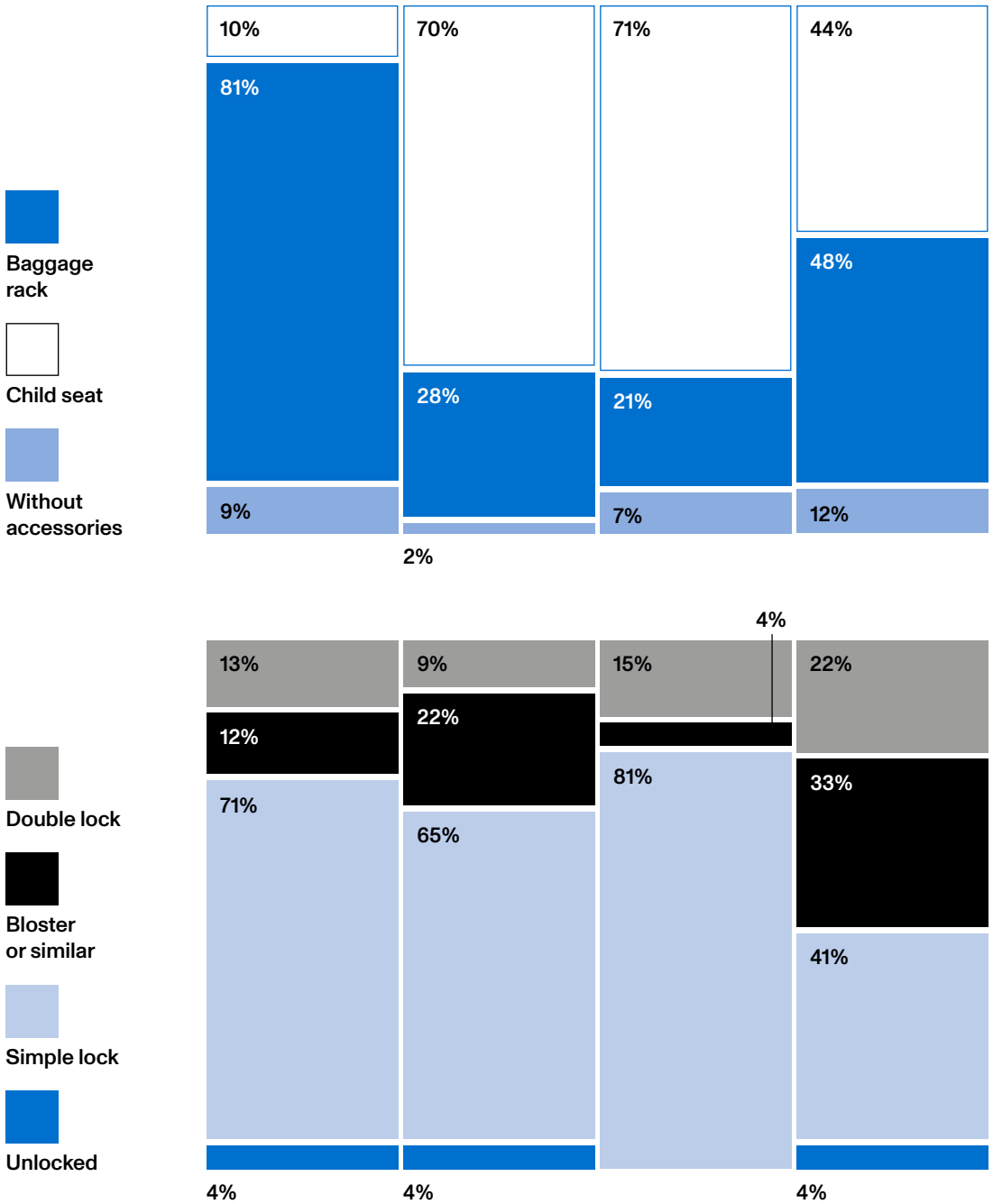
Normal	Anterior	Traditional	Racing	Baggage rack	Bloster
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Simple lock
Normal	Normal	Traditional	Traditional		Double lock
Normal	Normal	Traditional	Racing	Baggage rack	Bloster
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Child seat	Simple lock
Design	Anterior	Traditional	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Double lock
Normal	Normal	Normal	Traditional	Baggage rack	Simple lock
Normal	Normal	Normal	Traditional		Bloster
Normal	Normal	Normal	Traditional	Child seat	Bloster
Normal	Normal	Normal	Traditional		Simple lock
Normal	Normal	Traditional	Racing	Baggage rack	Double lock
Normal	Normal	Normal	Traditional		Bloster

A B C D


4%
7%
13%
19%
96%
93%
87%
81%
Normal seat
Design seat
1%
4%
21%
99%
32%
11%
79%
68%
85%
Only anterior brake
Anterior brake/ Posterior counterturn brake
Two normal brakes


2%
1%
4%
31%
59%
18%
33%
68%
40%
25%
57%
63%
Fixed gear
Integrated gear hub
Traditional multiple gear
Normal single gear
6%
3%
10%
13%
14%
22%
84%
84%
86%
78%
Traditional handle
Racing handle
Minimalist handle

A B C D



Bicycles are here catalogued according to a number of characteristics that are considered significant indicators of the users' type and habits. Specifically: aftermarket modifications to the seat, handle, breaking and gear systems, are considered indicators of a more young/gentrified user. The presence of accessories such as baggage rack indicate a possible daily use of the bicycle for the transportation of goods, while child seats point to a family use of the bicycle. Ultimately, the locking system applied to the bicycle is regarded as an indicator of the perception of security from the owners' point of view.

The highest concentration of bicycles is encountered in the proximity of schools and parks, favored by the large diffusion of public bike parking racks in the mentioned areas. Significantly modified bicycles are detected in working areas, close to the abundant creative spaces present across the neighborhood. Nearly all mapped bicycles have a locking system, thus indicating the owners' perception of a high risk of theft.

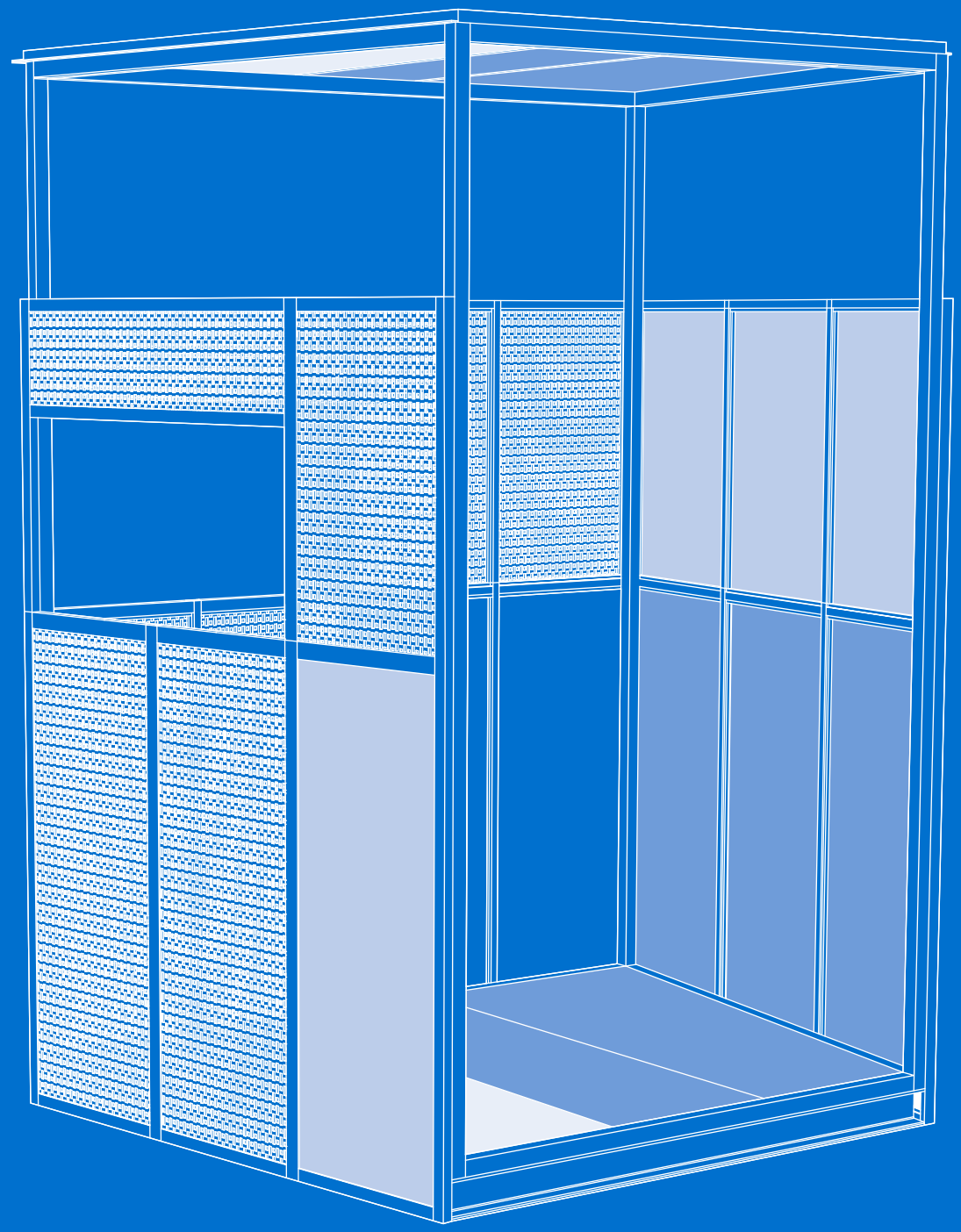
Concept by GT_NP_FF_

The centrality of outdoor spaces in the Bosconavigli project is reinterpreted through light and adaptable structures, scattered around the neighborhood.

POV concept project is a result of the post-pandemic demand for more outdoor spaces; nowadays an essential feature of our homes as well. The idea of giving a “new point of view” was born in order to accomodate these new social changes and needs. POV is a modular object attachable to the building’s façade like a parasite, that allows an exclusive view that is never the same. The façades are customizable and the POV is independent in terms of lighting thanks to the use of innovative materials. The shape opens up to new views and encourages the user to look further and “move the eye” in directions not previously considered.

POV is the structure that allows you to capture unique views directly from your building. All you need is a window; a flight of stairs makes it easy to climb up to access the new space offered by POV.

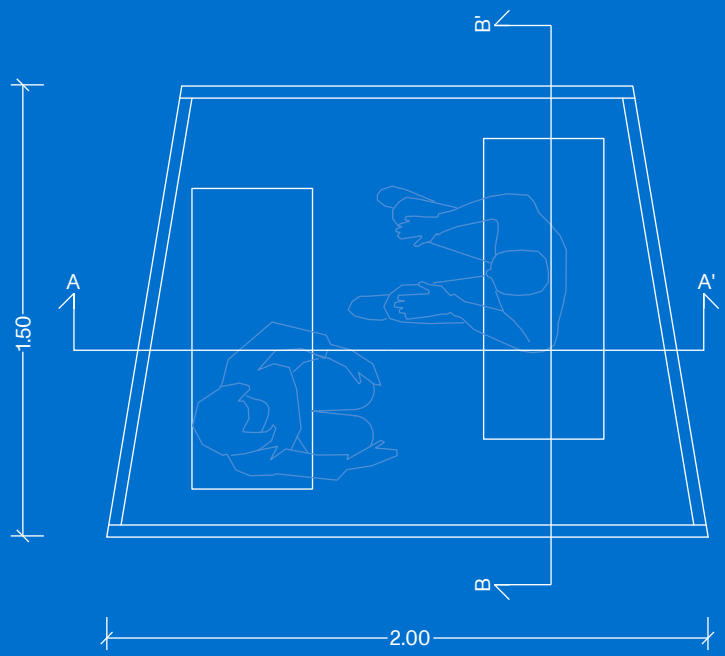
POV is designed to fit the majority of single-hung windows that everyone has in a typical flat. The modular design makes it possible to create different combinations of geometries, such as pairing to create a double space or linking one space to another. While granting everyone the chance to enjoy the experience of staying inside, POV can also serve as a dehor for public use in squares or public spaces. The main strength that makes POV suitable for multiple uses is the fact that, given the basic backbone structure, the rest is completely customizable by the user.



Module plan

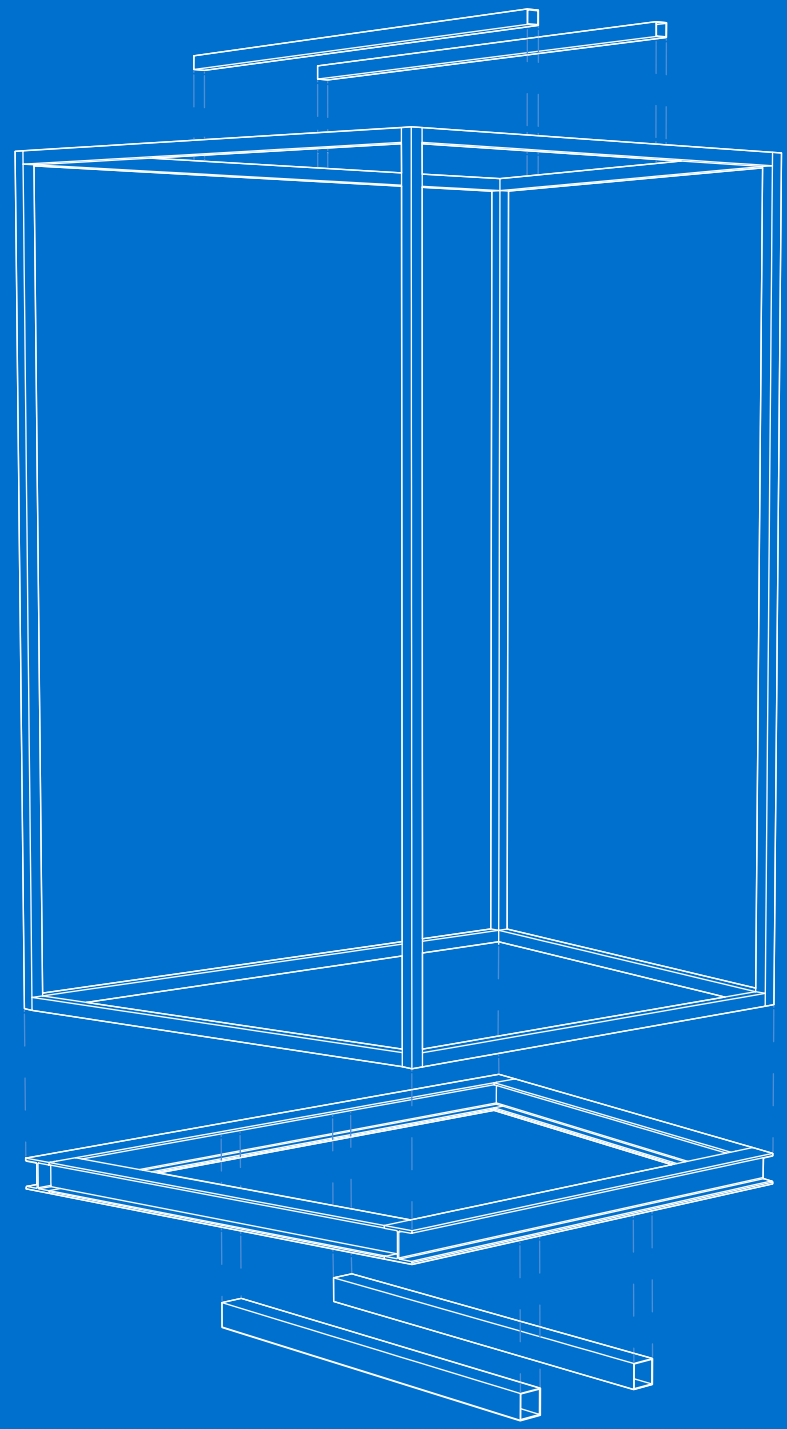
344

1:50 0 0,5 m



Exploded view of the frame

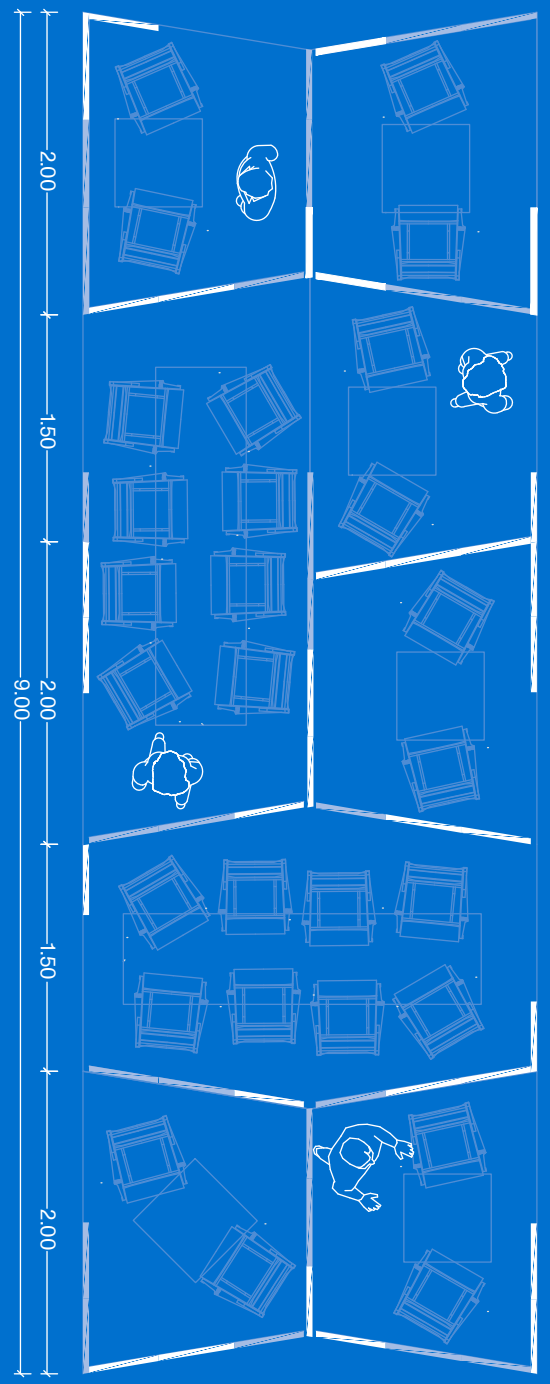
345



Dehor plan

346

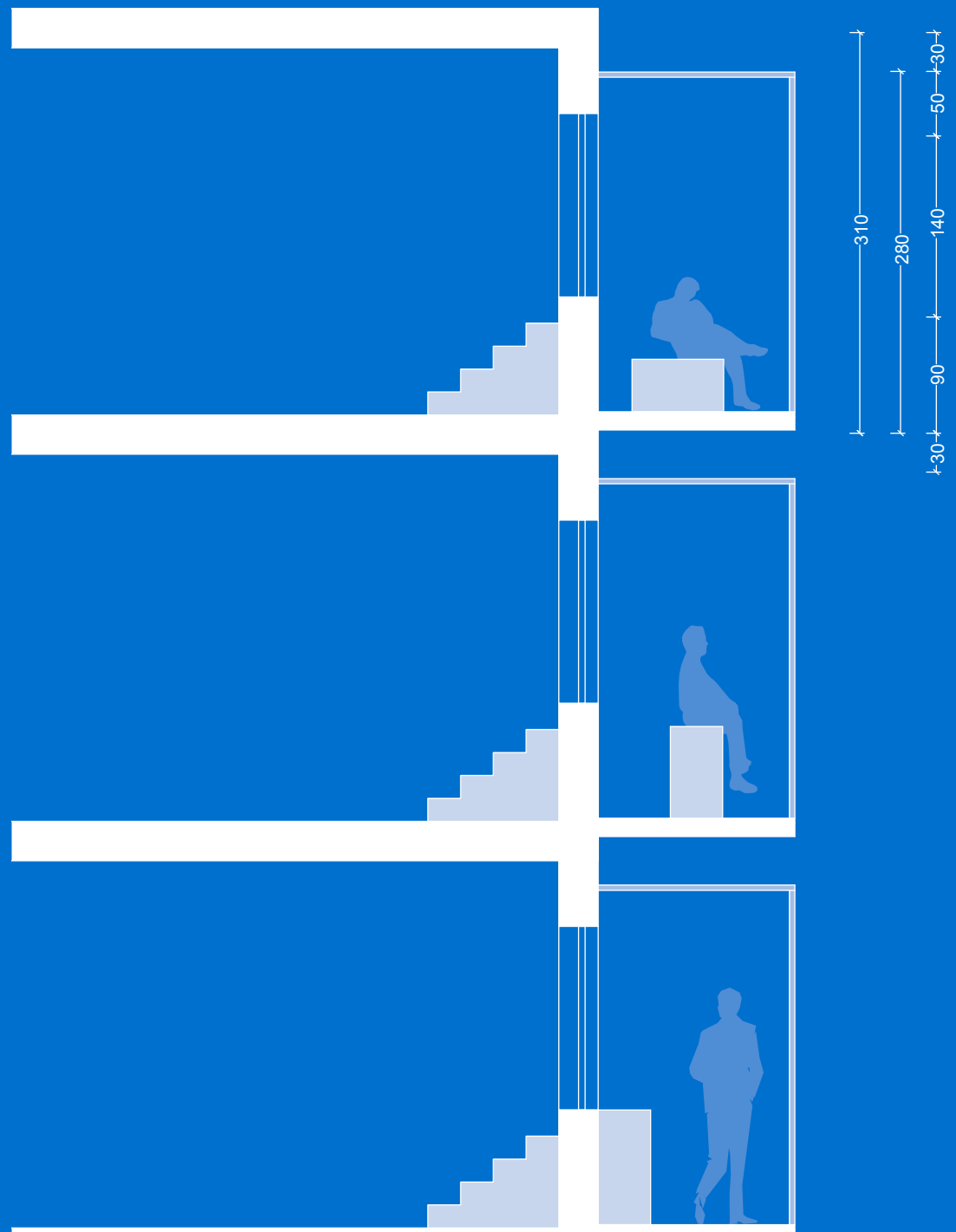
1:50 0 0.5 m



Section on building façade

347

1:50 0 0.5 m

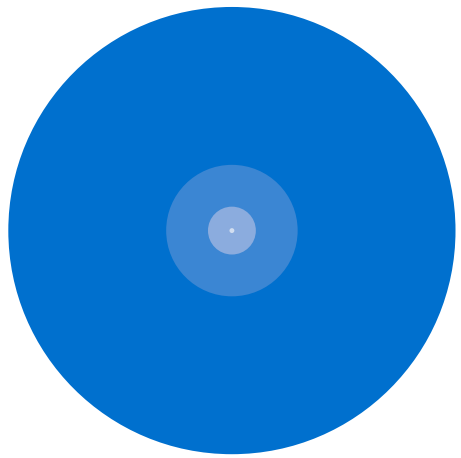


Motorcycle census

3 non overlapping areas are identified to map encountered motorbikes. The sizes of the areas span from 0.22 km² to 0.29 km² and are distributed in the north-eastern, north-western and south-western quadrants. The mapping research is carried out in the early afternoon of a working day, with mild weather and a cloudy but not rainy sky. Weather forecast is checked in the early morning the same day of the research in order to be sure that normal motorbike users would not be deterred in their use foreseeing rain in the day.

Scooters
Motorcycles
50 cc
Vintage scooters

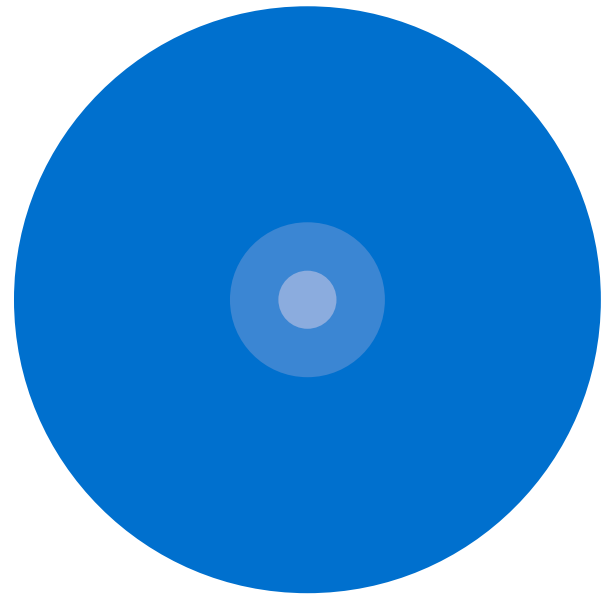
NW



53	Scooters
7	50 cc
11	Motorcycles
0	Vintage scooters

Locking system	Brake disk lock	10
	Strong chain	11
	Light chain	9
	No locking	45
Fixing system	Strong pole	3
	Light object	68
	Nothing	0

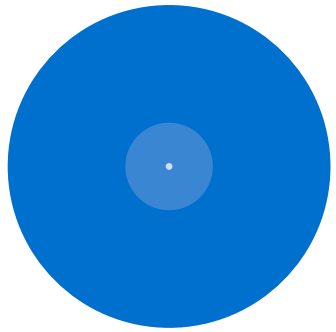
NE



132	Scooters
18	50 cc
35	Motorcycles
2	Vintage scooters

Locking system	Brake disk lock	13
	Strong chain	9
	Light chain	11
	No locking	135
Fixing system	Strong pole	7
	Light object	2
	Nothing	178

SW



35 Scooters

0 50 cc

12 Motorcycles

1 Vintage scooters

Locking system	Brake disk lock	6
	Strong chain	17
	Light chain	7
	Bloster	1
	No locking	16
Fixing system	Strong pole	5
	Nothing	42

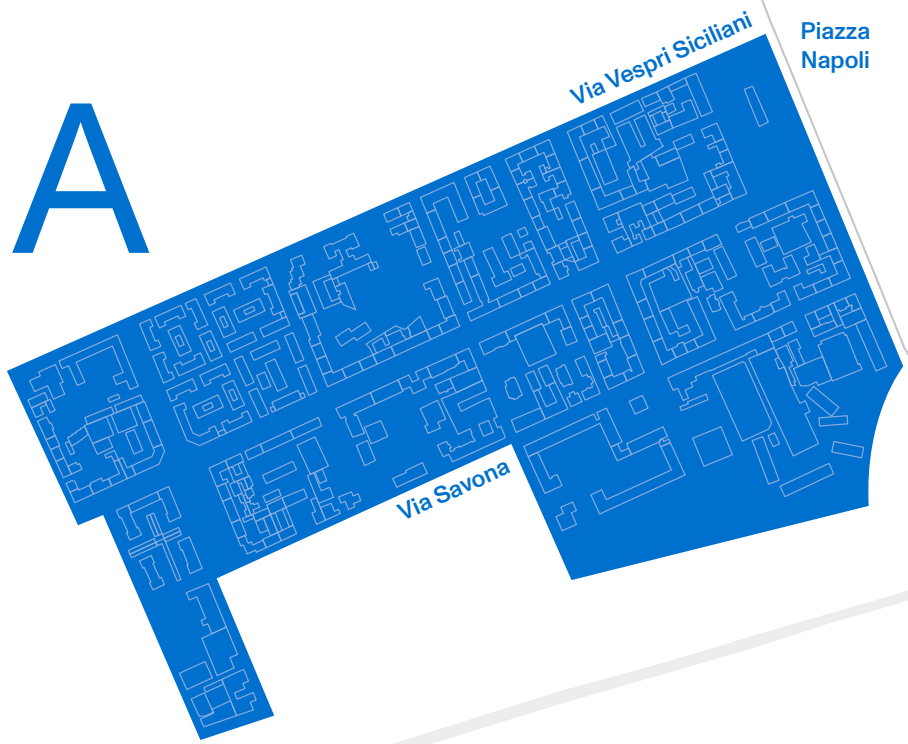
The largest amount of motorbikes is by far encountered in the north-eastern quadrant. The same quadrant is also the only one where vintage motorcycles are detected. Scooters are the absolute dominant typology, suggesting all the neighborhood being a dynamic area for both commuters and workers that benefit of frequent movements during their daytime. The trend is more evident in the north-eastern quadrant, followed by the north-western quadrant.

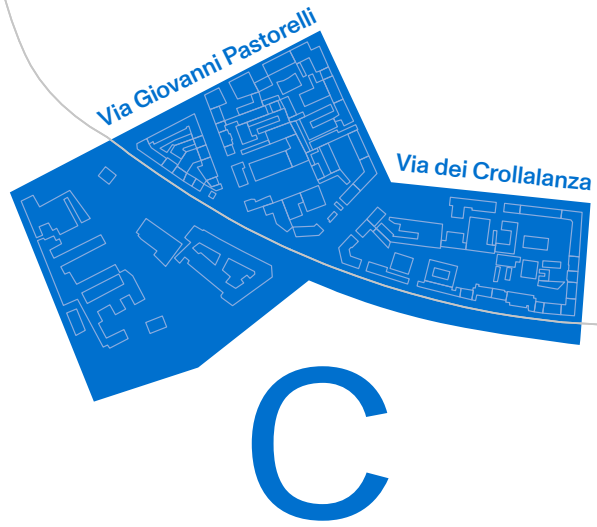
50 cc scooters are taken as a strong indicator of teenagers' presence (as scooter of such characteristics can be legally driven by minors): in all quadrants the incidence is relatively low (if compared to larger motorcycles) and drops to zero in the south-western quadrant.

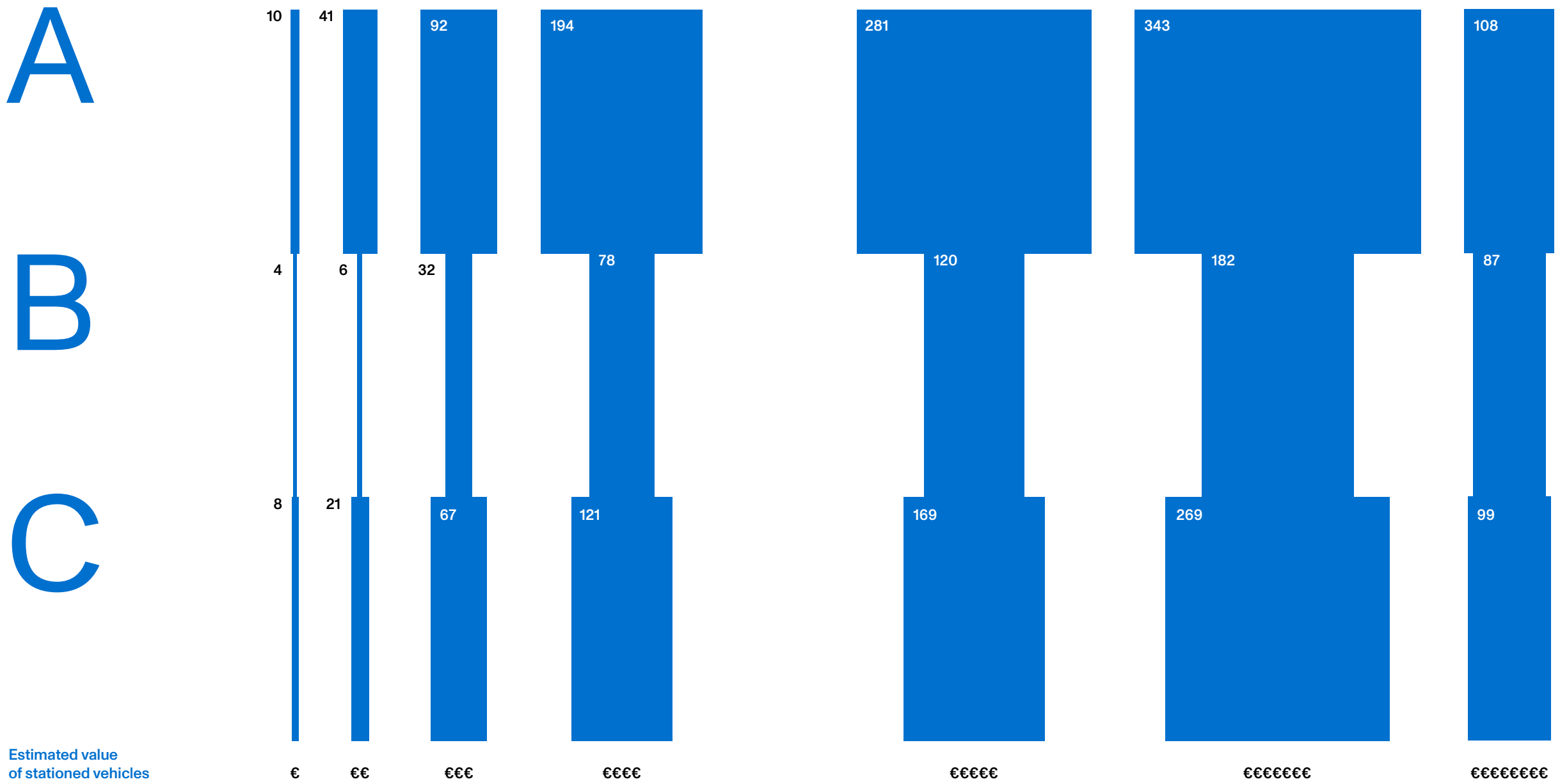
As per security perception the north-eastern quadrant is by far the one with the highest perceived level of security (displaying a small 18% of locked motorcycles); perception of security drops significantly in the north-western and south-western quadrants.

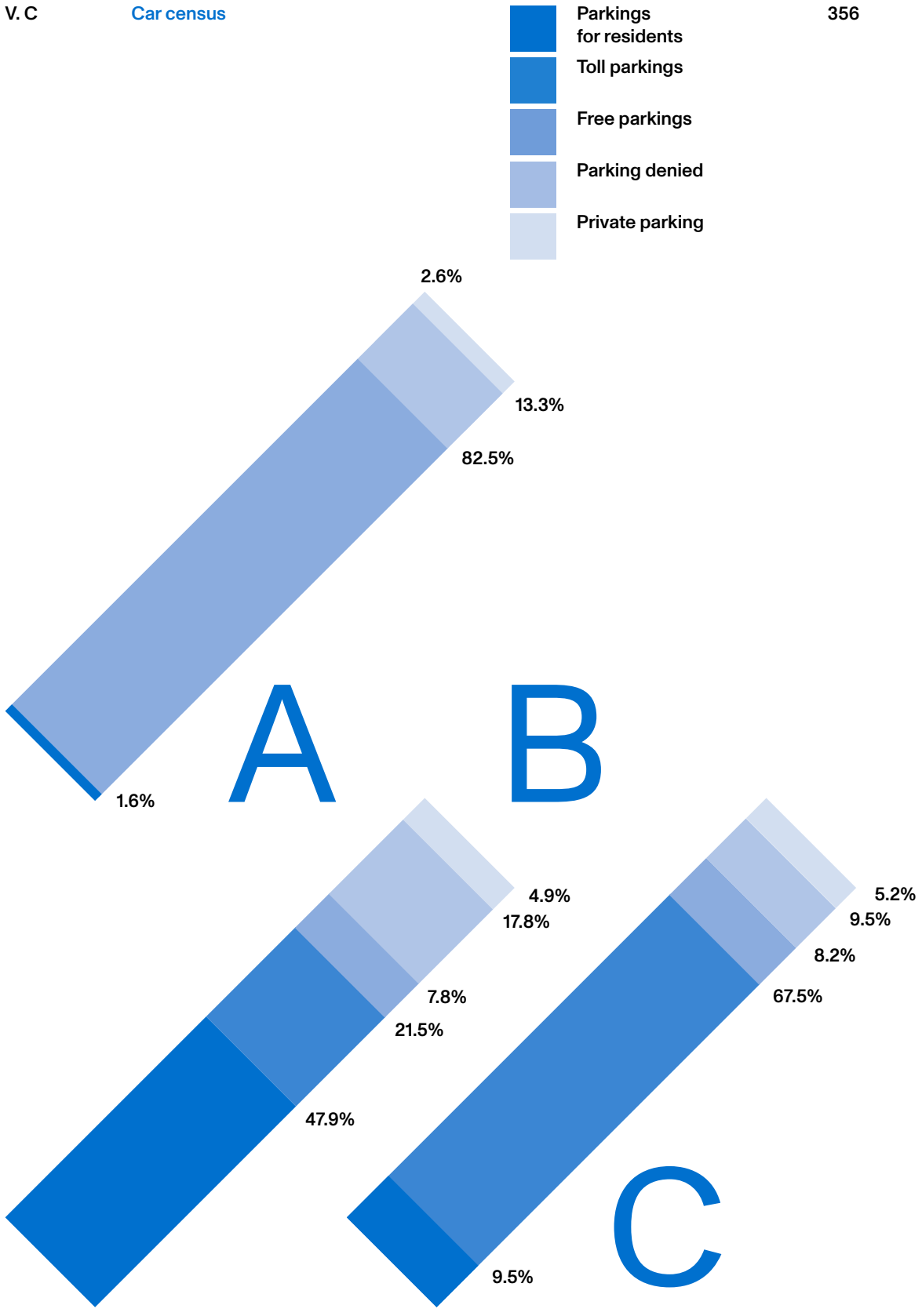
Car census

3 non-overlapping areas are identified covering all 4 quadrants. Every road and alley of each area is surveyed on foot and the first 2 letters of the plate of each parked car are registered, along with the indication on whether the vehicle is parked in private areas (supposedly for residents or workers), in yellow stripes parkings (for residents), in blue stripes parkings (both for residents and paying visitors), in white or no stripes (free for anybody) and ultimately in areas where parking is forbidden (assuming these would be short-term stationings).






A
B
C
10
41
92
194
281
343
108
4
6
32
78
120
182
87
8
21
67
121
169
269
99
Estimated value of stationed vehicles
€
€€
€€€
€€€€
€€€€€
€€€€€€€
€€€€€€€€



Because plate numbers are allocated with a sequential coding system, the analysis of the first 2 letters of car plates allows for an accurate estimation of the average age of vehicles stationed in a determined area. It is assumed here that a wider distribution of newer cars corresponds to a more wealthy area. Crossing the estimated value of stationed vehicles (derived from age) with their positioning in parking, allows for a possible reading of both habits and wealth of cluster of inhabitants of the area (residents, visitors etc.). The distribution, typology and availability of parking lots also allows to estimate their value.

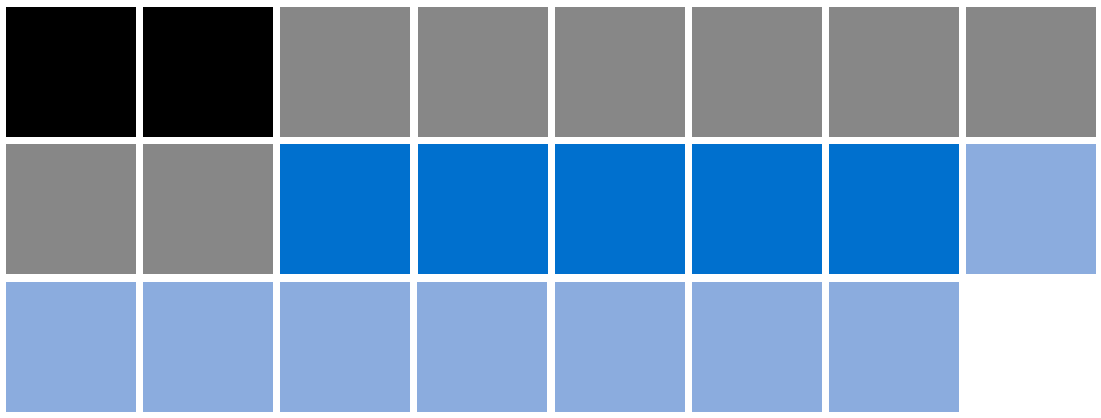
The crossing of the above data suggests a higher degree of wealth in the north-eastern quadrant, gradually decreasing in the southern quadrants, and touching its lowest in the north-western quadrant. The same goes for the estimated value of parking lots.

Shared mobility

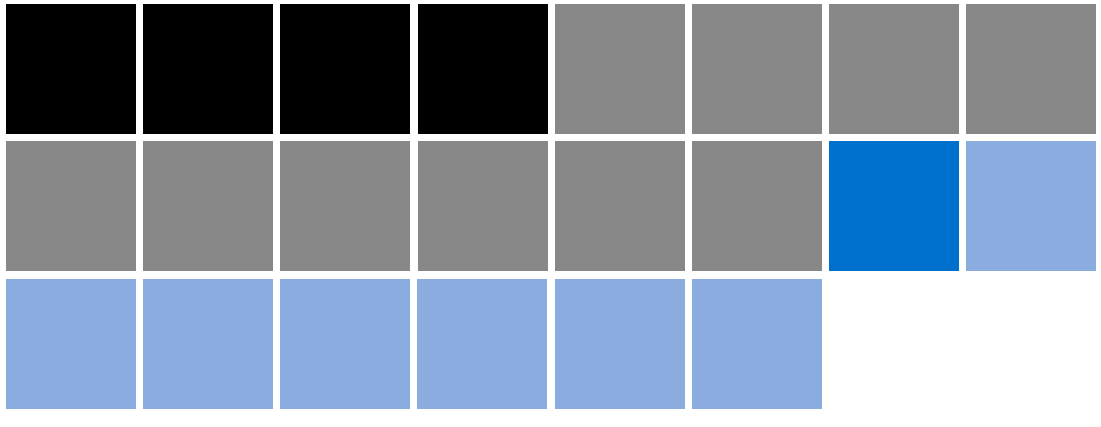
The analysis is carried out by a single researcher by collecting data from the vehicle sharing services present in the neighborhood.
The area considered for the census of available vehicles to be shared in a specific moment in time is defined by a circle centered in the new Bosconavigli building site, and with a diameter of 1.4 kilometers.

Car
E-scooter
E-motorbike
E-bike
Bike

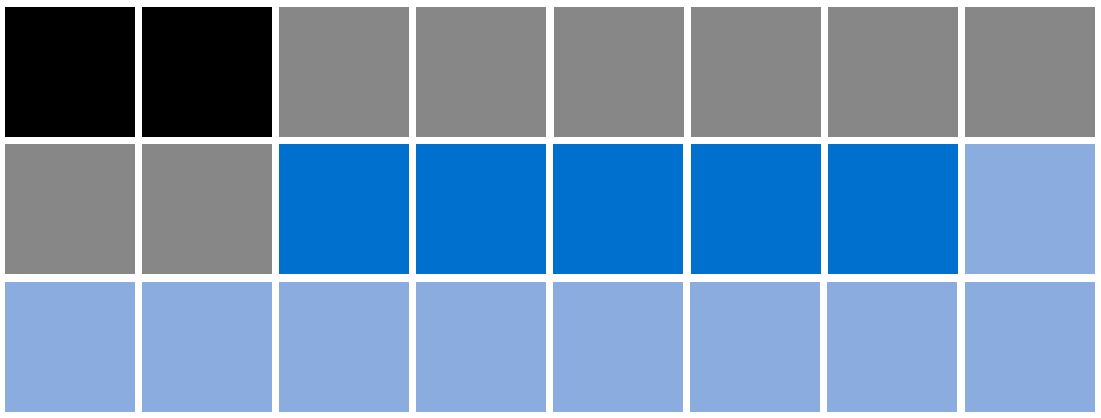
9-12 Tue

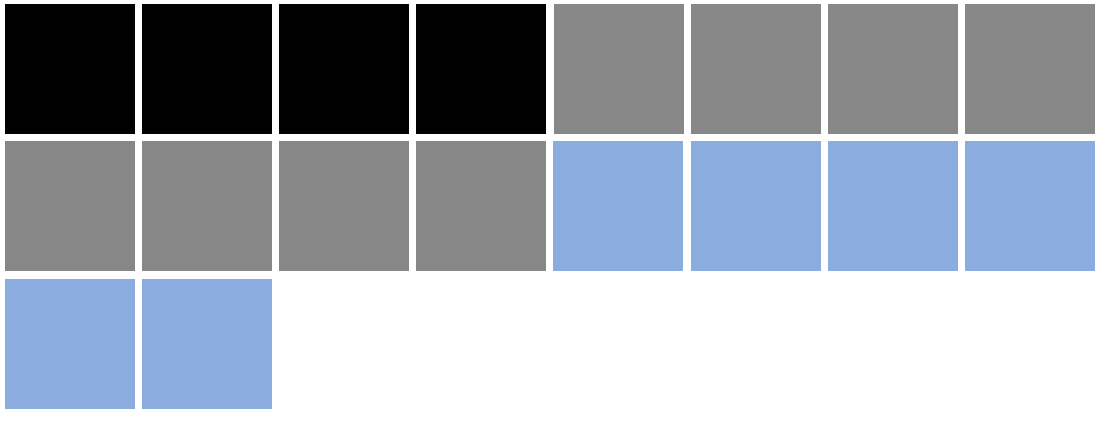


17-23

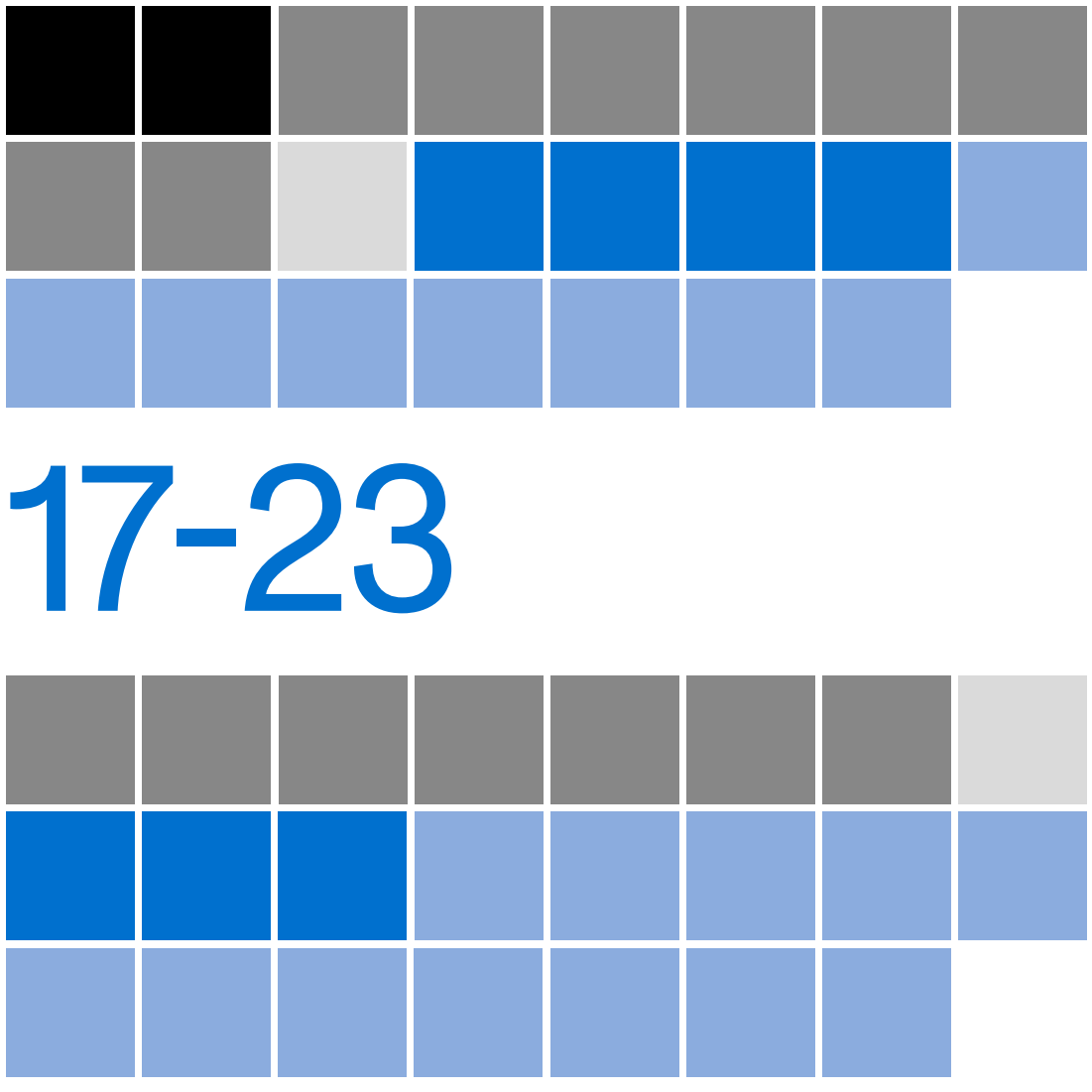


Sat





9-12 Sun



17-23

Datas on available vehicles to be shared are collected on Wednesdays, Saturdays and Sundays. The research considers 2 separate time slots: the first in the morning – from 9:00 am to 12:00 pm – the second in late afternoon/ evening – from 2:00 pm to 10:00 pm.

The mobile sharing applications taken into consideration are: Mimoto (motorbikes/ scooters), You (scooters) ShareNow (cars), Ridemovi (bicycles and electric bikes). All available vehicles are annotated.

The data analysis shows, regardless day and time, a relatively low availability of car sharing; while bicycles and e-bikes are the most commonly available for sharing, followed in availability by e-scooters.

Concept by FG_PL_ES_XH_

The project explicitly connects Bosconavigli and its services to multiple areas, thus expanding the option of a new lifestyle around the entire neighborhood.

Quipu is a conceptual system that aims at linking urban fractures of usable spaces through a network of connections. The system is based on an ancient Inca technique of binding through ropes: a tradition in which knots are assigned a specific purpose and symbolic meaning. The knot, an ancient and primitive symbol, becomes a metaphor of union with the aim of connecting separated parts.

The threads that compose it, highlight the areas of interest and mark the direction from the area to a central pivotal point, which works as origin and/or intermediate element of an articulated urban network. These threads, like a yarn, branch off and form a two-dimensional line that spreads in the public space evolving in three-dimensional shapes: elements of urban furniture that generate different functions in the neighborhood.

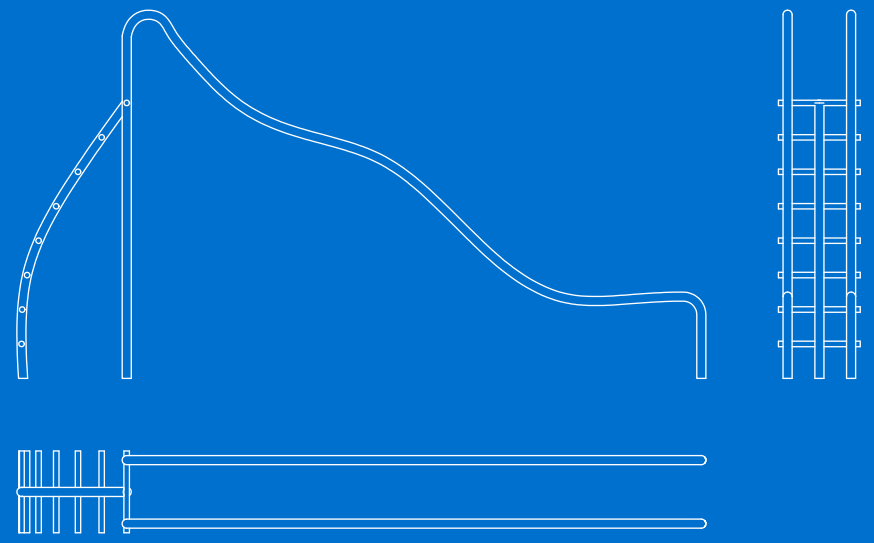
Quipu thus becomes an abstraction, a common denominator that binds fragmented areas to the pre-existing urban structure.

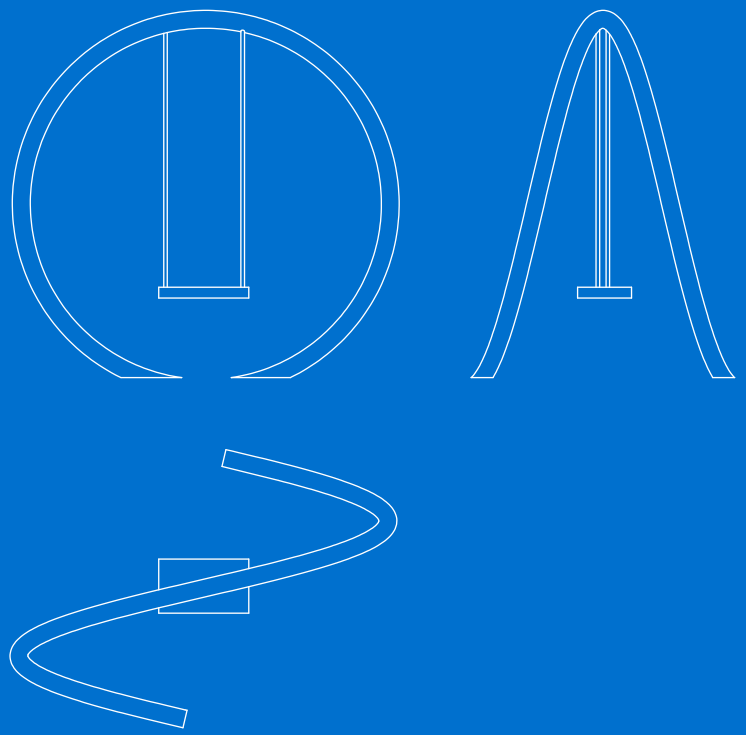
1:100 0 1 m

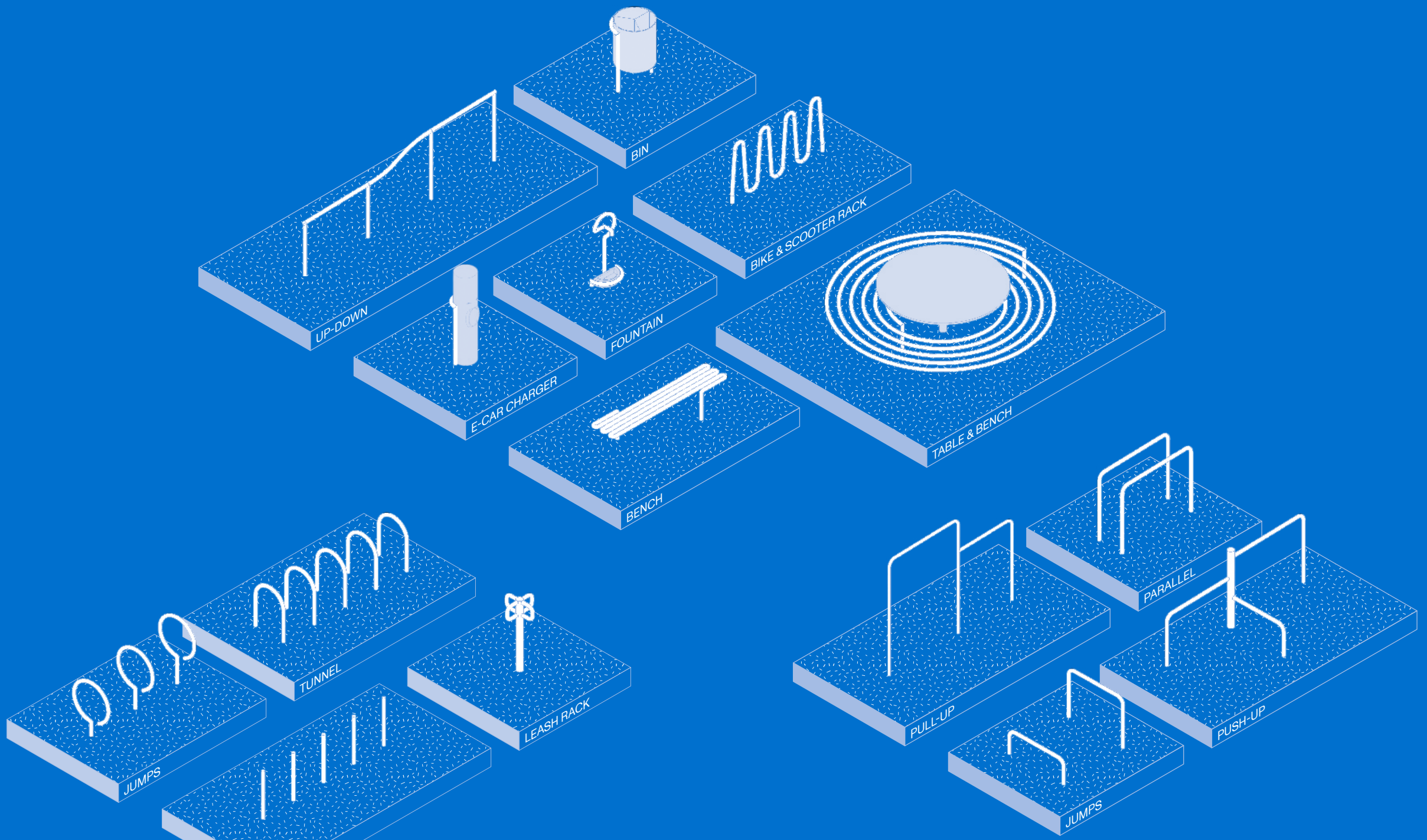
Infopoint plan

1:50 0 ——— 0,5 m

0 — 10 cm






BIN
UP-DOWN
BIKE & SCOOTER RACK
FOUNTAIN
E-CAR CHARGER
TABLE & BENCH
BENCH
TUNNEL
LEASH RACK
JUMPS
SLALOM
PARALLEL
PULL-UP
PUSH-UP
JUMPS

Cross-data analysis

As shown in other parts of this book, not only qualitative but also quantitative analysis of the area have been developed. Very different parameters representing diversified aspects of the territory have been taken into consideration. All share a common purpose: to provide an interpretation of how the territory is lived by the people frequenting it.

The interpretation of the meaning of each single parameter has been described in the previous pages; here will follow a cross-analysis of combined parameters. 5 “actions” have been identified, and to measure each of them a set of data have been chosen and used. In order to compare very different data – both from a qualitative and quantitative point of view – a qualitative numerical method of data comparison has been developed. Obviously the results are based on a scientific approach but must be read taking into consideration the limits of an analysis having first of all an educational purpose. All analysis and results are divided in the 4 quadrants around the Bosconavigli new building. It’s important to highlight the high differences within the 4 quadrants, being some of them (NW and SW) residential and other more based on working and leisure activities, some of them working-class (SW), other with higher standards of living (NE).

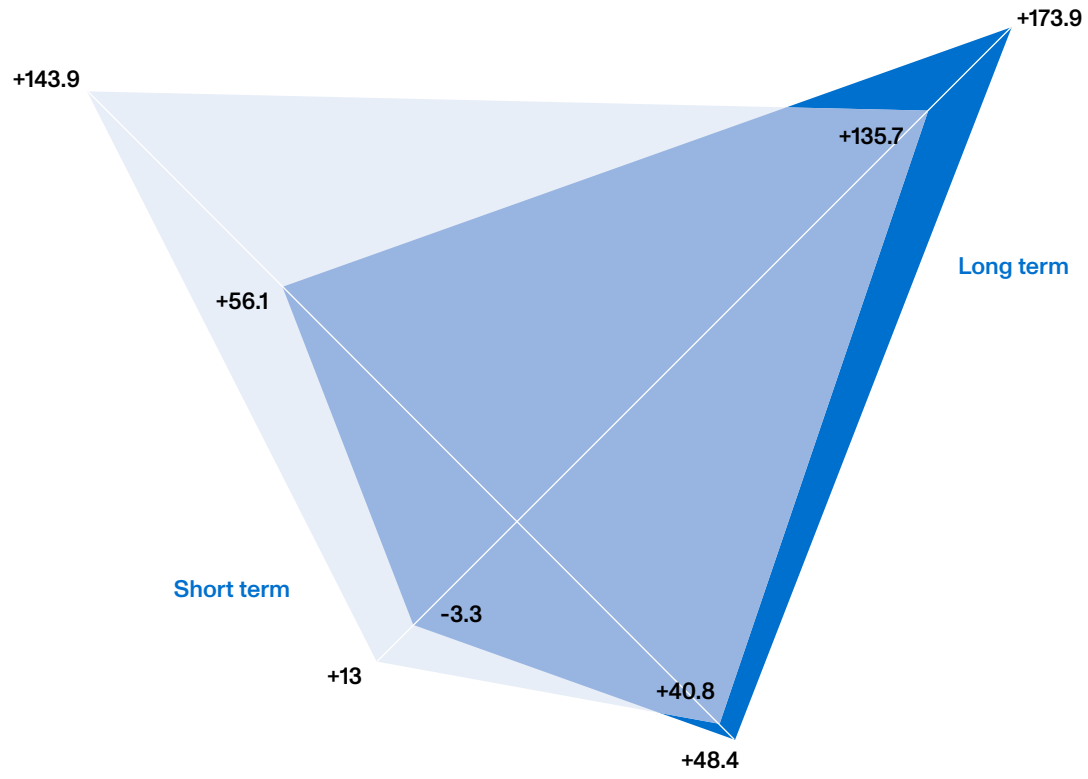
Dynamism

How dynamic is each area? Different collected data show the areas' dynamism in the short term (daily dynamism) and long term (years, decades).

For the short term we have considered the presence of pedestrians, bicycles, motorbikes, cars on blue stripes (so excluding residents), shops and restaurants, highlighting a much higher dynamism in northern quadrants (NE/NW), and a lower level in southern areas (SW/SE). For the long term the available and analyzed data have been: age of building (classified in pre-war, post-war and new), as well as the presence of real estate services. For this action, NE areas have a higher score (with a very high presence of real estate agencies) and SE quadrant a lower one (with a very low presence of new buildings).

NW

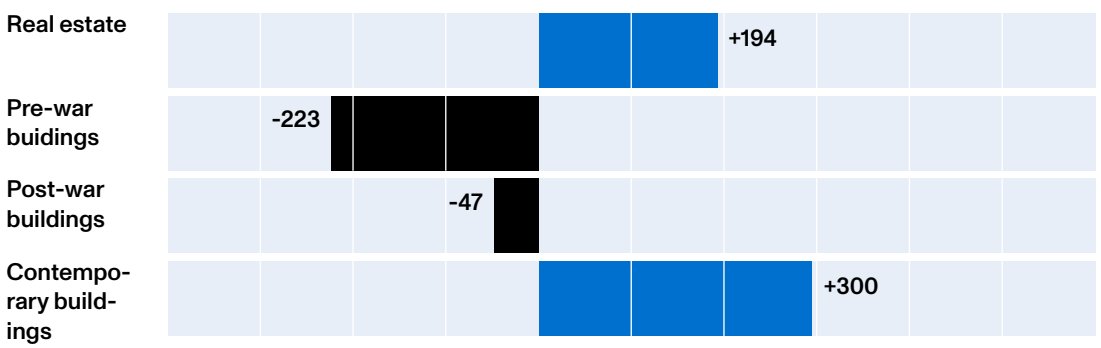
NE



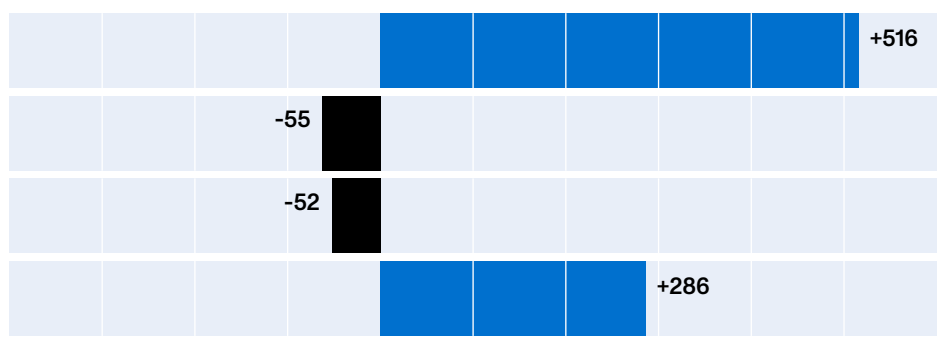
SW

SE

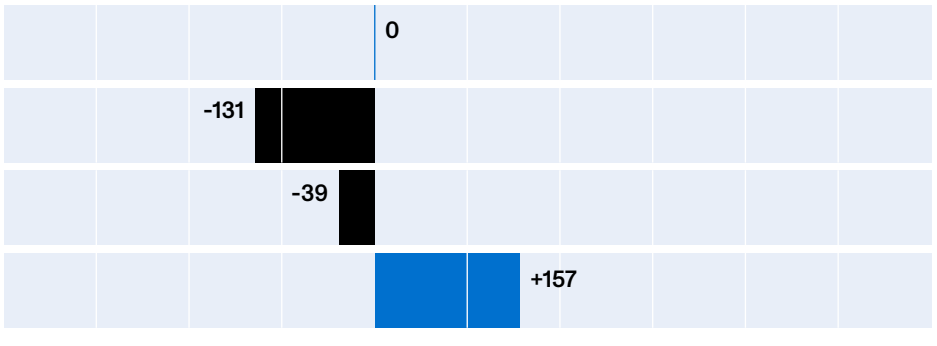
NW +56.1



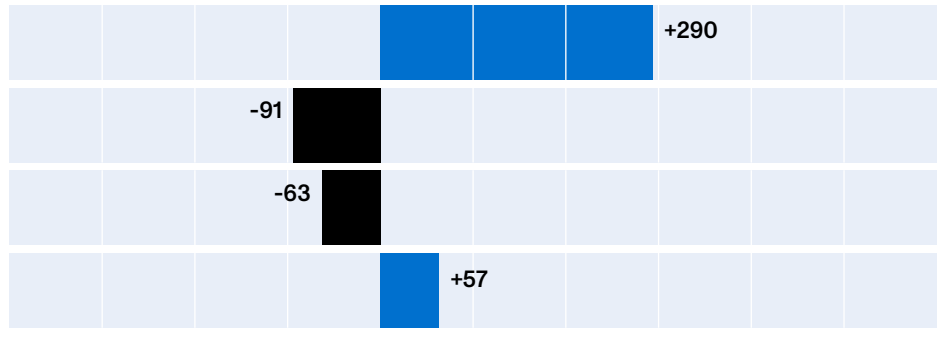
NE +173.9



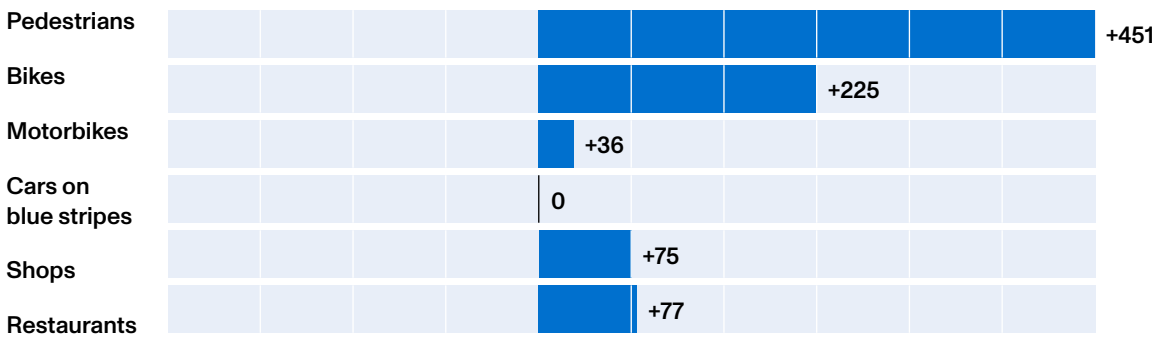
SW -3.3



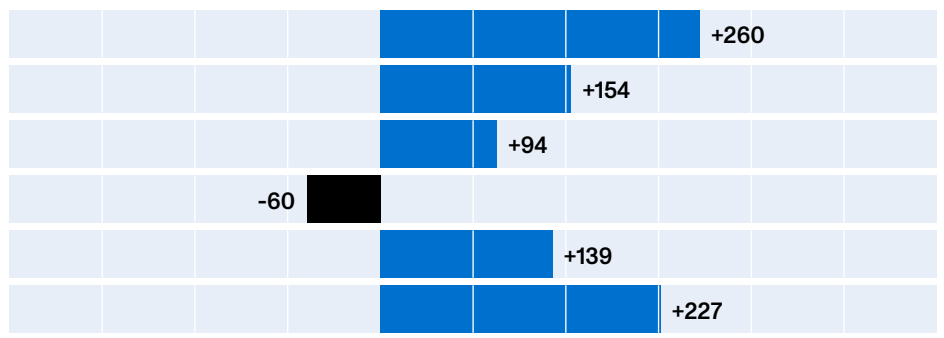
SE +48.4



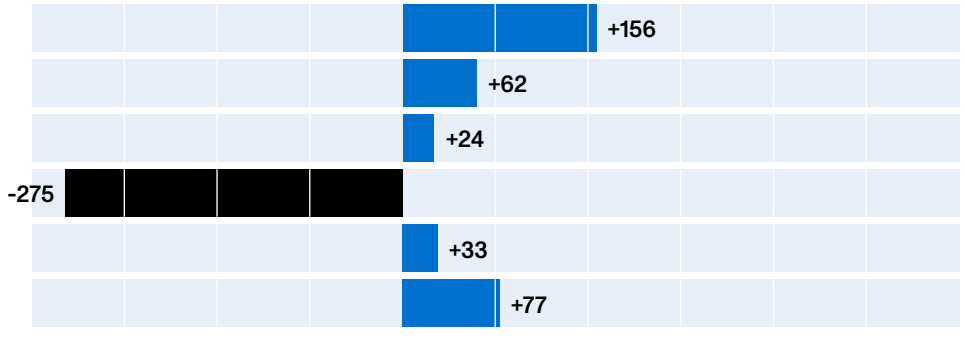
NW +143.9



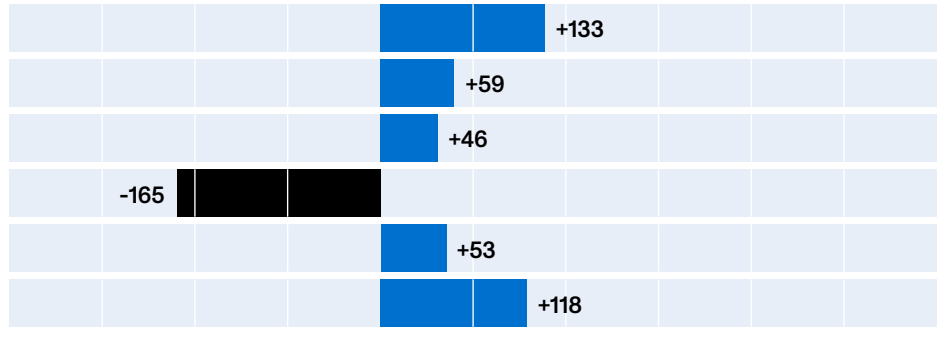
NE +135.7



SW +13



SE +40.8

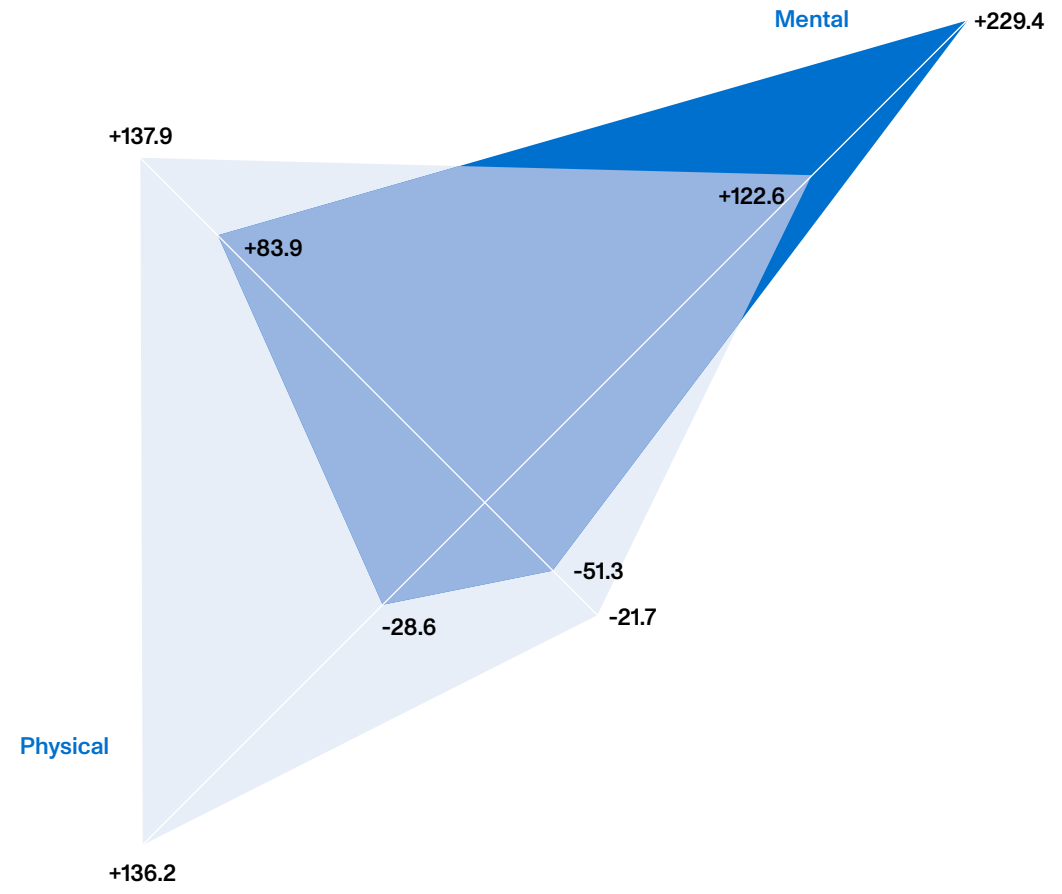


Health

Two different “actions”, both telling about how people take care of themselves. Once again direct and indirect parameters have been mixed, in order to have a look at the picture using different interpretations. Services as sport clubs, gyms, medical services, beauty centers together with a comparison between the use of cars and bikes show how people living in the NW quadrant have much more attention to physical health than all the others. The presence of educational and culture centers versus betting shops highlights the attention of NW and NE areas to mental health (NE area being helped by the presence of a number of cultural centers as Mudec and others).

NW

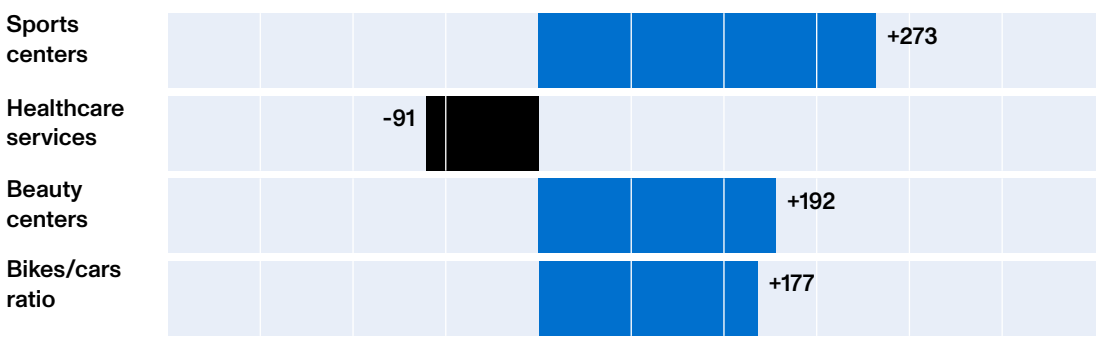
NE



SW

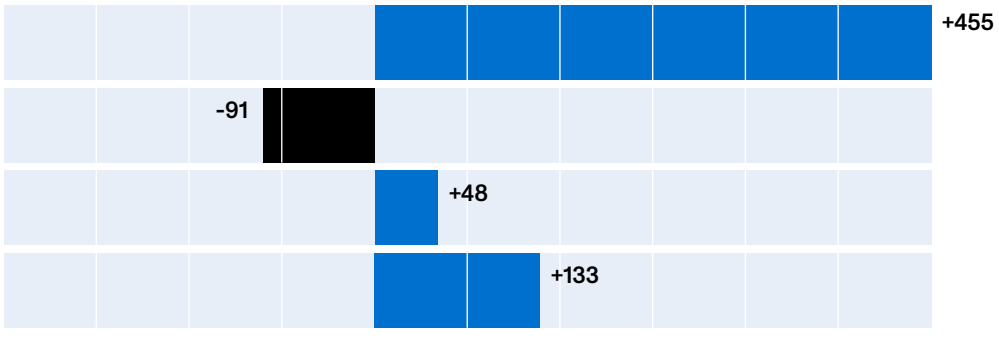
SE

NW +137.9

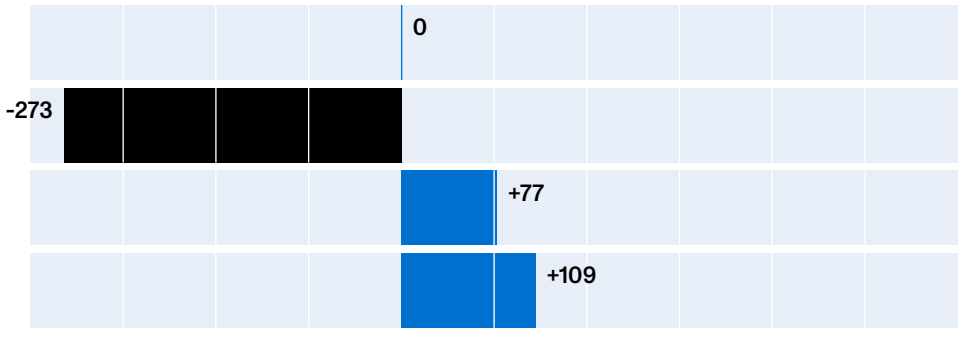


NE +122.6

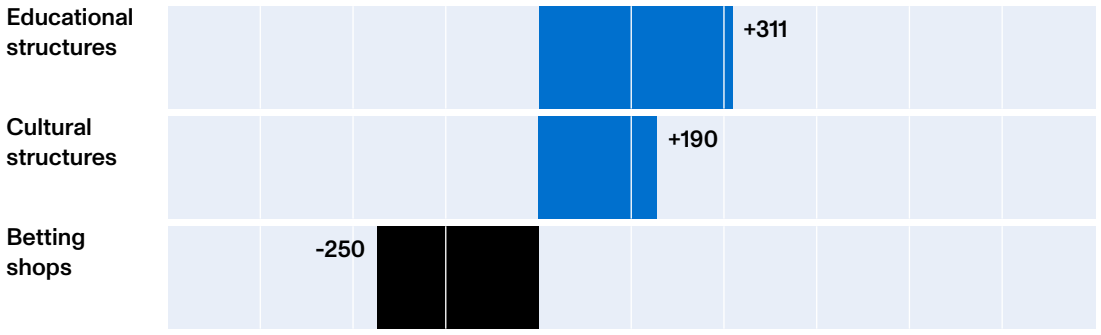
SW +136.2



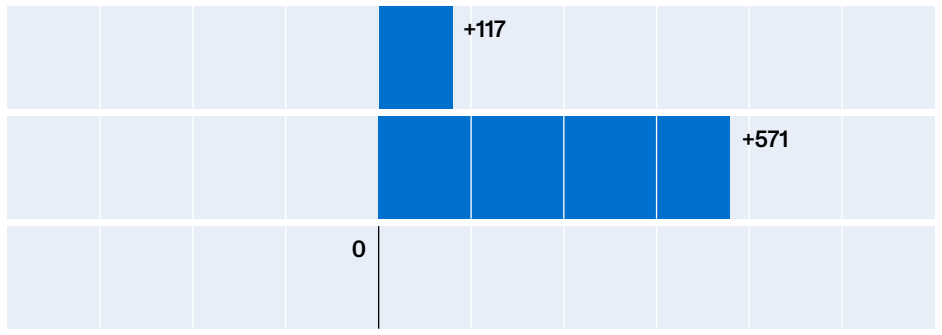
SE -21.7



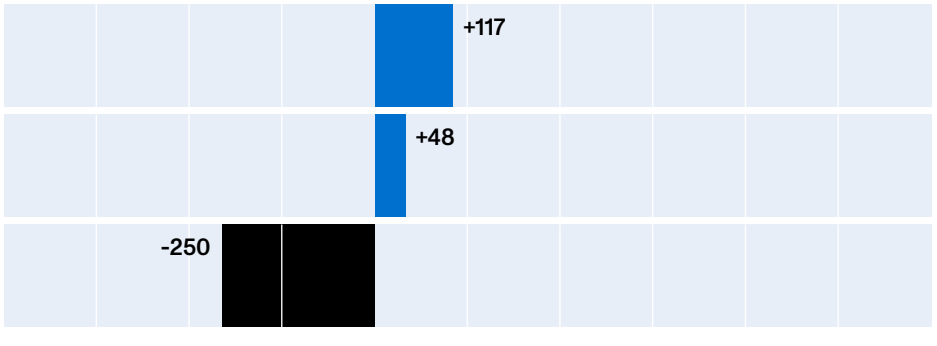
NW +83.9



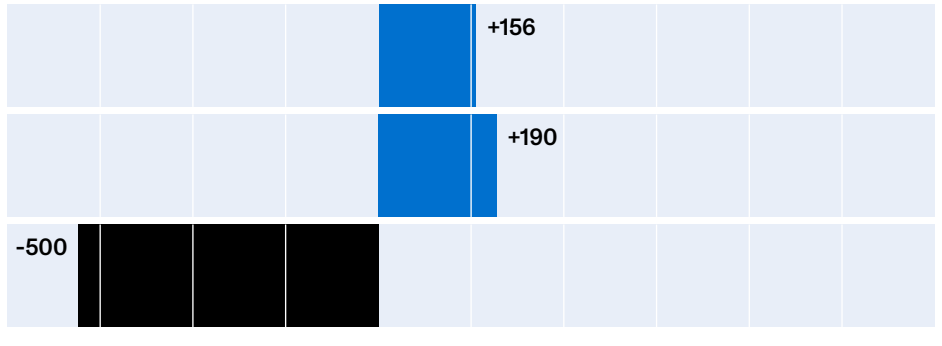
NE +229.4



SW -28.6

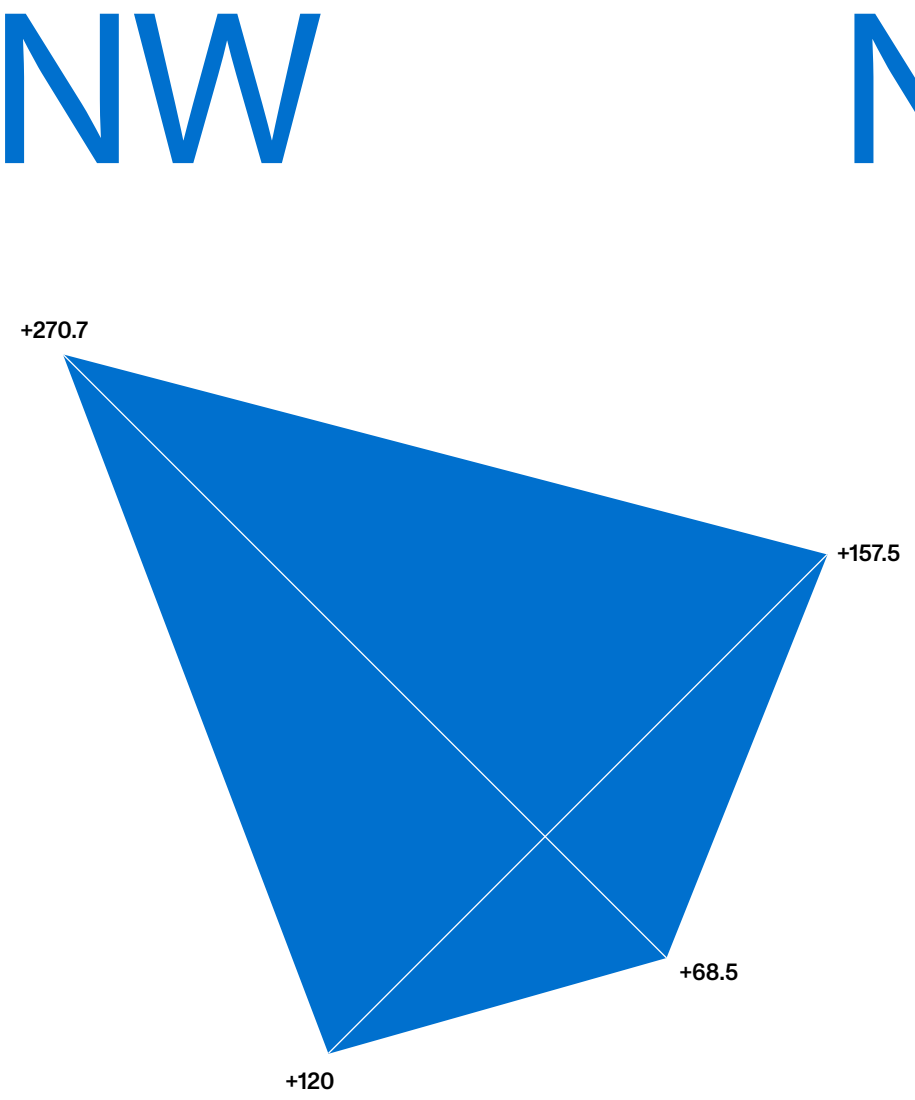


SE -51.3

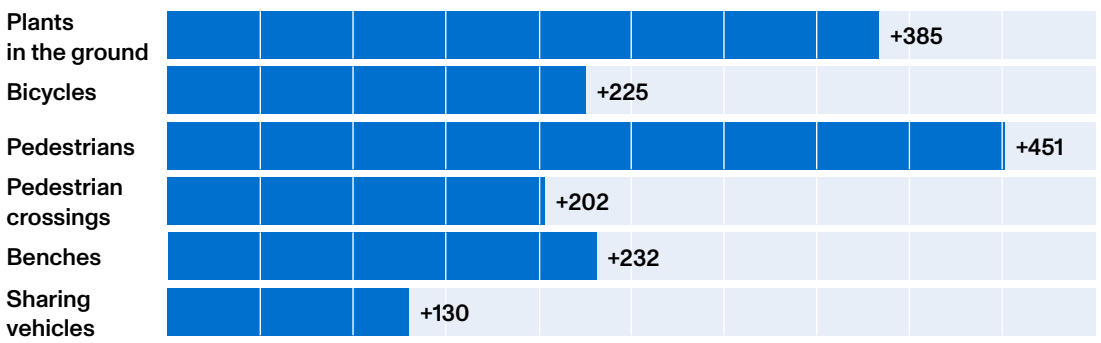


Ecological footprint

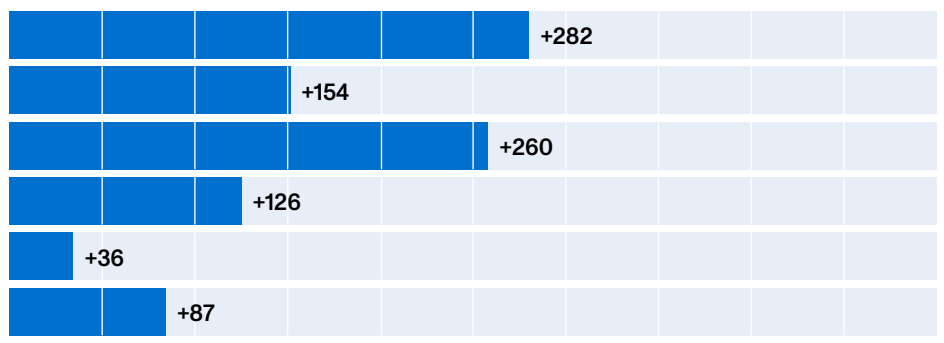
The ecological footprint of people living the area around Bosconavigli has been measured using the following data collected in the analysis phase: number of trees, moving and parked bikes, walking and sitting pedestrians, sidewalks, public benches and shared mobility presence. Unlike all other actions, the result of this analysis highlights for all parameters same conclusion: the NW quadrant is the greener area, and the SE one is the one with worst results. The very good result for the NW area is probably due to the fact that such area is historically residential, not rich nor poor, with the consequence of being lived by people taking care of the place: a lot of trees, benches, shared mobility. Another reason could be that most of the used parameters measure the residential life more than the working people's activities.



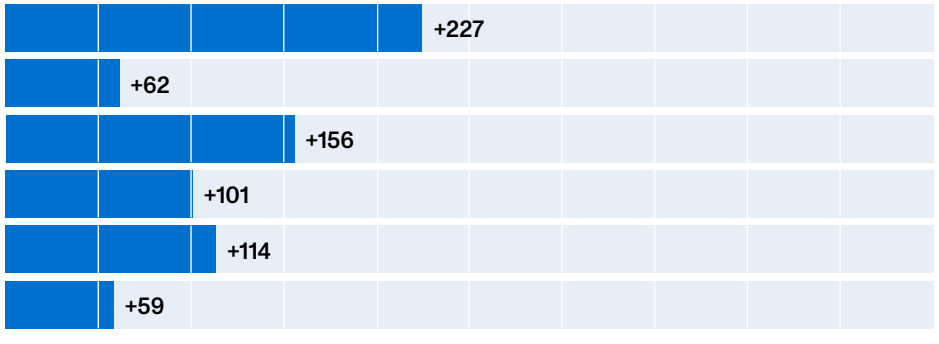
NW +270.7



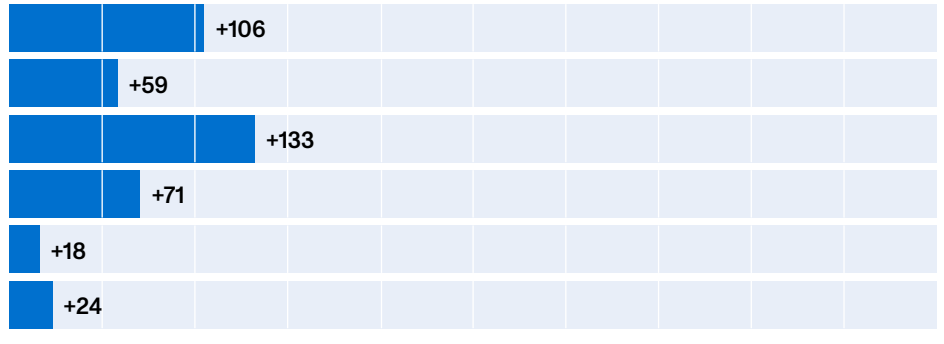
NE +157.5



SW +120



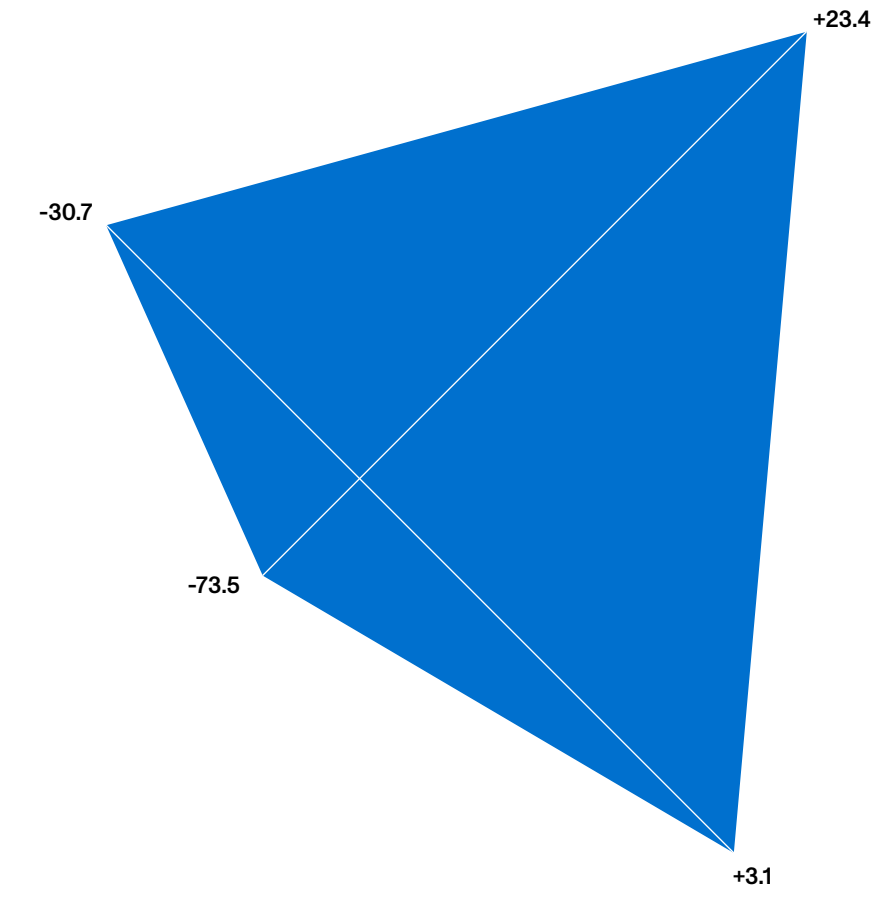
SE +68.5



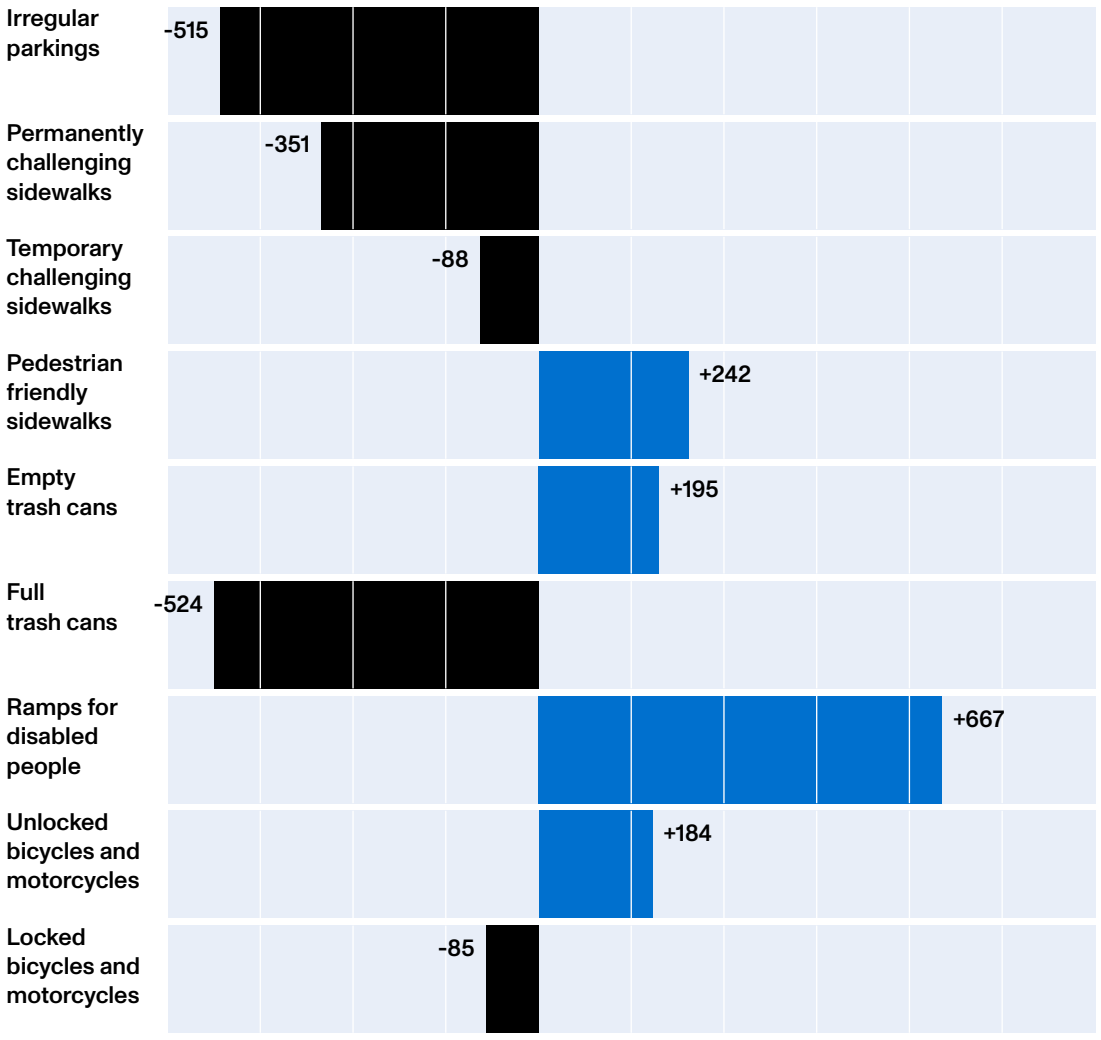
Civic sense

Presence and use of sidewalks, trash bins, car parking areas and slopes for wheelchairs: these parameters show how much city governors give people tools for a civic life, and how much – and how well – people use them.

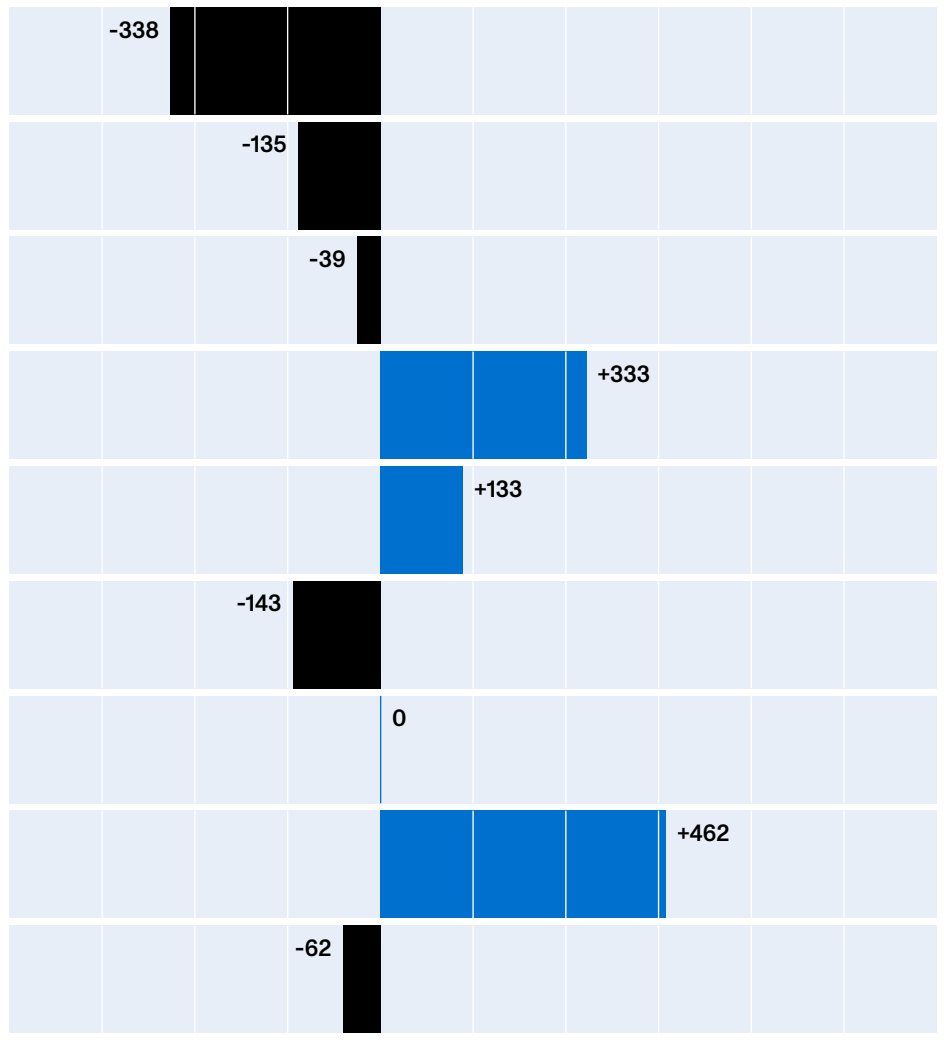
We have also used an indirect parameter, an indicator of perceived safety: how people secure motorbikes and bicycles while parking them. The good results are equally divided within quadrants NE and SE, showing a perception of lower civic sense in quadrant SW.



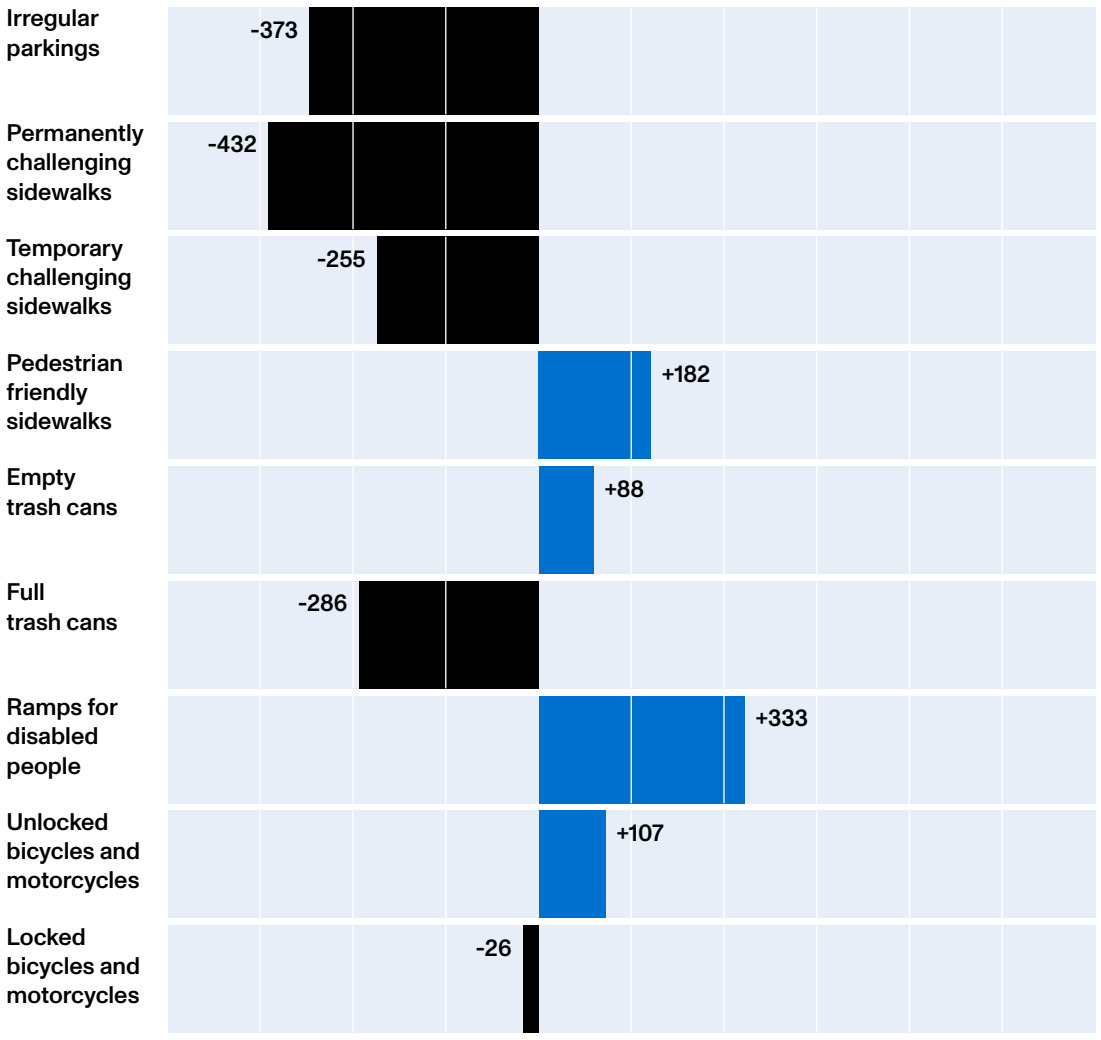
NW +30.7


Irregular parkings
-515
Permanently challenging sidewalks
-351
Temporary challenging sidewalks
-88
Pedestrian friendly sidewalks
+242
Empty trash cans
+195
Full trash cans
-524
Ramps for disabled people
+667
Unlocked bicycles and motorcycles
+184
Locked bicycles and motorcycles
-85

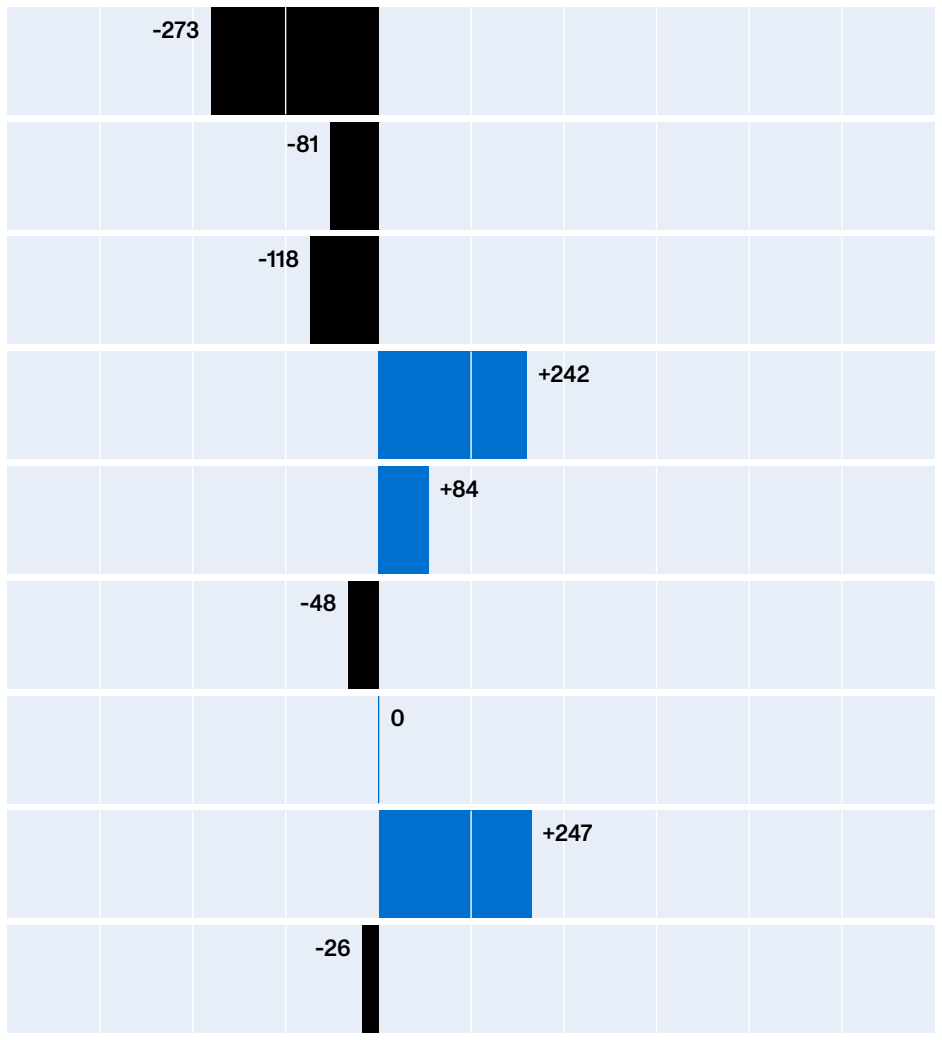
NE +23.4


-338
-135
-39
+333
+133
-143
0
+462
-62

SW -73.5


Irregular parkings
-373
Permanently challenging sidewalks
-432
Temporary challenging sidewalks
-255
Pedestrian friendly sidewalks
+182
Empty trash cans
+88
Full trash cans
-286
Ramps for disabled people
+333
Unlocked bicycles and motorcycles
+107
Locked bicycles and motorcycles
-26

SE +3.1


-273
-81
-118
+242
+84
-48
0
+247
-26

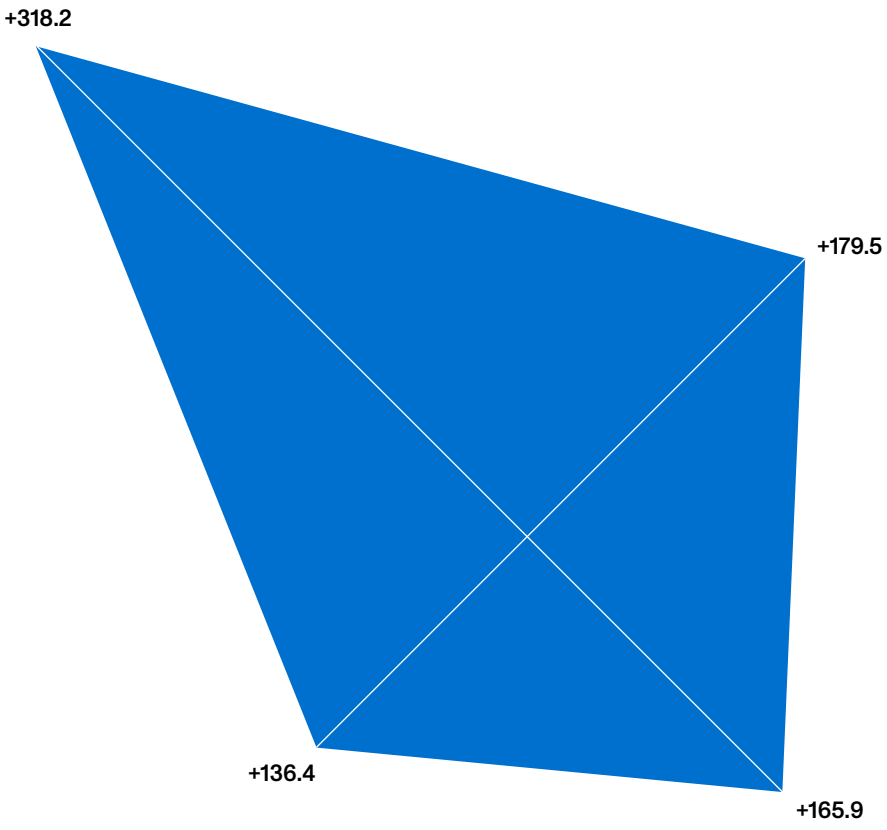
Hedonism

A mix of data based on direct and indirect parameters have been used also for this action. The idea is to analyze the perception of hedonism by the residents. Services as beauty centers and fashion shops have been considered, such as the presence of new cars and sophisticated bicycles.

It's interesting to discover that the higher and lower parameters both come from the two most residential areas, resulting in the SW quadrant (working-class, long-date residential area) as the one with lower results and the NW quadrant (younger and near to areas as Via Tortona and Via Savona) as the "hedonism winner".

NW

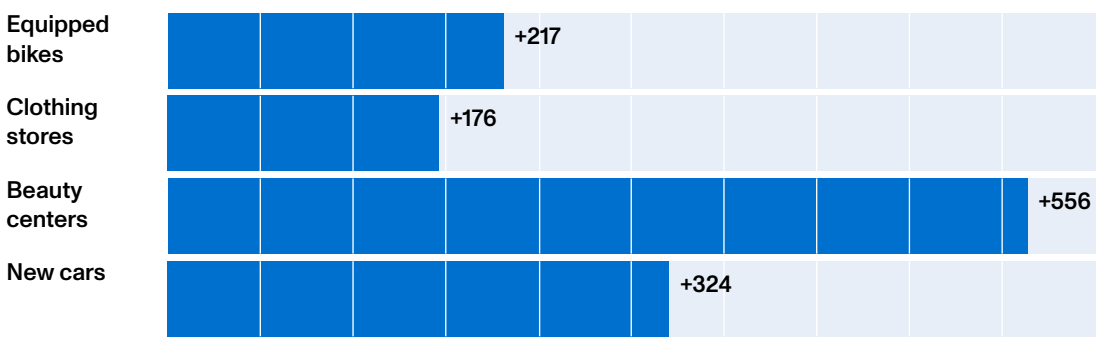
NE



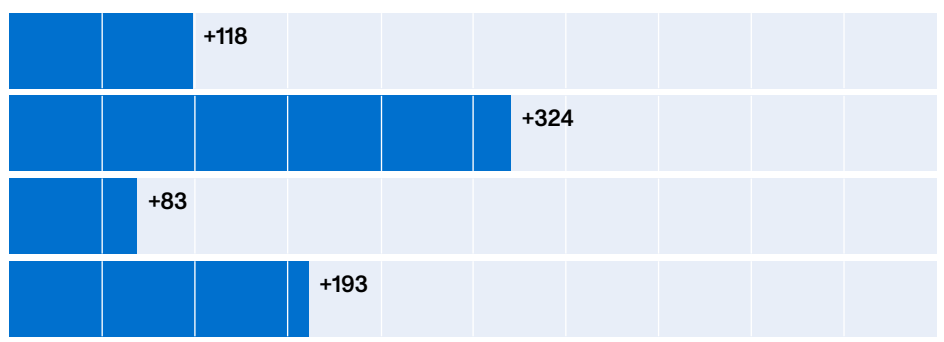
SW

SE

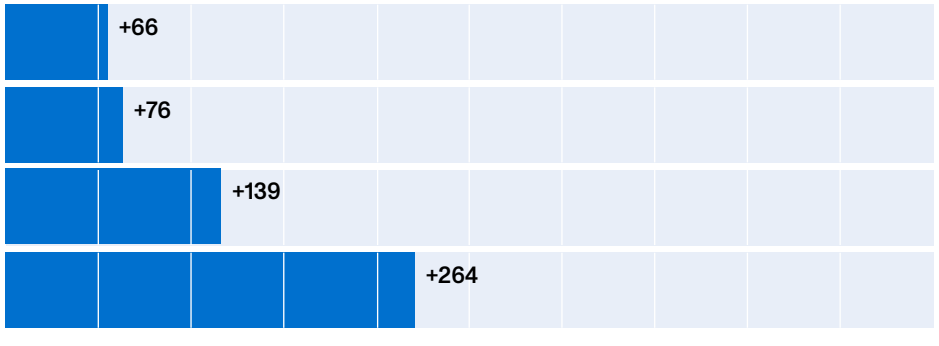
NW +318.2



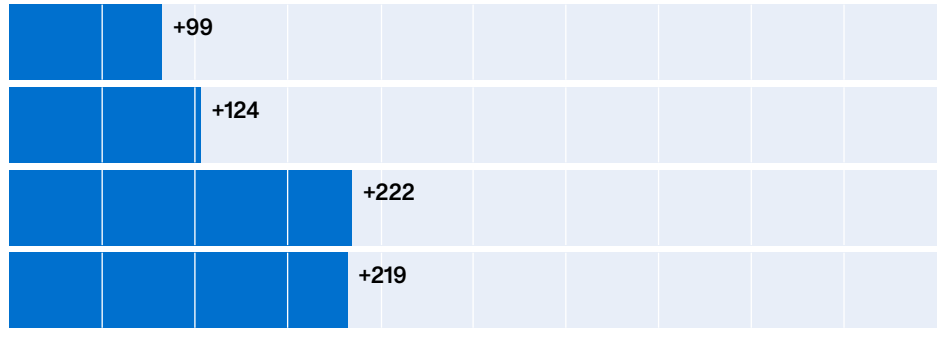
NE +179.5



SW +136.4

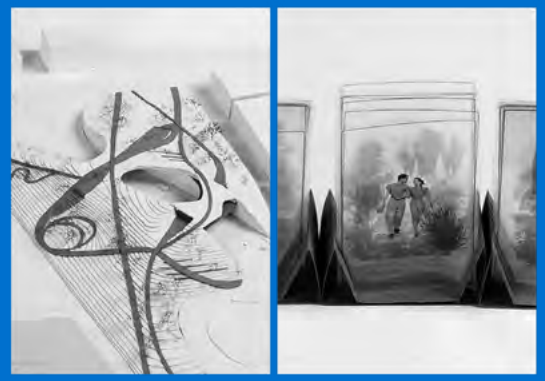


SE +165.9



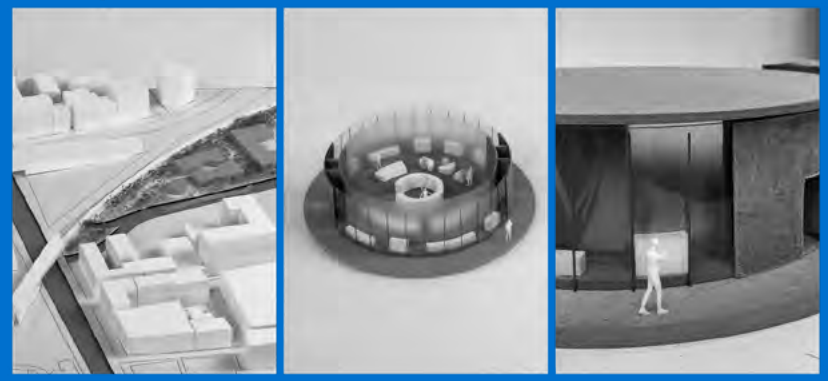
Models

CP1 – Urban Corridors IGG_LG_SZ_CHH_



CP2 – T.O.H.M. LP_VT_FV_

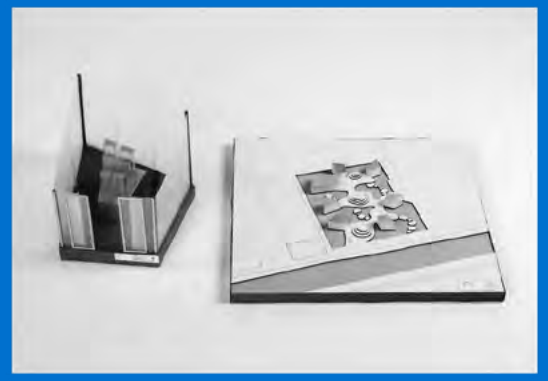
CP3 – Uptitude FC_MT_AMC_LB_



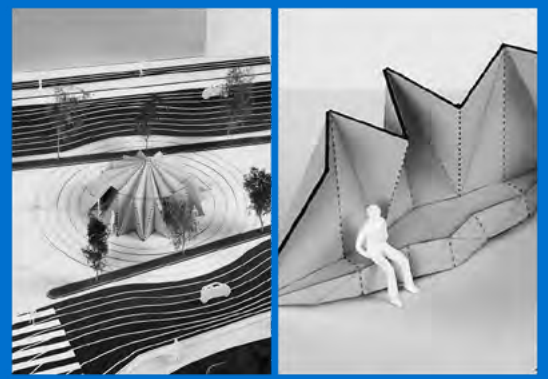
CP4 – Talea MG_EM_MP_

CP5 – SML OC_MS_SM_MB_

CP6 – Interscambio GB_IDG_LDM_

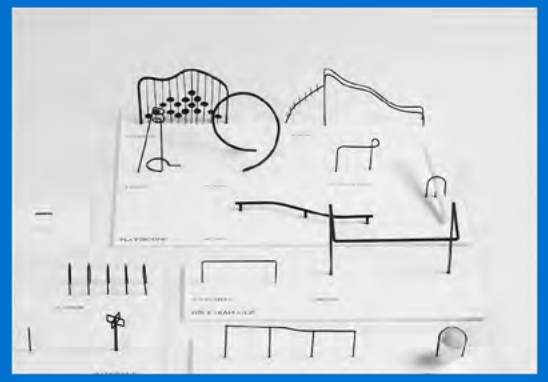


CP7 – Seijaku AP_PA_MC_



CP8 – POV GT_NP_FF_

CP9 – Quipu FG_PL_ES_XH_



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