



SAPIENZA
UNIVERSITÀ DI ROMA

Master of Science in
PRODUCT DESIGN
a.a. 2022-2023

Final Work

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Emanuele Di Salvo - Namiko

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NAMIKO

Parametric configuration system of furniture for work environments.



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PART ONE

**Design scenario
workplaces usability**

Co-working areas are spaces where different types of workers or students can find themselves to work in an environment equipped with internet connection, workstations and electricity, thus allowing to carry out most of the work activities from the office.

In fact, there are different types of co-working areas sometimes included in environments with other functions, in which case it becomes referring to them usually as common areas.

Co-working spaces typically provide a wide range of services and infrastructure, including desks, chairs, high-speed internet connection, printers, scanners, and secretarial services. Additionally, many co-working spaces also offer meeting rooms and event spaces, allowing members to organize meetings, workshops, and presentations.

But co-working areas are not just a place to work. These spaces offer a community of like-minded professionals who can share knowledge, ideas, contacts, and resources. Co-working members can meet and connect with other professionals, create collaborations, and discover job and professional development opportunities.

Moreover, co-working spaces are also a sustainable alternative to the traditional office, as they reduce the need for dedicated office space and therefore rental costs and operating expenses. Additionally, co-working can also offer a more cost-effective alternative for companies looking to expand or open new offices in other cities or countries.

In summary, co-working areas and workspaces are a flexible and affordable solution for professionals and entrepreneurs seeking a collaborative and stimulating work environment, as well as a community of professionals with whom to share ideas and resources.

Co-working areas are expanding globally to cater for all types of workers. The movement has expanded and amplified also due to the change that civilization has undergone following the pandemic. By now we see the birth of co-working areas in every area of our country and the whole world, even in areas where they did not seem to be necessary by now they are seen to arise going to occupy any type of space, from new buildings to redeveloped historic buildings and even in home environments. One of the proponents of this change in Italy is Massimo Carraro's Rete Cowo® network, which supports and accompanies new entrepreneurs towards the opening of a co-working area.

“The pandemic has made us rediscover the neighborhoods we live in and the potential of working close to home. This has opened a stimulating debate on the polycentric city and on the potential of policies for the 15-minute city and its variants. This dimension has always been at the heart of the Cowo® Network proposal.

Massimo Carraro

As already mentioned, co-working spaces are work environments shared by professionals from different areas and sectors, who decide to share the same work space to reduce costs and increase their productivity. These spaces can be organized in different ways, but generally include a series of workstations equipped with desks, chairs, electrical outlets and high-speed internet access.

It should be added that co-working spaces can be structured in different ways depending on the needs of the users. In some cases, the layout includes an open area where users can choose their workstation, while in other cases, workstations are assigned to users based on their specific needs.

Additionally, many co-working spaces also offer common spaces for socializing and collaborating, such as lounge areas, meeting rooms, and event spaces. These common spaces are generally designed to foster collaboration and the exchange of ideas among users, thus promoting the emergence of new synergies and projects.

As for the way users work, it can vary according to their needs and the nature of the work they perform. Some users choose to work alone, focused on their business, while others prefer to work in teams, collaborating with other professionals to develop new projects and ideas.

Their structure varies according to the needs of the users, but they all offer a shared work environment, designed to encourage professional growth and the sharing of knowledge and skills.

1 *“The pandemic has made us rediscover the neighborhoods we live in and the potential of working close to home. This has opened a stimulating debate on the polycentric city and on the potential of policies for the 15-minute city and its variants. This dimension has always been at the heart of the Cowo® Network proposal.*

Massimo Carraro is CEO and coordinator of the Cowo network and is still personally involved in supporting the development of new areas throughout Italy.

The co-working areas now establish a format that is also re-proposed in the work areas within the offices of companies, alongside the concept of a shared work area, therefore based on an open space and no longer on a structure of separate offices that allow privacy, but preclude the possibility of sharing the work process and therefore reduce the production process, having to communicate at a later time every progress made by the individual worker. Obviously productivity in this type of environment changes according to the user, so it is important to study various aspects of co-working spaces to define what are the criteria that establish what a good shared workspace is.

01.1 WHY CHOOSE A CO-WORKING AREA?

Co-working spaces are becoming increasingly popular among businesses and individuals because they offer numerous advantages both economically and culturally.

From an economic standpoint, co-working allows for a reduction in workspace management costs. Unlike a traditional office, where it is necessary to rent or purchase an entire space, in co-working, spaces are shared among several professionals or companies, thereby reducing rental costs, utilities, and other expenses. In addition, co-working also offers the opportunity to use shared services and equipment, such as printers, high-speed internet connectivity, meeting rooms, and more, with significant savings in time and money.

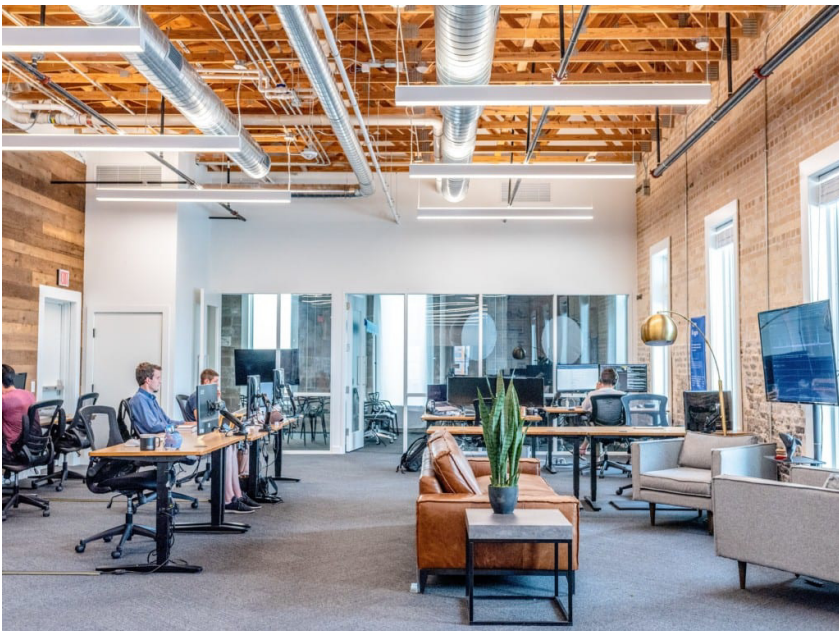
From a cultural standpoint, co-working offers a stimulating and collaborative environment that fosters creativity and innovation. In a co-working environment, it is possible to meet and work with professionals from different areas, creating synergies and collaboration opportunities. In addition, co-working spaces are often located in central areas of the city, thus offering greater visibility to the activities that operate there.

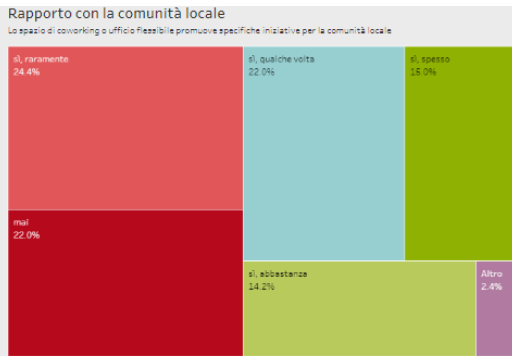
Furthermore, co-working can offer an additional prestige to professionals and companies that work in it. Co-working spaces are often well-furnished and well-maintained, offering a professional and pleasant working environment. This can have a positive impact on the business image and the perception of clients and collaborators.

Finally, co-working can also improve the productivity of workers. Co-working environments offer a flexible and comfortable work environment that can help reduce stress and increase motivation. Additionally, co-working spaces are often equipped with cutting-edge technology, such as videoconferencing equipment, which can improve communication and collaboration among team members.

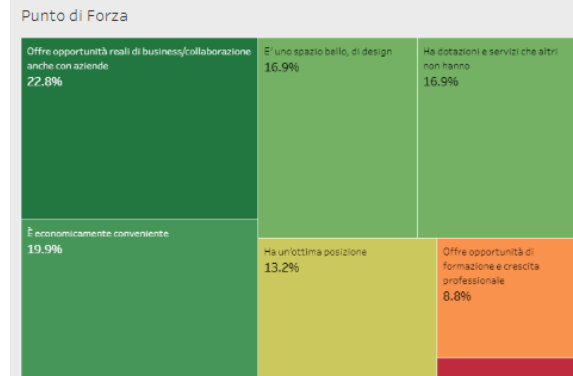
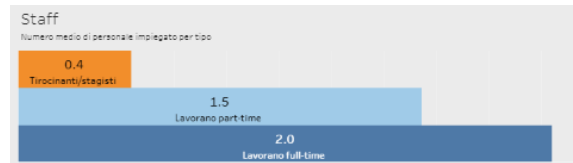
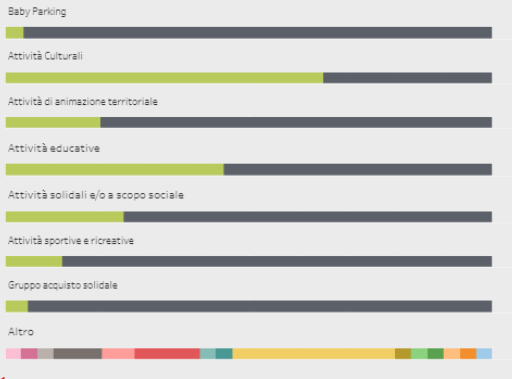
In summary, co-working spaces offer many opportunities both economically and culturally. They reduce costs, offer a stimulating and collaborative environment, improve the business image, and increase worker productivity. All of this makes it increasingly common for businesses and professionals to choose co-working as a solution for their workspace needs.

These aspects, both economic and cultural, are perceived more by the two integral parts of the co-working spaces. As far as the economic side is concerned, it is the manager's job to take care of the expenses and understand which services the co-working area can afford based on the income and services so-called necessary for carrying out a working day, which can be enclosed in: a workstation comfortable, an internet connection and a connection to electricity. A series of services are then added by imposing a higher cost and a series of secondary services which aim to improve the user experience. In fact, from a cultural point of view, the aspects we have mentioned above have a greater impact on the end user. be it a private individual or part of a company, providing a measurable output.

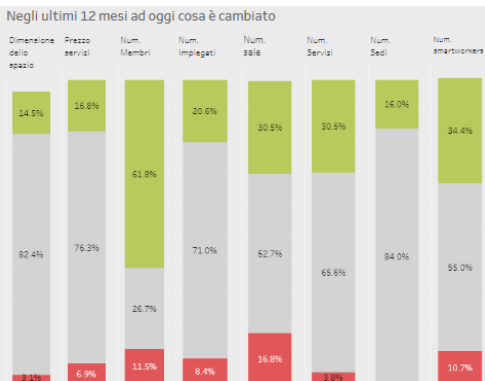




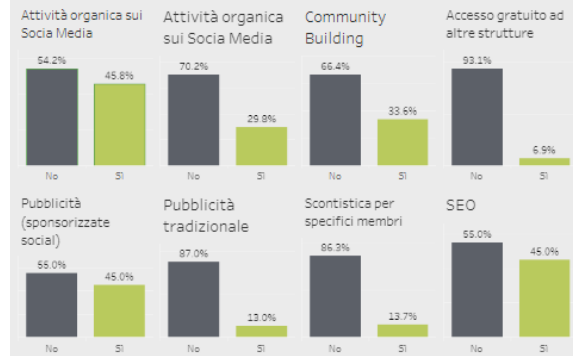
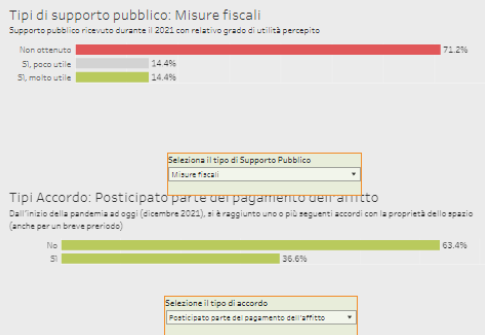
Iniziative promosse dagli spazi di coworking e uffici flessibili



1



Strumenti e Policy di mitigazione della crisi



2

3

1. Analysis of the 2021 territory of the Italian coworking survey.
2. Performance analysis 2021 of Italian coworking survey.
3. Italian coworking survey 2021 resilience analysis

2

01.2 COWORKING RESEARCHERS

The co-working space has become increasingly popular in recent years, due to its ability to provide a shared workspace and a community of professionals who support each other. However, the end user experience and the manager experience can be very different. While end users appreciate the flexibility and convenience of co-working, managers must contend with facility management, maintenance, security, event planning, and more.

To better understand this difference, it is possible to use the data collected through the Italian Co-working Survey. This study was conducted to evaluate the performance of co-working spaces in Italy, considering different evaluation criteria such as profitability, characteristics, performance, resilience, future and territory.

Data collection was done through an online questionnaire that was sent to co-working managers across the country. The questionnaire was designed to obtain detailed information on the activities carried out by the co-workings, their performance and their future plans.

The average results of the study show that co-working spaces in Italy are generally profitable and characterized by a good performance, with a strong presence of startups and technology professionals. However, there is a great variety between different co-working spaces, with some standing out for their resilience and others for their ability to develop relationships with local communities.

Overall, the Italian Co-working Survey provides a valuable source of information for those interested in better understanding the co-working industry in Italy. Through the collection of detailed data and the evaluation of different evaluation criteria, the survey helps to provide a comprehensive overview of the performance of co-working spaces, enabling managers to make informed decisions and improve their operations.

The research was carried out starting from 2018 and since then it has been updated every year, mainly providing data regarding the efficiency of these co-working spaces, but also and above all the type of user who frequents them.

The data taken into consideration are from 2021

"After the Covid19 emergency, on which we focused in the previous 2020 survey, we have resumed collecting data, statistics and reflections on the future of coworking and flexible offices in our country.

The Italian Coworking Survey 2021 (ICSurvey 2021) continues its diachronic survey on the state of coworking in Italy and with it the whole universe of shared workspaces, ranging from flexible offices, to business centres, to co-living, to maker places, to shared offices, in general to all hybrid workspaces.

How has the hard-hit coworking and flexible office industry reacted in the last 18 months? What changes have occurred? What prospects are emerging? What measures have been taken?

These are the main questions we tried to answer with our questionnaire. In the spotlight as the de facto protagonists of Smartworking, coworkings actually had to survive first and at the same time develop new strategies to stay on the market and anticipate new needs.

Could coworking and flexible workspaces finally be the enabling sector for the change of the working paradigm in Italy?

More than on other occasions, we have collected the solicitations of operators and researchers. We have formalized an important partnership with the Politecnico di Milano, Department of Architecture and Urban Studies (DASTU), which strengthens and gives prestige to our Coworking Observatory. We are also working with them within the framework of international research projects such as the Cost Action 18214 (NEW.Sp.), "The geography of New Working Spaces and impact on the periphery" - of which this Italian is the pilot survey of a survey on a global scale.

Finally, we have gathered the support of the new Federation of Flexible Spaces, Offices and Coworking, which is pleased to sponsor this edition of the ICSurvey.

The information gathering campaign started on 26 October and ended on 31 December 2021. 136 administrators and CEOs of coworking, flexible offices and other shared workspaces answered our online questionnaire.

The sample of respondents was representative of the universe of structures known by Italian Coworking which is the most complete directory of shared workspaces in Italy.

² From the homepage of the Italian Co-working Survey website, the definition of the aspects that guided the 2021 annual survey, taking into account the aspects that further changed our perception of work.

01.3 SCENARIO ANALYSIS

By analyzing the co-working areas more specifically, the necessary step to take is to understand their structure. In fact, the co-working areas are either private or belong to an institution or a network, this assumes their "disposition". Usually the areas belonging to entities or networks of spaces all follow the same provisions, but mainly follow the use of the same type of furniture. This helps the user in terms of association for the areas that are part of the same network and for a sense of comfort given by an environment that he already knows, the network of spaces and the owners who buy a wholesale quantity also gain from this methodology greater than furniture by reducing general costs and being able to distribute the product in several areas. Co-working areas that are not part of an organization consequently find themselves dealing with this management independently, based on pre-set models that are globally recognized as effective, such as the use of an open space for area dedicated to the hot desks and the grouping of the service area in the same point, i.e. the refreshment area and the toilet facilities. One problem that autonomous co-working areas face is that of adaptation. As previously explained, co-working areas are expanding and being places that arise mainly in the city center to facilitate the mobility of users, the buildings in which they arise are not always born or designed for a similar activity, but on the contrary they are often buildings born with other functions, mainly belonging to the industrial era, which are redeveloped and adapted to the new function, this contemplates a particular architecture which without adequate knowledge is complex to organize, especially for the owners of autonomous areas. In general, however, each co-working area is based on the addition of two types of workstation distributed over the surface of the building.

Co-working areas are usually internally structured in two types of environments:

- Meeting rooms
- Hot Desks

01.4 MEETINGS ROOMS

Meeting rooms are workstations designed for teams. In fact, they are not only used in situations where a video conference is being organised, but also to organize courses, formal and informal meetings and team work. Being private areas, i.e. physically separated from the rest of the space, it is possible to have greater privacy and more space available to the team, however renouncing in this way what is one of the key points of co-working as we have seen previously, i.e. the sharing of experiences and ideas among the different users of the area. Due to the space needed for a team to be able to work together, it is still the only solution. The other type of workstation, the Hot desks that we will see in the next paragraph, allow shared work up to a maximum of 2 users per workstation, being workstations based on real desks, which therefore do not offer large spaces.

On average, a co-working area of 1000 square meters has about 10 meeting rooms, but more generally, each coworking area has at least 2 separate meeting rooms inside to ensure a constant flow of users. The cost of meeting rooms is obviously higher than that of a single workstation, also thanks to the fact that the type of booking and use made of them is "exclusive", i.e. within a day the same meeting room is usually granted to a single team, unlike hot desks which can have even more users on a daily basis.

"Of course, coworking isn't just for the self-employed. A communication agency can itself develop a coworking project, making offices available, organizing the spaces and offering the potential client a set of services that can prove to be very useful.

3 From the article by Valentina Trevisan on "Legal for Creativity"





01.5 HOT DESKS

Hot desks are the backbone of coworking areas. Hot desk does not refer exclusively to a desk, but to mean the workstation itself, i.e. including electricity, internet connection and in some cases, auxiliary furniture for depositing one's personal belongings during the working day (drawers, shelves, etc.). Additional services such as printers and scanners are positioned in central points of the area to allow homogeneous use by all users, but in general the user spends 77% of his working day at his hot desk. Starting from the beginning and therefore from the desk itself, all the minimum measures for correct usability during working hours must be respected, therefore allowing to place the proprio computer and one's objects on it and work comfortably, having at hand the electrical outlets and a clear reference to the method and credentials for the internet connection. Hot desk distribution follows two different main layout types:

Column or wall organization.

In the first, the hot desks are arranged facing each other in the center of the open space, facilitating communication between users and reducing any privacy and mobility in the area, for this reason usually one opts for a derivation or the "islands" similar to the previous one, but divided into different modules to better organize the spaces.

In the second, the hot desks are arranged along the walls of the building ensuring greater privacy, better mobility and more space for the user, however significantly reducing the number of workstations and encountering problems related to the architecture of the building, which, if it has non-uniform or non-perpendicular walls, could preclude the possibility of arranging the Hot desk stations.

As regards the Hot Desks, on average in a co-working area we have from 40 to 55 workstations, more specifically we have an average of 8 workstations every 100 m² and consequently on the average 180 for 1800 m², leaving the user on average (remaining in terms of minimum average space for correct livability) an area of 15 m².

01.6 USAGE PROCEDURE

The coworking areas more or less all follow the same methodology. The procedure for using and entering these areas is mainly divided into 6 steps, which we can find in each type of area, perhaps slightly changing the specific actions performed by users and staff in each of the steps, with variables attributable to the area administration.

Mainly it all starts from the reservation of the station:

1- The user (individual or team) books a workstation (meeting room or hot desk) via the website or by telephone.

The staff proceeds to select one of the workstations and check if there is availability.

2- The user presents himself at the entrance and presents his reservation at the reception. The staff verifies the veracity of the data to confirm the reservation.

3- In the event that the user is there for the first time, the staff proceeds to carry out an orientation tour which contemplates the workstation, the various services and relaxation areas.

4- The staff indicates or repeats to the user the opening and closing times of the area. The times are established based on the staff's working hours, when the staff leaves the coworking area all users must have already left their workstations. Hours usually range from 09:00 in the morning to 19:00 in the evening with some differences between the various areas.

5- The user positions himself in her workstation, proceeding to organize the objects he will need for his working day. The user begins his work paying attention to the other users (in case of videocall keep the volume of the voice low) and proceeds with his tasks, taking some breaks in the relaxation area.

6- once the working day is over, the user proceeds to gather his objects, set up his workstation and leave the coworking area.

Although this is the classic procedure, there are several variations of it, based on the administration and the reference user of the coworking area.

4 From "Millionaire" written by the editorial team.

Study today, pay when (and if) you start working. This is how Pay4Talents works, the pilot project just launched by Talent Garden. The model comes from the United States: as soon as students find employment, they pay a percentage of their income. And if the work does not arrive within a fixed period, the contract is still considered honoured. The target? Making digital training more inclusive and democratic by breaking down the cost barrier.

01.7 USERS

So by analyzing the coworking areas it becomes clear that even the type of user who frequents them substantially changes the type of approach and the structure of the area itself, which therefore must know how to adapt and make itself compatible with different users, but who are the users of the coworking areas? coworking? Let's see more specifically what type of users we address and what their characteristics and needs are.

Let's start with the most widespread "smart workers" this category has started to use coworking more and more often, especially following the global pandemic, which has led many towards smart working. Smart workers usually choose smart working to avoid the loneliness of working from home and feeling excluded, while maintaining their autonomy and schedules.

The second category are the "digital nomads" in this case they are people who work on their own and often change area, hence the term nomads. Since they do not live in a fixed place, they do not have their own office or space where they can work comfortably and they also rely on coworking areas to take advantage of services such as an internet connection. They usually need single postings for short periods of time.

The third category is that of the self-employed. Similar in type of work to the previous one, it differs in other aspects. First of all, in this case we are not referring to people who move often, but rather to users who can also become regulars of the same coworking area and who mainly use them to obtain an economic advantage. In fact, by working and perhaps arranging appointments with their clients in a coworking area, the self-employed can save on the costs of buying/rent and maintaining an office, while still having a reference office when needed. They usually use areas for appointments or meetings so they need private spaces.

The fourth category is that of "Startuppers". By now, innovative and non-innovative start-ups are born at an impressive speed and not all of them are able to immediately obtain the necessary funds to start the business correctly, for this reason many start-ups use coworking areas as operational headquarters, saving on many costs of management and having the possibility of exploiting a space capable of accommodating all the members of the company. Another point that leads start-ups to enter the context of a coworking area is sharing. Within these areas, collaborations and new companies often arise from the sharing of information between the members of different companies, this amplifies the amount of productivity of both companies and the profitability of the same and of the area which becomes a pole of interaction. Precisely for this reason, start-ups are looking for areas where everyone can work in the same area, but without being separated from the rest of the coworking space like in a meeting room.

The last category of users is that of students. Mainly university students, they use coworking areas to have a meeting place, where they can also begin to understand the world of work or more simply a place away from the home walls which therefore helps them concentrate on studying while avoiding external distractions.

The results of the 2017 Global Coworking Survey provide us with very interesting information on what are the most common characteristics on a global level among those who choose to work in a coworking space by becoming part of a community.

First, the statistics revealed that in general, between 2012 and 2017, the average age was between 30 and 39 years and, more precisely, in 2017 the estimated average age was 36.4 years.

As regards the working role assumed by coworkers, it emerged that it changes significantly according to the geographical areas in which the shared workspaces are located; for example, in Asia the majority of users (on average 56%) are employees of small-medium enterprises or growing start-ups, in Europe instead the majority of coworkers (51%) are freelancers, while in North America 37% of coworkers are freelancers, followed by 35% by company employees.

With the help of Deskmag (the most widespread portal on the world of coworking) we also know that the majority (about 45%) of those who have chosen to experiment with a coworking workstation, or to rent a private office at within those spaces, he previously worked from home. Instead, only a small percentage (10%) have moved from one coworking space to another. According to statistics, new members tend to learn about coworking spaces through three main methods: word of mouth (33%), Internet searches (23%) and social media (11%).

5 Research based on the Global Coworking Survey (primary body of the Italian Coworking Survey) and published by the coworking network "Yo Room".



PART TWO

**Research
Co-working and workplaces**



02 RESEARCH

Coworking areas have given rise to a movement to renew the structure of work areas by transforming the concept we had and creating a new one. In fact, now even companies are no longer divided into offices, but tend to create larger environments capable of accommodating the workers of each section and allowing them to share their working phase, cooperating continuously as in a continuous brainstorming. This method not only increases profitability, but also improves the livability of working hours, helping to produce more even by the individual worker. Being part of this change and having direct experience with this type of environment, I was able to make some observations. Collaborating within the active spaces of LazioInnova I was able to closely observe the users of the coworking areas who are present within the active spaces, understanding their issues and their strengths and collaborating with them also on some projects through the Fablab.

This experience led me to interface both with those who used the coworking area and with those who managed it, thus being able to acquire knowledge on both sides of the coin. The management of a coworking area is more complex than it seems and it is often only thanks to the collaboration of the users that it is possible to understand the problems and how to deal with them.

Therefore, before thinking about a possible intervention, I analyzed the aspects of these coworking areas, broadening my vision to the spaces themselves, or to the working environment and the type of working environment that one wants to obtain in this precise historical period and of which the coworking areas are the emblem, that is, shared, open, spacious work areas. My observation is pertinent precisely in active spaces, the main users who frequented these areas were the members of some local start-ups. The environment was a large room, with 3 French windows on one side of the room and 8 tables/stations that users moved continuously according to needs. This mainly happened in this active space, but observing other areas I noticed the same methodology in some of them, mainly in areas built inside older buildings, i.e. places that architecturally were not designed to be used as coworking areas, but as old-fashioned offices. For this reason, the first aspect of the research on which I focused my attention was the environment, the building itself, the base within which the coworking area is built.

Having found the first point of analysis, I reflected on the next steps to take. Another focal point was certainly the user. As previously mentioned, users become an integral part of the working area and they themselves allow it to exist, so it was important to find out which users frequented the coworking areas and how they approached them.

Finally, I had to match my perception of these spaces to their real functionality in order to understand where to intervene and on which aspects, without affecting the functional aspects of this working method.

"Where before there were machines, today there are long desks to share. In the old canteen there is a relaxation area with armchairs and table football. The meeting rooms? They occupy what used to be the executive offices. The environment, aesthetically, often remains the same: large lofts, large windows, post-industrial style details. Because that was: factories."

02.1 RESEARCH ENVIRONMENT

The office furniture sector is saturated with various options and as far as one solution could be that of a new module would not take into account the various arrangements that shared workspaces may have.

Most of these spaces arise within cities and are often opened in buildings that were designed for other functions or that belong to a past historical period.

These categories of properties are often destined for redevelopment and used for the construction of offices, co-working spaces or headquarters of public and non-public institutions.

Unfortunately, these properties have unique floor plans that don't always fit perfectly into their new home function.

In recent years, we have witnessed a growing diffusion of coworking areas and open offices not only in new buildings, but also in historic or redeveloped buildings with particular or difficult architectures. This trend was motivated by several reasons.

First, the city center location has become a priority for many businesses and professionals looking to reduce commute times and improve mobility. Furthermore, historic buildings are often located in central areas and well served by public transport, which makes them an excellent choice for this type of activity.

Many of these buildings are from the industrial era and therefore former factories. Their conversion into coworking spaces or offices has been an interesting challenge for architects and designers, but it has also offered the possibility of preserving buildings of historical and cultural value and giving them a new life and a new function.

Furthermore, adapting an old building to a new function is also an opportunity to adopt a sustainable and environmentally friendly philosophy. In fact, the use of existing buildings makes it possible to reduce the consumption of natural resources and the energy needed to construct a new building. Furthermore, the redevelopment of historic buildings often requires special attention to the conservation of the architectural and cultural heritage, which helps to preserve the historical memory of a place and enhance its identity.

Of course, old buildings can present several problems that need to be addressed during the redevelopment process to accommodate coworking areas or offices. Among the main ones, we can mention:

Structure: Many historic buildings, particularly those from the industrial era, may have fragile or damaged structures that require reinforcement or repair. Additionally, some parts of the building may be unstable or present safety risks, requiring careful assessment and appropriate intervention.

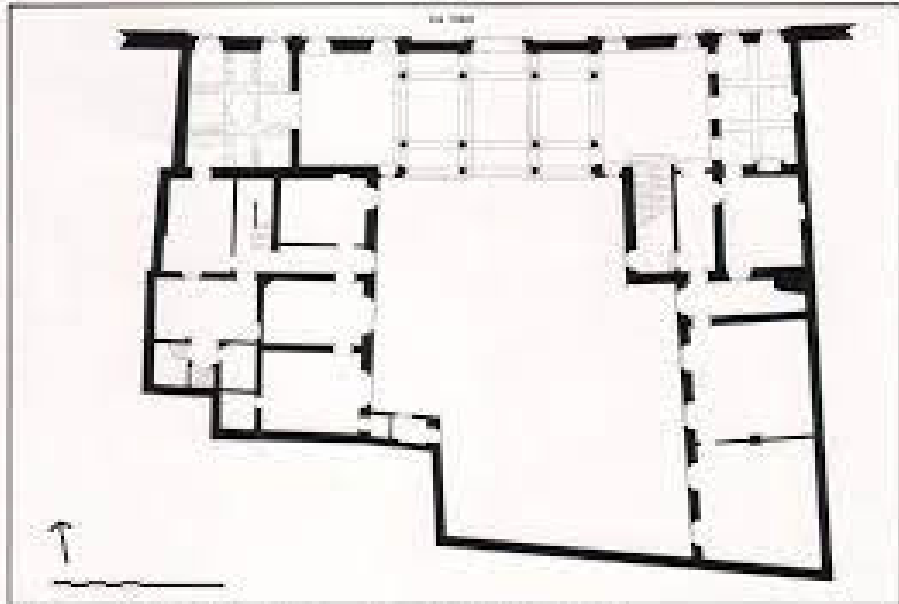
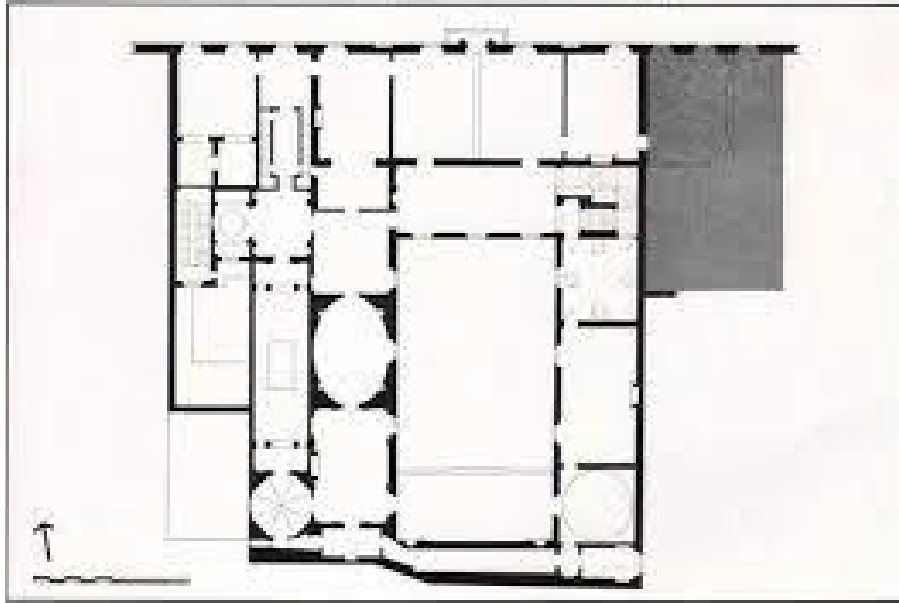
Systems: Old buildings are often not equipped with modern systems, such as those for ventilation, heating and air conditioning, which are essential to ensure a comfortable and healthy working environment. These systems then need to be installed or upgraded to meet the needs of the coworking area or offices.

Soundproofing: Old buildings may have thin or insufficiently soundproofed walls, which can cause disturbance to workers or other users of the coworking area. It is therefore necessary to take measures to improve the acoustic insulation of the building.

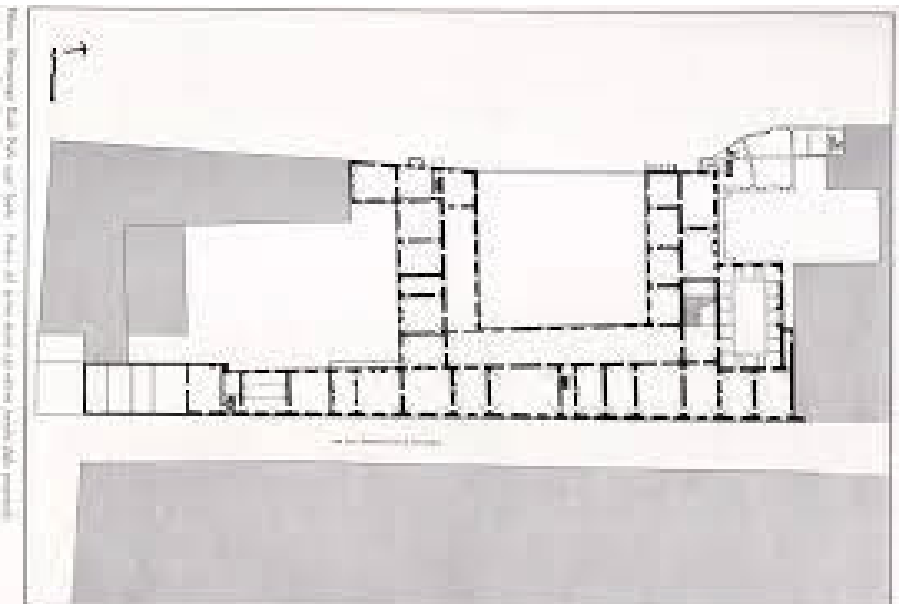
Accessibility: Many historic buildings may have narrow stairways, small elevators or other architectural obstacles that make access difficult for people with mobility impairments. In these cases, solutions must be adopted to ensure that the building is accessible to everyone.

Restoration: the restoration of a historic building requires specific skills and particular attention to the conservation of the architectural and cultural heritage of the place. Additionally, renovations can be expensive and take longer than constructing a new building.

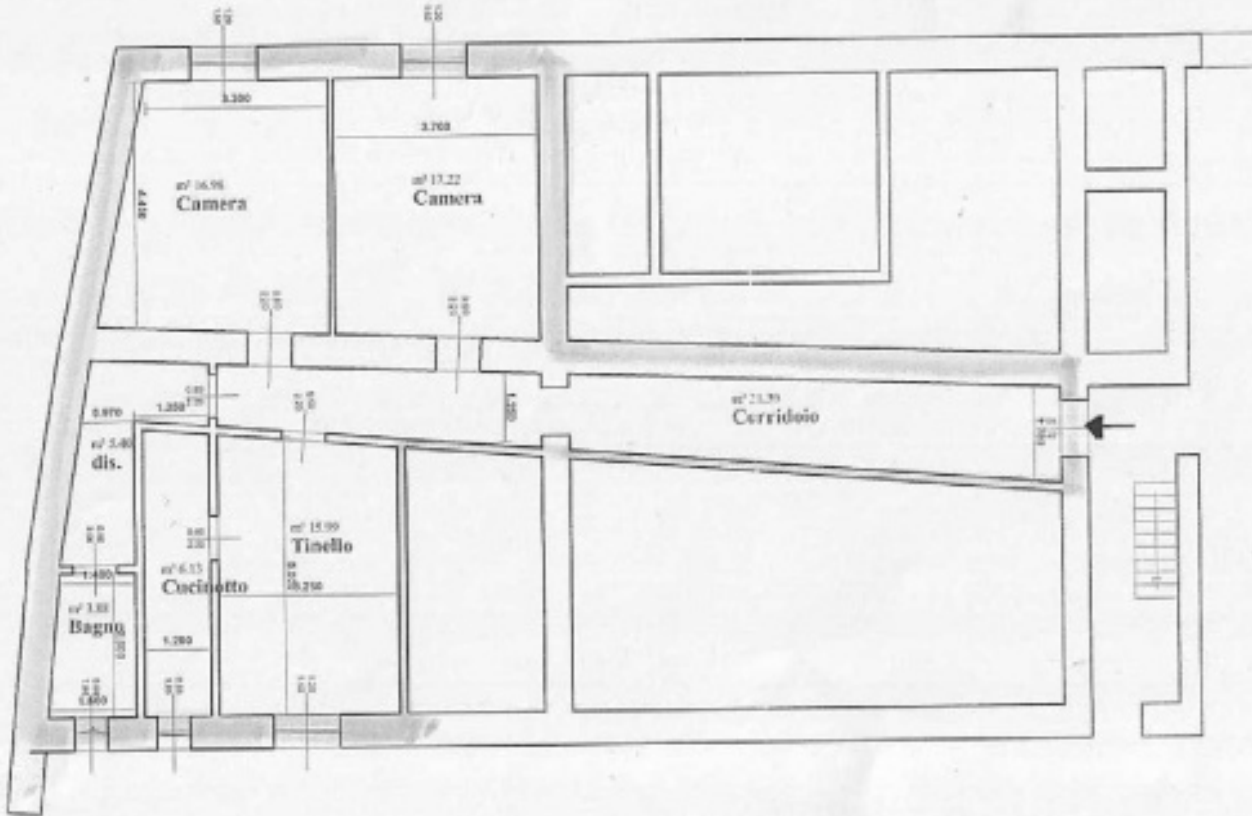
Palazzo dell'Anno già Tassi - Piano del primo piano (da rilievo tecnico della proposta)



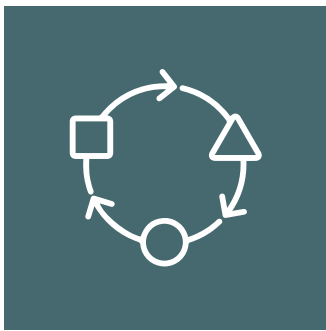
Palazzo all'Anno già Tassi - Piano del piano terreno (da rilievo tecnico della proposta)



mq. 117 H = 3,80 P. T. ...



PIANTA ANTE OPERAM



1



2



3

1. Adaptability to the building
2. Maintain functionality
3. Ensure an easy to use system

In fact we can say that the internal arrangement of furniture in historic buildings with particular floor plans and sloping walls can represent an interesting challenge for architects and interior designers. The solution will depend on the specific building and the needs of the coworking area or offices.

First, it is important to evaluate the building and its architectural features, such as the height of the ceilings, the size of the windows and the sloping walls, to understand how to make the most of the available space. In some cases, it may be necessary to make changes to the structure to create more functional spaces, such as the demolition of internal walls or the creation of new openings.

Subsequently, you can move on to the arrangement of the furniture, trying to make the most of the available space and taking into account the needs of the workers and users. In some cases, it may be necessary to use custom-made furniture or create ad hoc furnishing solutions to take advantage of spaces that are difficult to furnish.

In general, the goal is to create a functional and comfortable work environment that makes the most of the characteristics of the historic building and responds to the needs of workers and users. A creative and well-designed solution can transform difficult spaces into real assets, creating a unique and inspiring work environment.

02.2 USER BEHAVIOR AND APPROACH

In order to closely understand the behavior of users within workspaces, it is necessary to closely observe the interactions between users and the way in which they interact with the environment. For this reason, in addition to having carried out direct interviews, I opted for direct collaboration with some visitors to the shared workspaces and later consulted the results of the annual surveys of the Italian coworking survey.

For the interviews I performed a "dynamic" scheme. The interview itself was always based on different questions depending on how the user would relate to me and on previous experiences.

A total of 7 interviews were carried out on different categories of users. 3 of the interviews were carried out on teams, therefore within the interviews a debate was opened which provided more data. Schematically the interviews were based on 3 topics, why choose a similar coworking area? How are they organized within the coworking areas? What are the major issues within these areas?

The questions were generic in order to lead users to create a discursive answer and not a closed answer. In general, the interviews revealed that mainly coworking areas have a large number of positive sides and the only recurring defect is linked to a practical organizational problem, linked to the internal layout of the spaces, which precluded the possibility of collaboration between several people or that would allow the individual user to have their own privacy in the moments of the most intense work.

Now grouping the data was necessary to have a clearer picture of the relationship between user and environment.

02.3 DISCOVERY CANVAS USERS MAP

Based on the discovery canvas system, I started with data collection from the list of users involved, then contemplating all the stakeholders.

So what are the different types of affected users?

There are 3 categories of stakeholders to consider, which are part of 3 different degrees of interaction with the service itself.

First of all starting from the core we have the main users:

The main users of the service are smart workers in an age range from 25 to 60, self-employed workers in a range between 20 and 60, start-uppers in a range between 20 and 40 and finally nomads digital with an age between 20 and 35 years. These are the actual users, i.e. those who use workspaces for various types of needs. Then we have the category of those directly impacted by the activity, so in this category we find: shared workspace staff members, users' families, start-up funders, start-up collaborators, companies of the smart workers, the users' colleagues, the commercial activities near the work area and the owner and manager of the shared work area himself. This category highlights anyone who is affected by the activity, whether positively or not, so it is necessary to list another category, i.e. who benefits even indirectly from the activity? In this category we have: again the activities near the spaces, the manager of the space, the network that manages the various spaces (if it is part of a network), the casual users, the inhabitants of the neighborhood where the space is located, the owner of the property, who deals with the management of catering services and etc. In this category we find stakeholders also present in the previous one, such as the manager. In fact, the major problems are faced by the manager of the area, due to the various difficulties related to management, such as the organization of the location, for this reason future managers often rely on and associate themselves with pre-existing coworking networks which guide them in the realization of their activities. One of the problems most highlighted by this category was the initial phase of organizing the spaces or any renovations, when discussing with the property owners they understood that proceeding with a concrete renovation of the building, even at an architectural level, would have been too expensive and sometimes impossible for structural reasons, having to adapt to the situation already present. As previously mentioned, there is a tendency to follow an open space organizational scheme for shared work areas, but this is not always easily achievable. The most common approach to this problem is to rely on a pre-existing coworking network in order to obtain support on the purchase of furniture and any possible arrangements based on the plan of the building itself.

As far as direct users are concerned, i.e. coworking users themselves, the discussion is more complex and therefore it becomes necessary to carry out a more detailed analysis, given that each user tends to have divergent behaviors even when following the same procedure.

02.4 STATEMENT OF THE PROBLEM

Thanks to the data collected up to now, it is possible to begin understanding the intervention area, i.e. begin to identify what may be the pain points, on which to interact to find more efficient solutions to the problem. Starting from the problems already highlighted in the past years by the Global co-working Survey, we find the question of safety in first place ever.

Safety in coworking spaces is now more important than ever to guarantee professionals the use of these shared places without running risks.

In recent years, the availability of coworking areas has increased exponentially in many Italian cities, making it easier for many professionals to organize their work without necessarily having to have a fixed office. What is certain is that with the problem linked to the covid-19 emergency, coworking areas have experienced dark times, but with the right organization for sanitizing the environments, and some foresight on the part of users, this new method of organizing spaces work can definitely become a viable alternative again.



Since the very beginning of the covid-19 health emergency, many spaces have been reorganized to guarantee, for those who still need to, to use their office or coworking station to work in maximum safety from a hygienic and sanitary.

When we talk about "safety", however, we are not only referring to the cleaning and sanitation of the workplace, but also to other variables that must make the shared space a 100% safe place:

- spaces in accordance with the law
- accesses and circulation in the spaces
 - workspace ergonomics
 - privacy
- cleaning and sanitizing

As in any self-respecting workplace, coworking spaces must also meet certain standards.

First of all, the place used for coworking must comply with the law, especially with reference to the systems and equipment present inside it, including emergency exits, fire extinguishers and plans of the space with escape routes.

Access to the work area and circulation within it must be simple and effective, thanks to good space management. Especially at this time, where it is mandatory to maintain an interpersonal safety distance and avoid gatherings, coworking areas must guarantee sufficient freedom of movement, both near the workstation and on the main and secondary traffic routes.

Even the ergonomics issue should not be underestimated: it is important to check the main factors to protect health and working conditions, such as, for example, the height of the workstations, the size of the desk, the lighting and, in particular, the microclimate and the ventilation and air recirculation system. The temperature must be between 19°-23° in summer and between 17°-21° in winter, while the humidity must be between 30% and 70%, with optimal values between 50% and 60%. For this reason, coworking must include an adequate heating/air conditioning system and all rooms must be properly ventilated.

Furthermore, it is important for every worker to have a fairly high standard of privacy, especially in places shared with other professionals. To give some examples, the Wifi network has different access points for visitors and resident customers, mail should be kept in reception and printers should have privacy protection systems.

A very important issue nowadays is certainly that of cleaning and sanitizing coworking spaces, to guarantee all workers to work in a safe place.

Precisely with regard to this issue, on 17 March trade unions and companies signed "a protocol to protect the health and safety of workers from possible contagion from the new coronavirus and guarantee a healthy working environment." which establishes that work spaces, especially common ones, must be subject to "periodic sanitization and daily cleaning with special detergents."

Today, working side by side with ever-changing professionals requires, in addition to the normal application of prevention rules, also an effective and regular cleaning, sanitation and sanitization service of these highly frequented workplaces.

Desks, rooms and meeting areas, break areas, conference rooms, meeting rooms and furnished or shared offices are the spaces that most need an adequate cleaning and sanitizing service.

Furthermore, often within the same coworking spaces there are digital laboratories (FabLab), where there are specific machinery, from 3D printing to laser cutting, from numerically controlled milling machines to large plotters.

These spaces are real laboratories, attended by a large number of people, who operate simultaneously or in rapid succession on different machines intended for digital prototyping.

In many cases, these venues also host educational workshops for schools, training events, hackathons and start-up contests.

So to further define the starting point of the analysis, taking into consideration the problems already highlighted, I answered 9 questions that outline the design process.

1- Why is this a problem?

1- A 360-degree use of spaces is difficult.

2- Who has a need?

2- End users and managers

3- When does it show up?

3- When you need to work in a group or you want your privacy in an architecturally complex environment.

4- How is it resolved today?

4- Using larger areas at a higher cost or opting for distant services.

Context:

What?

Actor:

For who?

Need:

Which?

How could we allow users to have multifunctional workstations

to be able to work individually or in a team sharing the same space, the same workstation, perhaps at a slightly reduced cost.

(re)designing the co-working area and specifically the hot desks so that the end user **is satisfied** with the work environment and can do so share with colleagues and other space users

Taking into account how important the privacy and your comfort zone so you don't have to be bothered if you don't want to interact.

Now that the problems that can be analyzed and on which it is possible to work on are more defined, my attention has focused on the relationship between users, management, the internal layout of the upgraded environments and the relationship with the fablabs within the areas themselves.

02.5 FABLAB IN CO- WORKING AREA

A FabLab (from the acronym "fabrication laboratory") is a space where members can access rapid prototyping tools such as 3D printers, laser cutters, electronics and design software, in order to develop and implement innovative projects. The utility of a FabLab in a coworking space is manifold.

First, a FabLab gives members of the coworking space the opportunity to use expensive and sophisticated tools that are otherwise difficult to purchase and maintain. This allows them to explore new ideas and experiment with prototyping without having to invest in expensive tools. Furthermore, the use of a FabLab space allows members to acquire technical skills and to develop a problem solving mindset, two important skills for their professional future.

Secondly, using a FabLab can increase creativity and collaboration within the coworking space. Users can share ideas and collaborate on innovative projects, thus stimulating innovation and progress. This group activity can also create a sense of community within the coworking space, increasing its attractiveness to potential members.

Thirdly, the owner of a coworking space can use a FabLab to furnish the space itself. Many coworking spaces arise in abandoned buildings that are redeveloped and can therefore be difficult to furnish in a conventional way. Using a FabLab allows the owner to personalize the environment and create bespoke furniture for the space.

In summary, the utility of a FabLab in a coworking space is manifold. For users, it offers the opportunity to use expensive and sophisticated tools, develop technical skills and collaborate on innovative projects. For the owner, it allows you to customize the working environment and create bespoke furniture for the space. Together, these factors can increase the attractiveness of the coworking space and stimulate innovation and creativity among members.

02.6 DISCOVERY CANVAS

The discovery canvas is a tool based on direct questions to the designer who have the very intention of discovering which are the guidelines to follow in order to correctly develop a project that covers the problems analyzed in the problem statement and the data resulting from the discovery canvas user map, thus adding the data that is analyzed through the questions of the discovery canvas itself.

Discovery

Canvas:

- What do we have to build? What are we being asked to do?

Improve the usability of coworking areas.

Think about users with special needs.

Define a standard of use of the areas that makes the user autonomous also in the management.

- What problem are we trying to solve? For the business and for the user

User:

The lack of flexible hours in coworking areas for those who work even at unusual times. Lack of reference points and usage information.

Business:

The exclusion of a catchment area that under current conditions do not have the possibility of exploiting the environments and which therefore do not bring income, plus a management necessarily linked to the staff.

- What is the expected final impact? For the business and for the user

User:

Better management of one's working hours and the possibility for different users to use these work areas, perhaps even users with disabilities or users who use different areas and not always the same.

Business:

The increase in entrances and use of the area by a new category of users. Maintaining the quality of information and management of the area even in the absence of qualified staff.

- Why do you do what you do? Why should anyone care?

Coworking areas are increasingly becoming our offices, now even companies bring their employees to work within these areas, thus transforming the old conception of being inside a work area and bringing it towards a perspective in which each of these areas is your office and therefore you feel comfortable inside it.

- What we know and can verify:

CO-WORKING AREAS

Co-working areas are spaces used for shared work and are usually divided into hot desk stations and meeting rooms. They are present within them different types of services, such as the kitchen, the refreshment rooms and the basic hygienic services, but some areas also have more advanced services such as internet and specialized services. All areas are managed by individuals or companies that train adequate staff for reception and problem solving.

RESERVE AREA

The users are divided mainly in 4 categories: smart workers, university students, self-employed workers and startappers. Each of these categories takes advantage of coworking areas avoiding the expense of a private office e it usually uses different areas and not always the same depending on the need, except for university students and smart workers who usually rely on the same structure.

OWNER COMPANIES

The areas are managed or by private owners, from conglomerates or from companies that therefore they manage according to the same criteria over a wider area. In Italy the only network of coworking areas that can be defined as such is "Cowo" which in Italy has coworking spaces in 16 regions and is responsible not only for managing these spaces and providing information about them, but also for training new managers for expand your network of spaces.

RESEARCH INSTITUTIONS

In Italy, the main research body for coworking spaces is "Italian Co-working" which every year releases its assessments based on surveys completed by users and space managers, basing everything on 7 key principles that describe "health" co-working areas and allow us to understand their growth rate.

This annual research allows us to understand by analyzing the it also surveys the problems that have not yet been resolved.

- **What we don't know and we need to find out**

CO-WORKING AREAS

How does orientation work for new users if the staff is not present?

Is it possible to use a hot desk even outside normal working hours?

The shared spaces of co-working areas can be used by anyone?

The signage and infographics inside the spaces are standardized?

Can every type of user access and take advantage of workspaces?

RESERVE AREA

How are start-ups organized to work together?

Do users with disabilities who work in smart-working have easy access to these facilities?

Can users use multiple spaces on the same network in one day?

OWNER COMPANIES

How is space maintenance managed?

Is the staff trained by the manager or does the distribution network take care of it?

Does the staff work in rotation on different shifts?

Is it possible to manage spaces 24 hours a day without staff?

RESEARCH INSTITUTIONS

Does the research also deal with the user experience in terms of livability of the spaces?

Are the searches and interviews also carried out in person?

- **What thoughts, constraints, barriers?**

- **What are we being asked to do?**

Improving the user experience by providing a completely customizable service, which therefore allows you to work even in non-canonical hours and gives the feeling of working in an organized and comforting environment, which is therefore easily understandable and usable even by new users or by those who did not experience all services.

The constraints concern safety and the difficulties relating to users with disabilities, mainly visually impaired who, however, need to be involved in the shared work process. Security is related not only to the space itself and therefore to the objects and services inside it, but also to the users who live there.

02.7 PERSONA

The data collection was also aimed at recognizing the end users, to whom the project was to be addressed. Given the results of the interviews and the data extracted from the Italian Co-working Survey, the creation of the personas had to identify 2 main end users. One of the personas had to be a user of the co-working area, the other a manager of a co-working area, in order to have a one-to-one vision of the aspects analyzed in the research.

For this purpose, both the *personas* and the *proto personas* and the *extreme proto personas* were created, which were then selected to highlight even more carefully the key points to work on.

So the first person, i.e. the user, is Marco.

Who is experiencing the problem? Who is interested in solution?

Marco is a motion designer working for a virtual design company based in New York. Marco works from Italy, mainly in smart working, relying on co-working spaces, given that he has several roommates at home and cannot manage the spaces to be able to make video calls with his superiors. Marco often works in coordination with America therefore follows the timetables imposed by his company. In Italy, the headquarters are located very far away.

7 *Personas: A fictitious person created with data collected through interviews.*

Proto personas: A fictitious person created with data collected through interviews.

Extreme proto personas: A fictitious person created with data collected and then sorted by design to identify only suitable data.

Goals:

What is he trying to achieve?

Marco wants to be able to access the various co-working spaces near his home even during the evening / night in order to work in communication with his company.

What's the problem?

Co-working spaces have fixed hours, which are usually from 9:00 to 19:00. In addition Marco must be able to quickly access the workspaces when he is contacted and therefore he must be able to orient himself within different spaces.

What task should he perform?

Marco must be able to place his laptop in a comfortable position that allows him to work simultaneously with multiple devices and must be able to work in video calls, therefore having an internet connection and a quiet environment.

Needs

What does he need to get it / carry it out?

Silence and organization, in order to be able to get to work in the shortest possible time, also requires an environment where services are always available during breaks.

Context

Where does it happen? (at home, on the move, in the office)

Who else is involved?

Everything takes place within different co-working spaces, in fact, not having fixed hours, Marco travels around the city for his errands and when contacted he accesses the work spaces.

Clutch

What obstacles does he encounter?

What annoys/whips him the most?

Marco is very annoyed when he has to leave the co-working space although he has not finished working and therefore moving to work at home or sometimes in other premises, however interrupting what he is doing and therefore wasting a lot of time. Sometimes when he has to use a new co-working space he finds it difficult to do the orientation tour every time even when he is in a hurry.

Behaviors:

What does the user do that indicates they're a good customer for you?

Marco works in particular hours, he relies on co-working spaces, to avoid the chaos of his home, but not to be alone during working hours.

How do you solve the problem today?

He divides his weekly work activities into several spaces, between home, co-working space and public places, managing the schedules based on his activities, but with the problem of travel.

User day consists of?

Marco wakes up at 08:10, gets ready, takes the backpack with the computer and the rest of the material he needs. He calls the co-working space and books a hot desk. He leaves the house and goes by public transport into space. Upon entering he asks at reception and goes to his hot desk, positions the equipment and gets to work. By 13:30 he stops to eat, takes his material and goes out. After lunch he goes on an appointment with a co-worker and heads to another co-working space. He works with his colleague until 19:00 when the space closes and heads home. Marco prepares dinner, eats and gets ready in his room for a call. After the call Marco watches a film and goes to sleep.

What does he say he wants?

Being able to find the same modalities in every co-working space being able to work perhaps until the evening or only in the evening and at other particular times that are necessary.

The second person, the manager of a coworking area, is Giulia.

Who is experiencing the problem? Who is interested in solution?

Giulia is the manager of a co-working area in Rome located in a former glass factory, which also includes a Fablab. She manages the area independently together with her staff. You chose the location because of the large spaces and because you had the opportunity to obtain a loan to redevelop the disused building, so you were able to save on the costs of purchasing and renovating the structure. Giulia was already an entrepreneur, but this is her first experience with a co-working.

Obiettivi

what is he trying to achieve?

Giulia wants to adapt her co-working area to its users, initially she had different types of users, but now the area is increasingly frequented by start-ups which therefore require more space to work, even within the dedicated space at the fablab.

What's the problem?

Giulia hired an interior designer to arrange the furniture within the area, also getting help in understanding the best arrangements, however, as the building is based on a particular architecture, she was unable to occupy all the spaces correctly, inserting fewer workstations what he had imagined.

What task does she have to perform?

Giulia has to manage the amount of users who frequent her area, paying attention to satisfy the requests of regular users who usually adapt to the environment, but which in some cases require changes to the environments or times.

Needs

What does it need to get/do it?

Giulia is very good at managing people, but she has difficulty managing space, she would like to have the opportunity to be part of the shared work area first of all and therefore get help from users, in managing spaces and common problems.

Context

Where does it happen? (at home, on the move, in the office)

Who else is involved?

Inside her co-working area, between the open space section dedicated to shared work and the fablab area.

Clutch

What obstacles does it encounter?

What annoys/whips him the most?

One of the biggest problems is having to carry out some sort of removals whenever the space does not adapt to the new user, having to rely on external sector experts, despite the fact that perhaps there are competent people within the area who could help you . In addition, his area is autonomous and the costs to furnish new workstations are always very high when orders are placed for just a few pieces.

What does the user do that indicates that he is a good customer for you?

Look for an alternative solution that contemplates a wider collaboration and possibly the use of the fablabs to which I belong.

How do you solve the problem today?

relying on external experts.

What does it say it wants?

An easily understandable solution, which allows you first of all to resolve the situation with the collaboration of the users of the co-working area.

02.8 USER JOURNEY

A user journey is a detailed representation of the experience a user has when using a product or service. This type of document helps to understand how users interact with the product or service in question, and what their needs, wants, goals and expectations are.

The purpose of a user journey is to create a complete understanding of the user's point of view, so that we can design products and services that are as suitable as possible for their needs. In other words, the goal is to create a positive and satisfying user experience.

For the development of a correct project, the analysis of the user journey is a fundamental tool. This is because it allows designers to identify pain points in the user experience and find ways to improve those points. For example, a user journey might reveal that users are confused by a certain feature or encounter difficulties at a certain stage of the buying process. In these cases, designers can make changes to the product or service to simplify the user experience and improve its usability.

In summary, user journey analysis is a critical tool for the success of any project. It allows you to create a satisfying user experience and meet the needs of the users, which leads to greater engagement and retention of the same.

In this case it is dedicated to the first person, Marco, who being a user who primarily uses the service, i.e. the co-working area, best describes the events associated with it.

Before:
Stages
Key moments

Wake up, check phone notifications and check daily activities on the calendar. Call Co-Working Space to book one place for the whole day. Is advised by a colleague that they need to work together during the day and calls the co-working space again to reserve another workstation as close to your own as possible.

Before:
Stages
Need

Usually Marco places his computer in the room to be able to check emails in the morning. He would like a quick system to be able to book several co-working areas by selecting specifications, even of different networks. A schedule that allows him to know if he has to work with other colleagues or alone and then select the most suitable space and the type of workstation. A network of people in the same situation with whom to share their experiences and understand how to improve their situation and perhaps more widespread spaces in the area that "communicate" with each other.

Before:
Stages
Dramatic arc

His workstation at home is very small and he doesn't allow you to work comfortably, so it feels forced to use a co-working space to work comfortably and above all away from various disturbances and annoyances that he could have at home. He would like to be able to work from his home, so in a homely and comfortable environment, while remaining connected to people who work like him, so as not to feel isolated and above all to feel understood in an environment where everyone is at work and busy. He often comes under the stress of having to find a place that allows him to book two nearby workstations or gets annoyed because he is forced to book a meeting room at a higher cost perhaps, simply to work comfortably and not have to share a single workstation.

8 Before: What happens before getting in touch with the service?

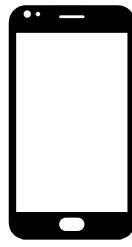
Stages: Grouping key moments with the same purpose

Key moment: What are the key moments of the experience

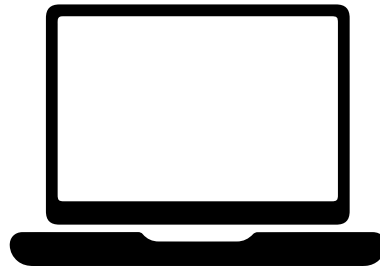
Need: What does the user need right now?

Drammatic arc: How does the user feel when he experiences this moment?

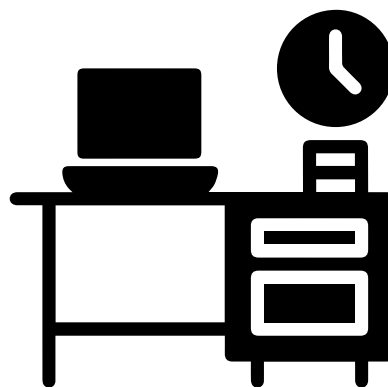
1



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UJ triggers

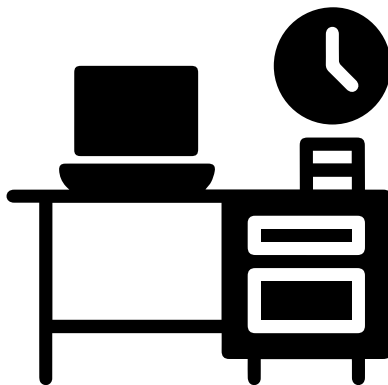
- 1. Smartphone
- 2. Computer (tools for work)
- 3. Hot desk (workstation)



1



2



3

UJ triggers

- 1. Backpack (bag with personal objects)
- 2. Computer (tools for work)
- 3. Hot desk (workstation)

During:
Stages
Key moments

Entering the co-working space and requesting the pre-booked location.
Orientation tour of the new co-working space and arrival at the workstation. Preparation of material and division of tasks between colleagues.
Start of working day.

During:
Stages
Need

A comfortable and free space to arrange your belongings, in addition to placing your computer, your tablet and your notes on the workstation, you also want to be able to arrange your bag, your jacket and the rest near your workstation. A quick system to get an idea of the position and conditions of the services in the area, accompanied by a direct indication of your location, since you are sometimes in a hurry and don't have the time or desire to follow the entire orientation tour. Silence and calm, with some stimulating pauses which therefore allow him to interact with people who they work in other fields, but that do not end up disturb him outside breaks and therefore during work.

During:
Stages
Dramatic arc

Initially uncomfortable and awkward when he has to set up his workstation in a new space, but slowly he feels more and more at ease, although sometimes he has to share space with his colleague and this makes it so much more complex and stressful. Anxious about the limited time, but curious to find out how the space is structured. Quiet the moment you can finally put to work, with an eye to what happens within the shared space.

After:
Stages
Key moments

Close to closing time, although he hasn't finished working, Marco starts arranging his material and belongings, in order to be able to leave in time, given that the staff is closing the shared space. Marco is careful not to have left anything in the workstation, since the following day he will probably use another space or work from home. Once he has everything sorted, he walks towards the exit greeting the other users of the shared space and the staff.

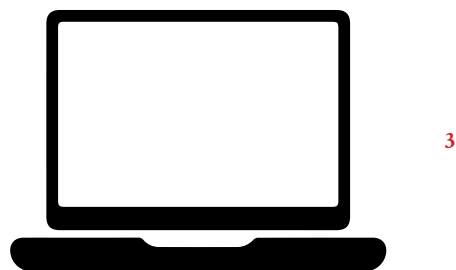
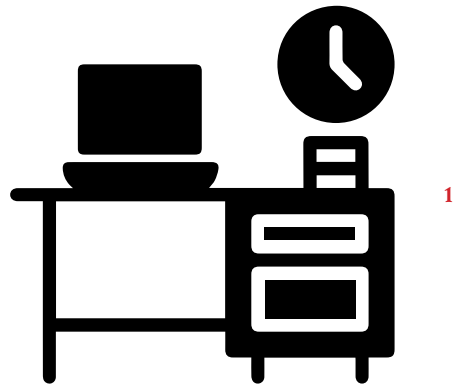
After:
Stages
Need

it is necessary to have a well-organized space and systematic that allows you to organize work quickly and retire just as quickly. Would be it would be advisable to have a place where it was possible to work even in unconventional hours and therefore perhaps during the evening hours. Drawers, furniture, brackets where to arrange your material and personal effects during working hours in order to maintain order and be able to find everything easily and in a short time. A backpack or bag that allows him to carry all the material he needs for his work quickly or a place to leave some material in case he wants to reuse the same workstation the following day without having to carry the same material more turn back and forth.

After:
Stages
Dramatic arc

Stressed and annoyed, not having finished work, he knows he will have to go home and get all the material out again to continue working. In addition, he feels in awe as he has to hurry to fix to allow the staff to close the shared space. Worried about leaving documents or important objects that could be useful during the evening or the next day. For this he rechecks several times knowing that the next day probably not will attend the same shared space. In a rush, knowing he'll have to go home and get back to work after dinner, but relieved that the day is almost done and that he's been working in a stimulating environment.

10 After: What happens after using the service?



UJ triggers

- 1. Hot desk (workstation)
- 2. Computer (tools for work)
- 3. Backpack (bag with personal objects)

PART THREE

Concept

03 CONCEPT

Creating the concept of an idea based on co-working areas and fablabs requires a good understanding of the users who frequent these areas, the environments in which the co-working spaces are located and the difference between new and redeveloped historic buildings.

To start, it is important to carry out a thorough research on users who frequent co-working spaces. This can include their age, their occupation, their space needs and their preferences regarding the work environment. It is also useful to understand how these users use the spaces within the co-working spaces and what activities they perform.

The research should also extend to environments used for co-working. There are differences between new and historic redeveloped buildings that need to be taken into consideration. Historic buildings can offer a more authentic and unique atmosphere, while modern buildings can be more functional and have state-of-the-art technology and security facilities.

Once you have a clear understanding of your users and environments, you can move on to concept the idea. At this stage, the option of involving users in organizing the co-working area, working closely with the manager, can be considered. This can allow co-working spaces to adapt to user needs and offer personalized services.

Furthermore, the fablabs present within the co-working area can be used to create new products for the working environment. Users could get involved in creating custom furniture, lighting solutions, and even artwork. This can help make the co-working environment more creative and stimulating, while also providing networking opportunities.

Finally, user involvement can also extend to co-working area management. For example, there might be work groups involved in keeping the area clean and organized or organizing events for the co-working community.

Therefore, given the data collected and the problems highlighted by users and managers, through interviews and surveys, the initial concept is based on the desire to provide managers and users with an internal arrangement system for co-working environments that is more adaptable to those which are the very needs of both, therefore having the possibility to consequently reorganize the environments in an efficient and rapid manner, taking into consideration the problems highlighted during the previous chapters, i.e. the safety of users and environments, the preservation of user privacy and the ability to collaborate easily within a team or between multiple users in the shared workspace without having to use meeting rooms, which remain more suitable for other functions such as courses or video calls. In order to effectively apply a similar concept to a static environment such as that of an office, it is first of all necessary to go back to analyzing the different pain points and the pre-existing organizational methods of the areas themselves so as to have a solid starting point on which to develop the idea .

The first point of analysis is that of the environment, how to improve the user experience in an open space environment? To understand this aspect, first of all, the classic provisions that are already used must be identified.

Also in this case we must start by identifying the buildings in which the co-working areas are located, as previously mentioned, we can find ourselves faced with new buildings, born with the intention of being offices and therefore architecturally organized to insert workstations, or to old buildings that are redeveloped to be adapted to a new function.

Once these criteria have been defined, the most efficient method of selecting an action plan is to study several possible solutions (possibly an odd number) and carry out an evaluation based on the criteria on them in order to obtain a classification and establish the first point of interest from which to start working on an idea.



1



2

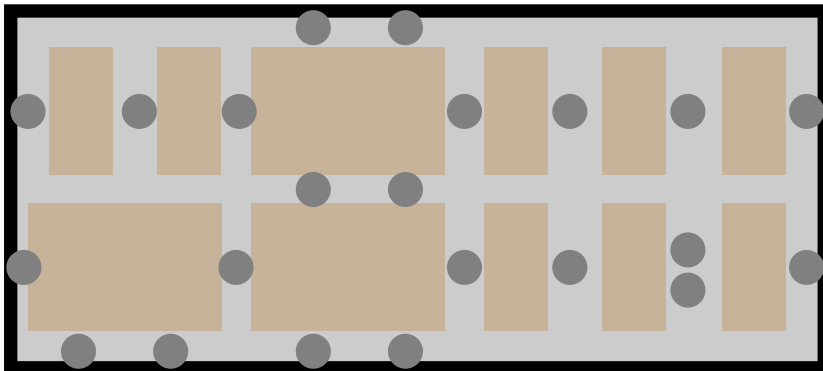
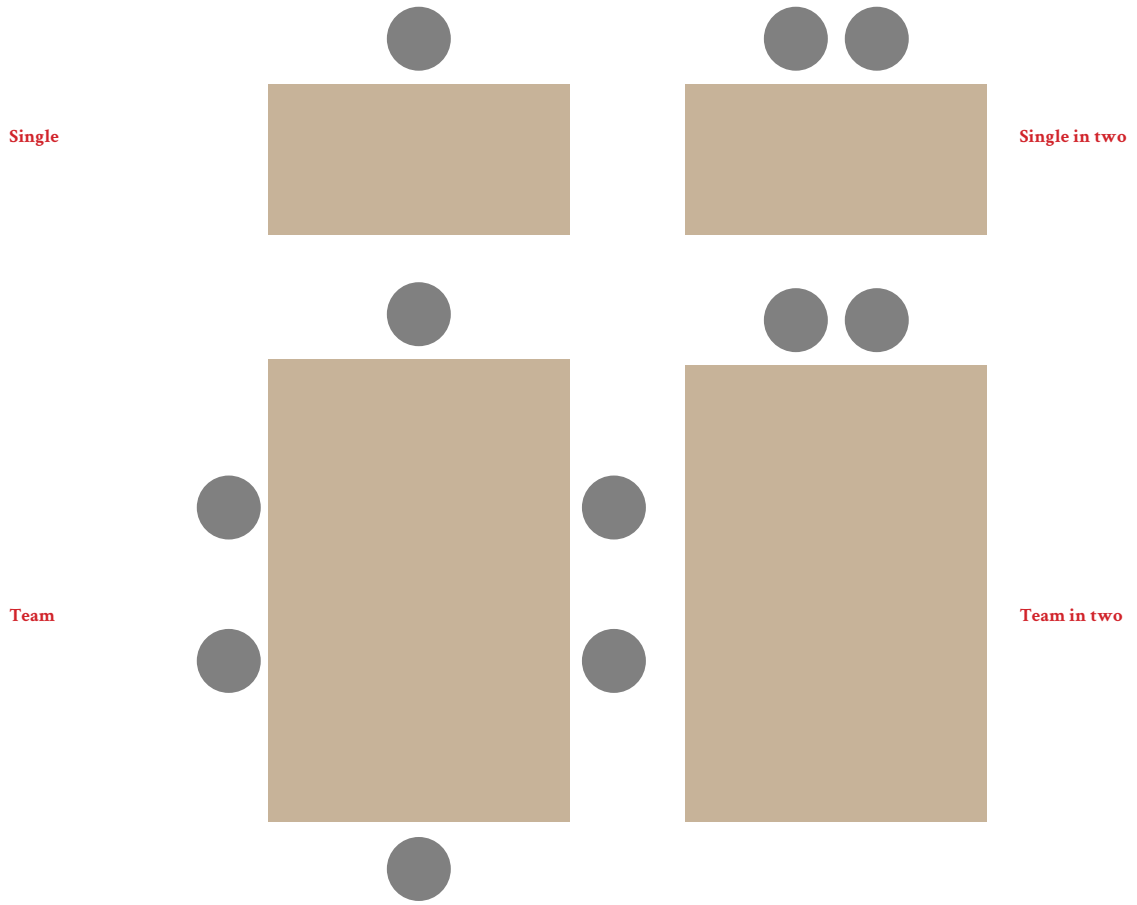
- 1. Co-working area
- 2. FabLab

03.1 AREA CONCEPT

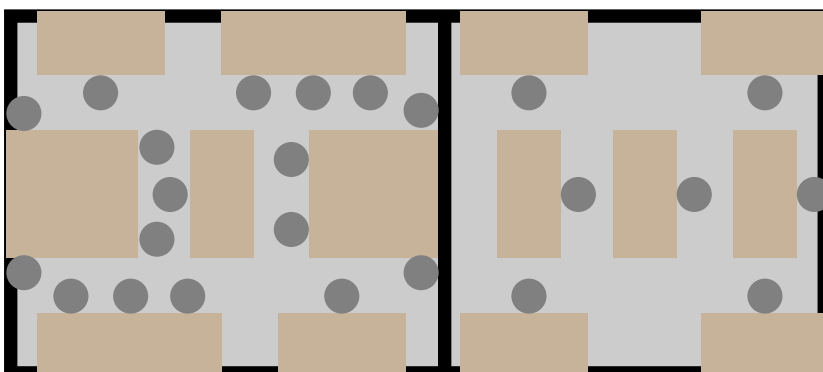
Considering an area of a newly built building, designed to be an office and therefore with large spaces and geometrically balanced spaces, only by intervening on the arrangement of the furniture, it is possible to create different types of workstations, which would guarantee more places for users, with both independent and group formations, they maintain a balance between them. The problem arises when the data relating first of all to personal space is analysed. Each user must have from a minimum of 10 m² to an ideal 15 m² of personal and livable space so as not to interfere with the work of other users and to guarantee their privacy, the creation of spaces would therefore be subject to the creation of a new type of furniture, which however must maintain the ergonomic standards established for office areas.

The second problem arises when we analyze the planimetry of the area. Obviously a large rectangular space was chosen to develop this scheme, thus placing the same characteristics, to ensure continuity and correctness of the relationship between the two arrangements, the fact is that as we have analysed, in reality the rooms are not all of this type, indeed, even newly designed buildings often divide up the spaces to allow the insertion of several companies on the same floor, but we really fail when we consider the whole mass of redeveloped old buildings. Currently in the world and especially in Italy, most of the buildings in the city center, where co-working areas always arise, are former factories, or former industrial plants and warehouses that are converted to a new function, although these buildings have large interior spaces, their architecture was not designed for current purposes and therefore usually have walls with particular inclinations or very narrow rooms.

freedom comes from no other part if not from the possibility of awareness that each of us may have, who is experiencing and also together, which is - slowly, slowly dying. "End of Jobs" definitely is a successful title for a book of the last century interesting, but maybe already forgotten by many: more likely, it is a lie, when compared with the size more and more a distressing lived by who of work just can't help a less, either because needy or because it is, more modernly, victim of common workalcoholism (translatable in an approximate Italian "lavorodipendenza"). You don't count the more or less sophisticated analysis or the good, from a television living room, on the untold stresses that the daily demands of the production system world produce or would produce. It matters less and less if the work takes place sitting all day in front of a boring (or funny, when the boss is not around) computer, or inside the belly of one ship in yard; whether inside the factory or outside it, or even in that diabolical invention that is the teleworking, or more simply work from home (the call centres, new factories without a place, those from which one voice, persuasive or anonymous will answer you from an unspecified point of the country, they are a collectivized variant of it). However, everywhere, the work still exists and is synonymous with fatigue, psychological if not physical. Rather than the end of the work, it would instead be correct to speak of the end of the factory, of that circumscribed and specific place, subtly thought out in all its possible articulations functional and spatial, the perfect contraption that will relentlessly churn out every day tens, hundreds, thousands, millions of pieces all the same of the same commodity, bomber strategic or deodorant makes little difference. Or at least, it's about the end of the factory inhabited and lived by men and women for a lifetime. Replace divine creatures with human creatures - that is, created by man himself - a bit woodenly metallic, in the industrial utopia of the last two centuries the examples of the factory of the common good (or collective, according to regimes). Peter's AEG foundations Behrens or Gropius Fagus Werke, the wonderful jewel Van Nelle by Brinkman and Van der Vlugt a Rotterdam, the FIAT megastructure Ingot of Mattè Makeup or the Saarinen's General Motors, even the industrious Nicholas workshops Grimshaw for Vitra in Weil am Rhein, down to the new Fiat of Melfi by Marco Visconti and Fiat Engineering are just the stages of a dreamy utopia is liberation from superfluous toil: the temple of work as a celebration instead of the Supreme justice of socially useful toil, progressive industrial architecture as liberation expressive from the venal sense of goods. Unfortunately the reality of decay of the conventional production system cannot be denied. The images of the semi-abandoned vertical factories in Hong Kong which Domus still publishes only three years ago on the cover are the revelation: especially for those who do not have eyes and ears to hear that by now the factory is everywhere and nowhere place, it is within us, in ours desires and in our senses. We are what we consume or produce, without stopping, time or limits space, because in our existence goods and their needs are continually renewed and transformed of production and consumption. Reduced this definitely a pure fetish, far beyond the interpretations of Karl Marx (does anyone still have the perception of real economic value of a cell phone call, a dress, a dinner at a restaurant, a car?) is likely to fail interest in where, how, and even if, the goods are produced.



Area Co in classic layout:
11 workstations (3 per team)
21 users



Area Co with mixed layout:
14 stations (7 mixed)
23 users (half room)

At least which, I believe, is not a question of the Ferrari factories, or rather of the places mysterious and inaccessible where it comes from physically built the myth for excellence, not a fetish, but the fetish: the linguistic and formal essence of the car, the object in which transubstantiates the very idea of speed, naturally only for the objective physical and physiological limits of the human being, because speed it is not a material quality, but quite mental. Over the recent years a managerial management that has practically eliminated the competition from other manufacturers sportsmen (also in reality only virtual, because as a loved being which reappears after ten years, every victory of a Ferrari has exactly the same amazing effect of the first) also has, under the sign of understatement, slowly put together the pieces of a singular micro-urbanism. It turns out one small park of snappy buildings that they have nothing to envy to the complexes of the golden age of architecture Contemporary. With stubborn insistence, one by one, the factories of material (engines, cars) e of the immaterial (the research, the design thinking that goes with it behind) were given to draw a excellent architects, engineers, designers. Inside and outside the architecture, give it astute protections against injury of the climate to the abysmal pools of liquids that ensure the metal the almost eternal life, up to the unfathomable corridors of the Wind Tunnel - where it seems that they actually happen very few things, but of deadly importance - or to icy perfection brand new environments where vital decisions on product development will be made by a select group of people, valuable designers they pursued the attempt (which in these pages it will even seem successful) not to abandon the factory to its destiny of disappearance, apparently already sealed, but to re-propose it as a utopia of an ethic of the Work.

The space of manual work conforms, during the XIX and of the 20th century, on functional and organizational variables deriving from the technical conditions of carrying out the work itself: the development of the forms of driving energy and the Mechanical technologies influence the location of industrial establishments and their functional organization. The social achievements on safety issues and attitude towards the working condition are the basis of the design of industrial interiors: attention to the operator yes in an increasingly consistent way alongside the one aimed at the efficiency of the production process. In the period under analysis, the spatial formations and techniques adopted to mediate the relationship between man and the work space have been studied in multiple examples¹¹, which make it possible to verify trends in the development of human workplaces. More of these have been verified aspects, which aim to define settlement methods, e therefore the relationships with an urban or natural context for which the factory represents an event with a strong environmental impact, the set of functions present, so as to define the relationships between spaces for manual work, spaces for work intellectual and service spaces, and the conformation of the internal environments, in their variables of space, margins and equipment. The relationship between organizational systems, technologies, safety legislation, thinking and the work space is verified in five successive moments, which are defined upon variation of some of the overall technical and organizational conditions and which correspond in the nomenclature to those adopted to define successive moments in the organization of work in the factory. The intertwining of aspects regulatory and organizational and the project outcomes do not cause in rigidly unique results, but provides a sampling of varied solutions, although in response to a theme defined by particularly restrictive constraint conditions: this is the case allows for the first time to verify how reading the architecture of the factory as exclusively functional is extremely reductive, and does not verify the deviations from an imposed model capable of considering the human variable, or in any case to enrich and qualify the work space.

It is therefore necessary to reevaluate all the problems and develop an idea that concretely adapts to the different types of environment in which a shared workspace can arise.

¹¹ "Domus", n.872, 2004 part II



F. Dolza, Morando factory, 1958
P.L. Nervi, Burgo Paper Mill, 1960
L. Figini, G. Pollini, Nuova Ico, 1956

03.2 CONCEPT PAIN POINTS

Pain points are problem areas or difficulties that users of a product or service experience while using the product or service. In the concept phase of a project, it is important to identify these pain points to develop effective solutions that can improve the user experience and increase the effectiveness of the product or service.

In our case of co-working areas, some of the common pain points include:

Noise from other users - Noise can be a major nuisance for those seeking a quiet and peaceful work environment. In a co-working area, where there are many people working at the same time, noise can become a very annoying problem for users trying to concentrate.

Little affinity with other users - Working in a co-working area means sharing the space with many other people. However, not all users will have similar interests or compatible personalities, which can lead to a sense of isolation or disconnection.

Poor signage of spaces - In a co-working area, signage of spaces can be a problem, especially for new users who are not familiar with the environment. The lack of good marking of spaces can lead to confusion and make it difficult to find your workstation or common areas.

Distribution of personal spaces - In a co-working area, distribution of personal spaces can be another source of stress. If spaces are randomly assigned or unclear, patrons may feel unhappy with their location or may struggle to find a space that meets their needs.

Space for user objects and ergonomics - Ergonomics and space for personal objects are other common problem areas in a co-working area. Users may not have enough space to work comfortably or store their personal items. Additionally, chairs and desks may not be ergonomic, which can lead to long-term health problems.

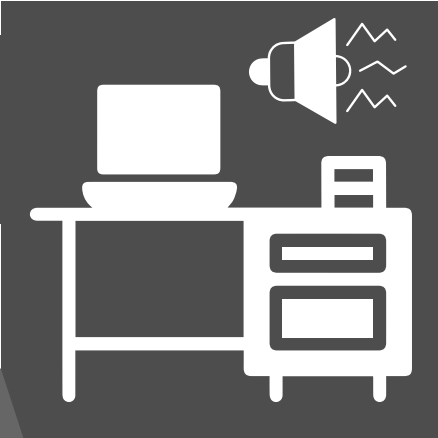
In summary, in the concept phase of a project it is important to identify the user's pain points to develop effective solutions. In the case of a project on co-working areas, some of the common pain points could include noise caused by other users, lack of affinity with other users, poor signage of spaces, distribution of personal spaces, space for user objects and ergonomics. Fixing these issues can improve the user experience and increase project effectiveness.


Once the pain points have been identified during the concept phase of the project, effective solutions must be found to solve them, but first of all they must be prioritized, not all pain points have the same impact on the project and some may already be resolved through existing solutions, for this reason the first phase is to focus on some points that are considered the main ones on which to develop the concept.

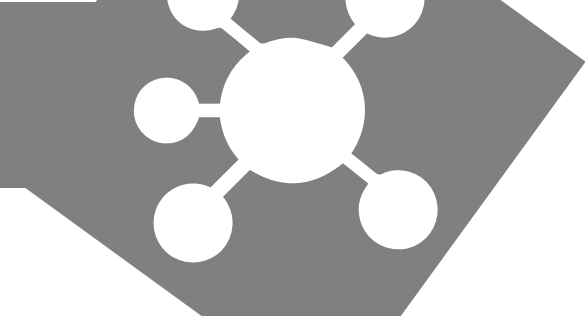
In our case, the first two pain points are strictly linked to the type of user who frequents the co-working area, for this reason users usually tend to look for an area in which the internal user is already in line with what the specific user thinking.

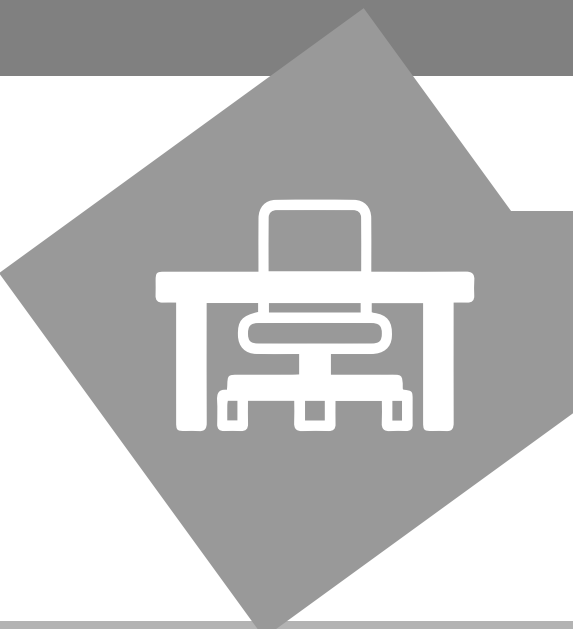
This is why the pain points that we take into consideration mainly for the concept are the last 3 which are all directed towards the relationship between the user and the environment itself, therefore:


The understanding and reporting of the distribution of spaces, the space for each workstation and the space for the user's personal objects.

1  Desk neighbors noisy

 **2** Unrelated users

No mapping **3** 

 **4** Space location

Effect space personal **5** 

03.3 POSSIBLE SOLUTIONS TO THE PAIN POINTS

The phase of conceiving possible solutions starts with the collection of the problems highlighted by the pain points and their junction with the data learned in the research phase, to carry out a correct evaluation I answered again design questions that help in defining the solutions. These solutions focus on the 3 pain points that we have previously selected and mix with the discovery canvas data to define solutions, which are not definitive, but which are in agreement with what was indicated during the research phase. The solutions have no design purpose, but are used to test the truthfulness of the data and their connection with the real problem. This evaluation and test phase can only take place if we hypothesize new solutions to our pain points or if we take into consideration existing solutions that totally or partially solve the same problem.

What do we have to build? What are we being asked to do?

Improve the usability of coworking areas.

Thinking about users with needs details.

Define a standard of use of the areas that makes the user autonomous even in management.

Why do you do what you do?

Coworking areas are increasingly becoming our offices, now even companies carry their own employees to work within these areas, therefore transform the old concept of being inside an area used for work e bring it towards a perspective in which each of these areas is your office and therefore you are comfortable inside it.

What thoughts, constraints, barriers? Which affect the design the most

The need to be able to work without being disturbed, also having sound-absorbing protection.

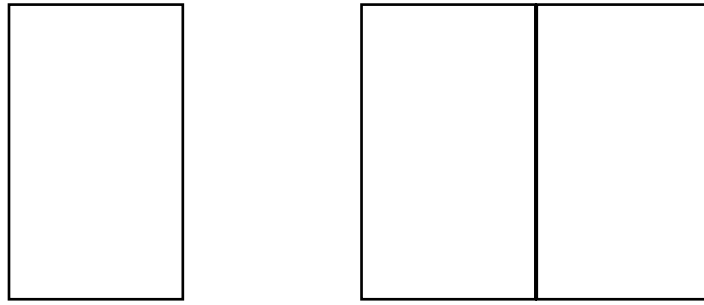
The possibility of working together with colleagues on a single hot desk, to avoid the burden of a meeting room.

The problem of the space needed to stow the user's materials and personal effects. A clear signaling system of the position of the workstations and services that facilitates the usability of the space.

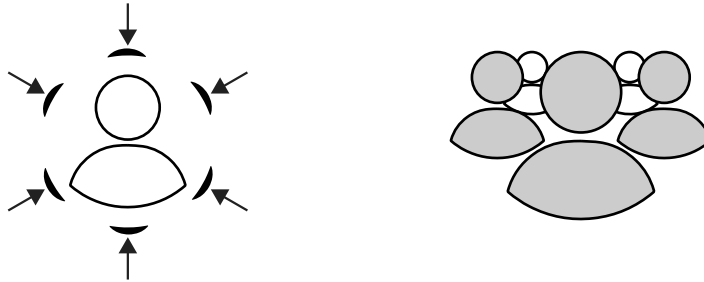
What are the most appropriate functions for our solution?

In response to this question, we can begin to define some possible solutions, only on an ideal basis, without actually defining a real project.

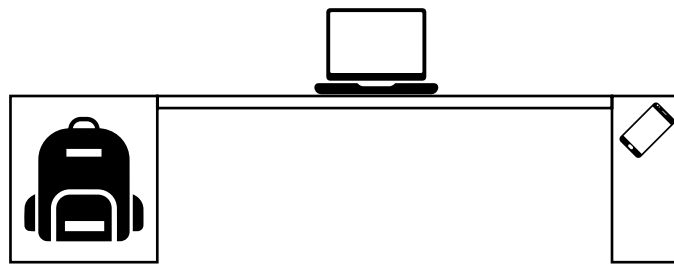
- 1- The first solution consists in creating an expandable workstation that can be adapted to the number of users.
- 2- The second solution creates an isolation system for the user (sound absorbing panels) to guarantee privacy.
- 3- The third inserts a modular system of interlocking spaces to allow the user to insert all their objects.
- 4- The fourth creates a guidance and mapping system of the internal area to allow users to easily orient themselves inside the area and find their own position.



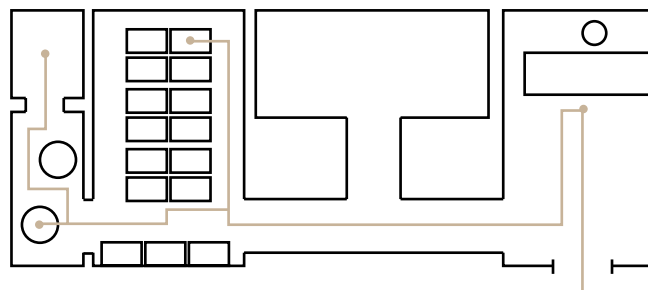
1



2



3



4

- 1. solution to space location
- 2. solution to noisy neighbor
- 3. solution to objects storage
- 4. solution to mapping and places segnalation

03.4 EVALUATION OF THE SOLUTIONS

Selection

Which solution has the most impact on the user and on the business?

When it comes to evaluating possible solutions based on pain points, it is important to consider both the value these solutions offer to users and their impact on the business. In this case, there are four solutions to choose from, with number 1 being more business oriented, while the other three are more user oriented.

To evaluate these solutions, the first step is to understand which pain points you want to solve. In this case, it seems that the main problem is the need for an expandable workstation. Solution number 1 appears to be the most straightforward, as it addresses this issue specifically. However, it's also important to consider the value that the other three solutions offer to users.

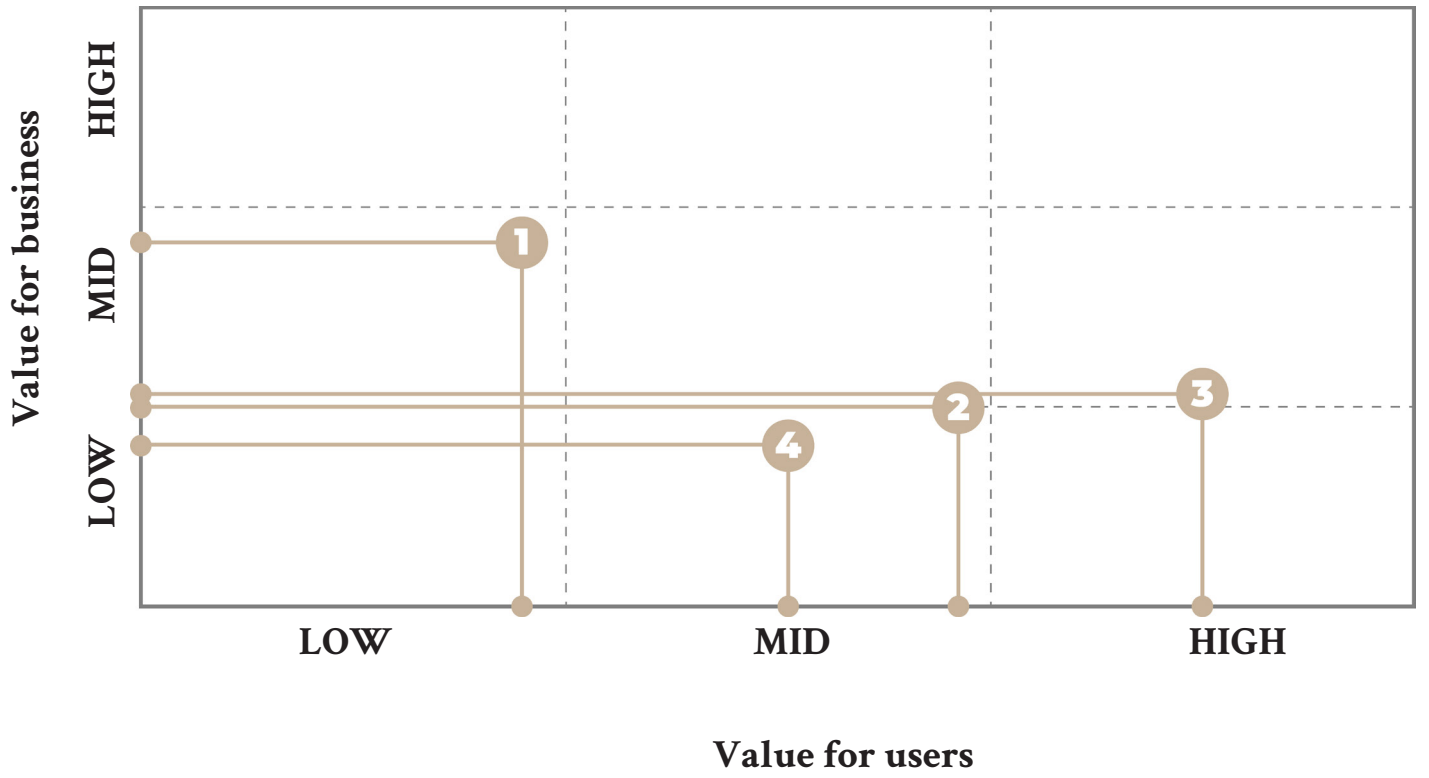
Solution number 2 seems to be an interesting solution as it offers a similar solution but with a wide range of expansion options. This could be a big boon for users looking to personalize their experience. Furthermore, this could also lead to more sales opportunities for the business.

Solution number 3 appears to be even more complex and may require more user effort, but may also offer greater benefits. For example, if users are willing to invest the time and energy to learn how to use this more advanced solution, they may experience greater efficiency and flexibility than other solutions.

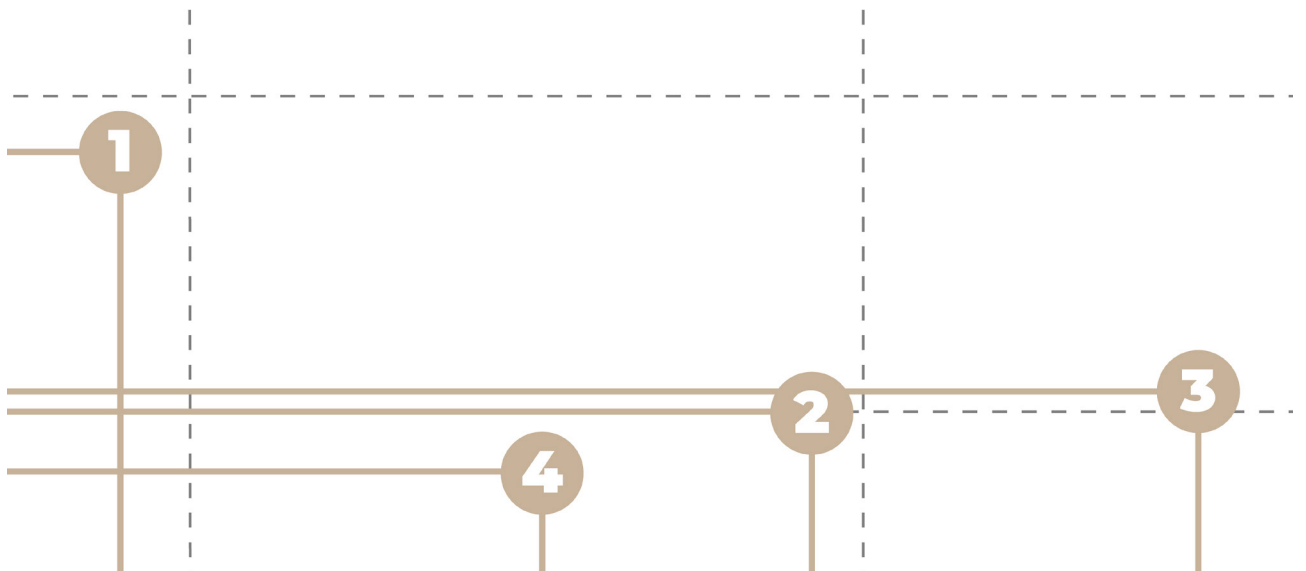
Finally, solution number 4 seems to offer a simpler but equally effective solution, which could be appreciated by less experienced users or with less time available. However, it's also important to consider the effect on the business, as it may lead to fewer sales opportunities than more complex solutions.

Ultimately, the choice of solution will depend on the specific needs of the business and the users involved. It is important to carefully evaluate the value that each solution offers to users and to the business and choose the one that best meets the needs of both.

In conclusion, analyzing the graph and weighing the 4 solutions, the most effective concept is the first, considering integrating solutions deriving from the second and third solution to structure a complete project, which mainly focuses on the business and in this case on the manager, with the support of the reference user, i.e. the users of the co-working areas.



SOLUTIONS



- 1. solution to space location
- 2. solution to noisy neighbor
- 3. solution to objects storage
- 4. solution to mapping and places segnalation

03.5 CONCEPT IDEATION AND STUDY

Inspiration

Modular/insulating workstations

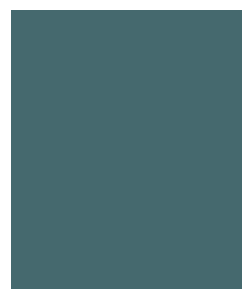
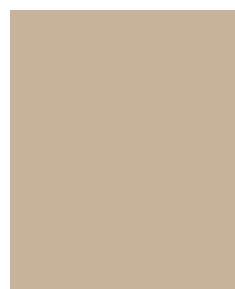
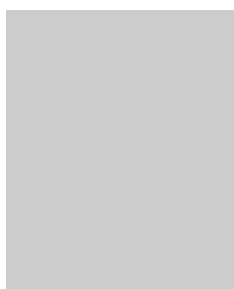
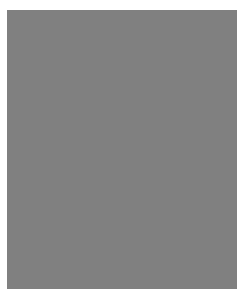
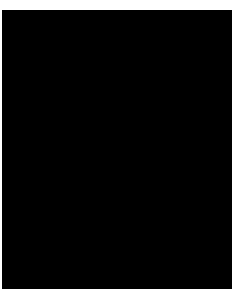
Taking inspiration from existing projects is a fundamental aspect when you want to develop a new and original idea, especially in the field of organizing shared workspaces and co-working areas. A new method of organizing shared workspaces based on the implementation of new furniture or structures that allow for a better distribution of spaces and guarantee good livability for all users and lower costs for the manager is a very interesting and innovative idea.

However, the realization of this project requires a careful analysis of the existing solutions, in order to take inspiration from what works and improve it, while trying to avoid the mistakes already made. In this way, the new organizational method of shared workspaces could take advantage of all those workstations that are modular, save space and guarantee the user a sufficient work area.

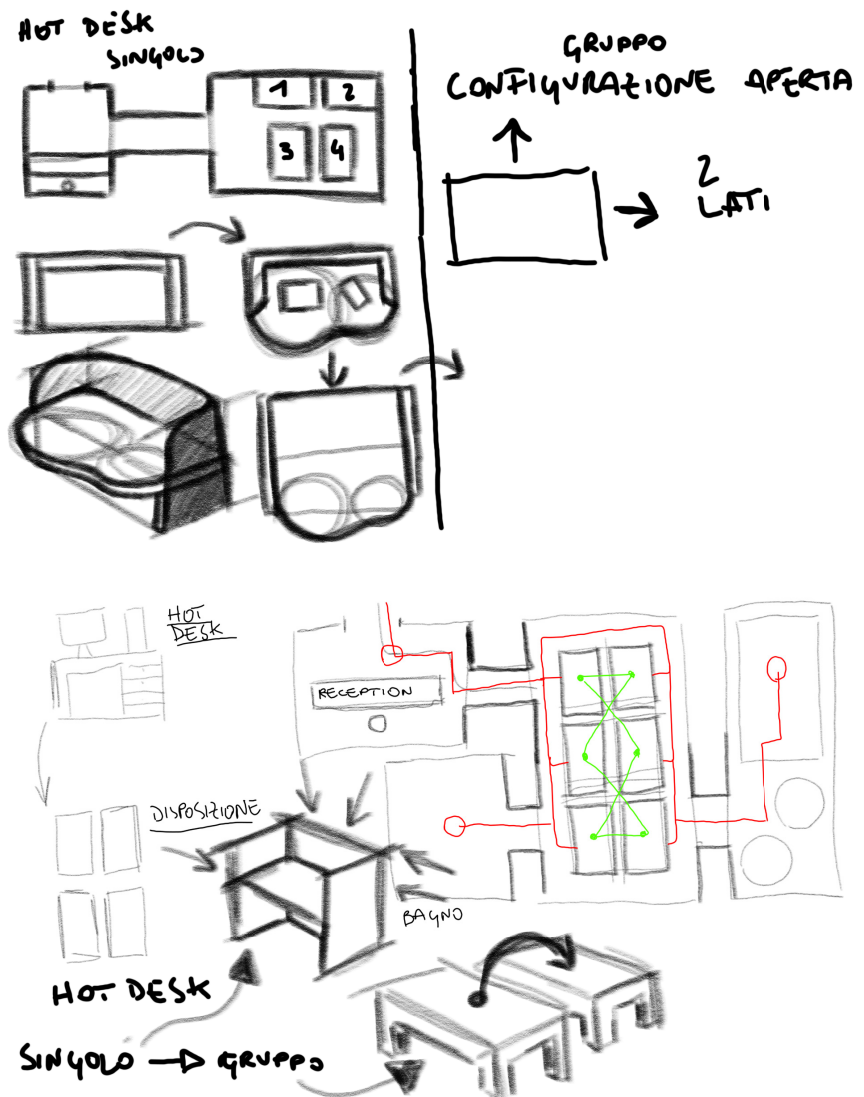
Taking inspiration from existing projects can also save time and resources, as you avoid starting from scratch and you already have a solid foundation to build on. In this case, the implementation of new furniture or structures that allow a better distribution of spaces and guarantee good livability for all users and a lower cost for the manager can be made possible thanks to the knowledge and experience acquired from similar solutions already present on the market.

In summary, taking inspiration from existing projects is an important step when you want to develop a new and original concept. In the case of the new organizational method of shared workspaces, the search for modular, spacious and efficient solutions already present on the market can represent a precious starting point for creating a welcoming and functional working environment for all users, while optimizing costs for the manager.

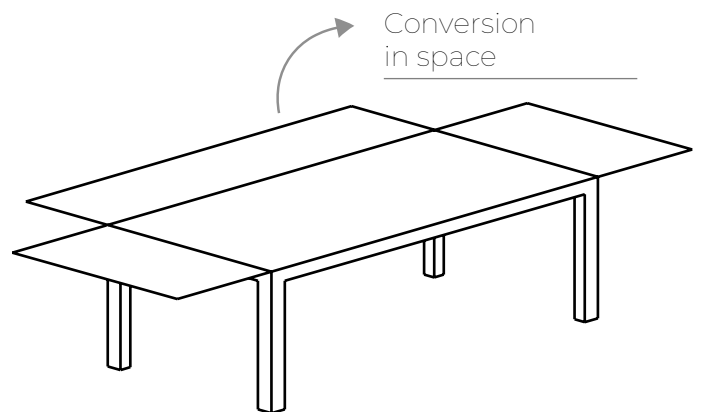
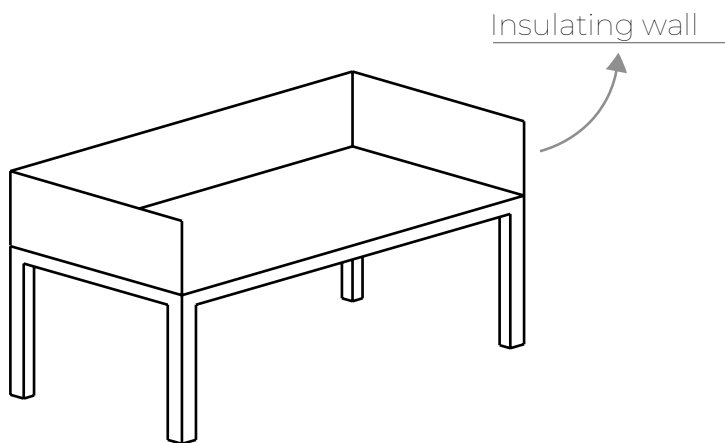
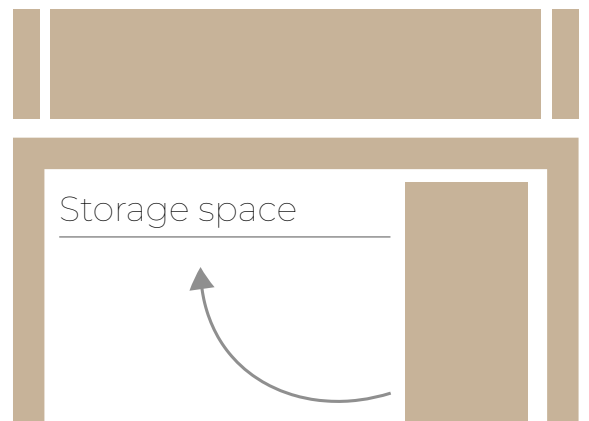
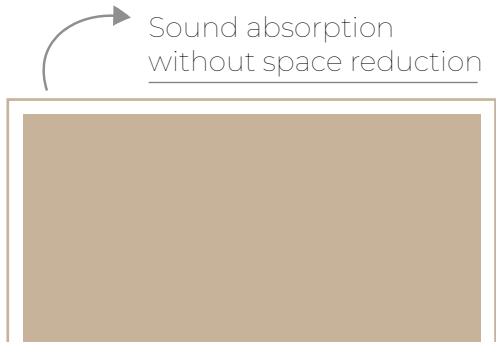




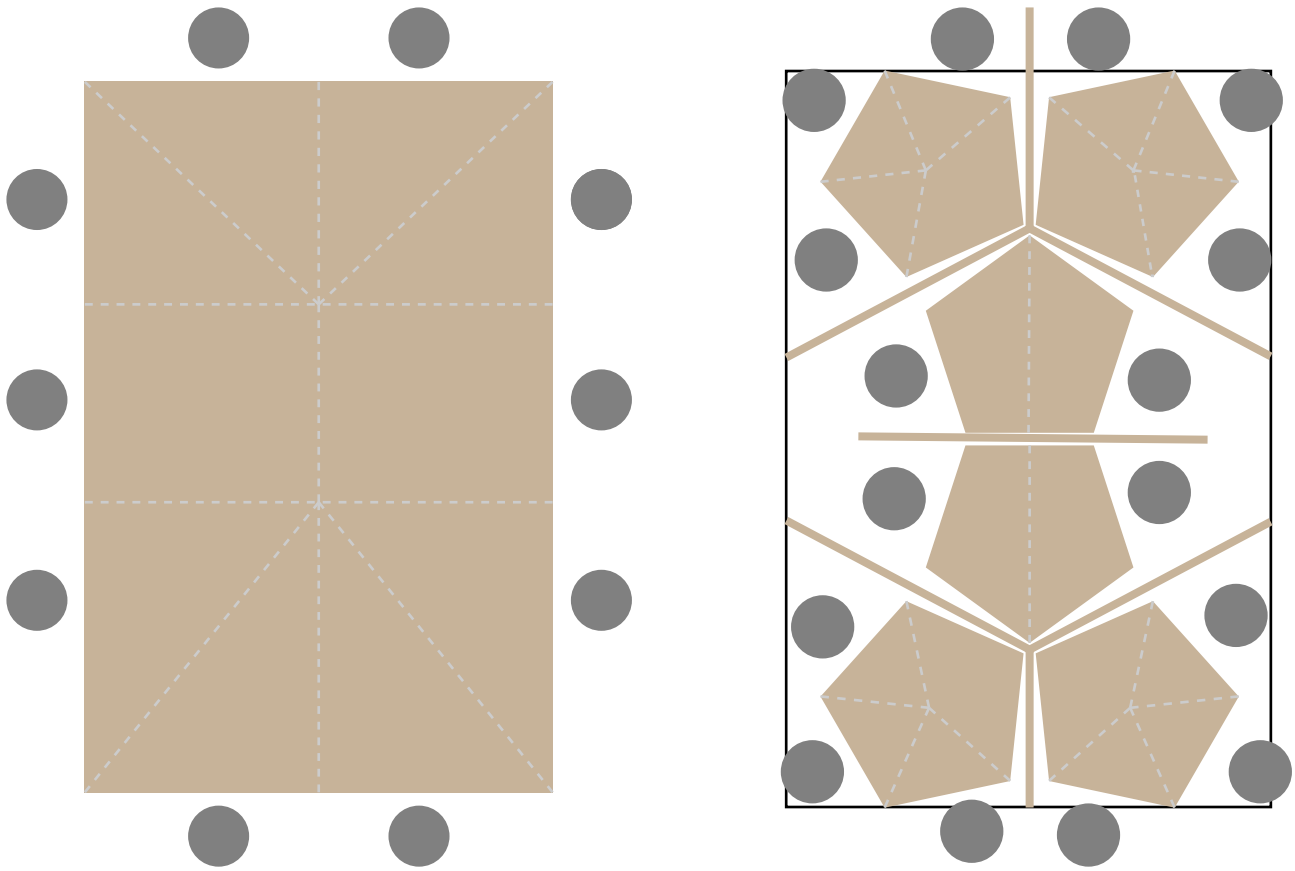
The conception of the concept mainly consisted in creating a solution to the first pain point analysed, and therefore creating a new type of furniture that would allow the previously explained interactions. This is based on the concept of hot desks and therefore of single workstations which in co-working areas are positioned in the common area, generally an open space, also converting these areas into environments suitable for both single users and teams and guaranteeing greater diversification of the use of spaces. An initial idea of the project saw in fact a single system, which would allow the development of two different configurations and consequently allow the configuration change directly by the user, this would guarantee the possibility for teams or single users to organize work depending on the number of users, but important space problems would remain due to the size of the solution itself.



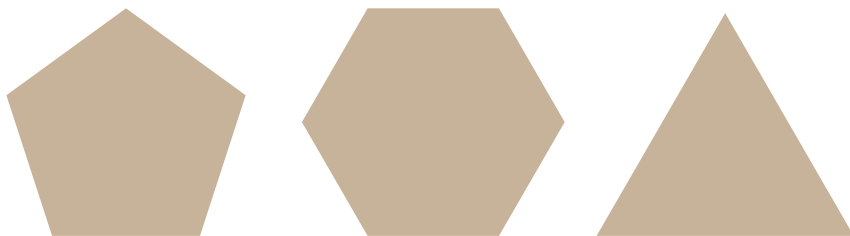
Version 1 SINGLE



Versione 2
MODULARE





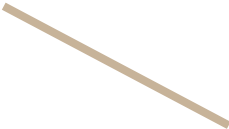

Module



Collapsible separator



The second version of the basic idea consisted of a modular system and therefore designed to be used on a large scale, no longer as a single element in its own right. The concept was to have within the shared space a series of workstations capable of being arranged according to various orientations, which once again allowed both the individual user to work while maintaining his privacy, and the teams of companies by merging several modules at the same time. same moment. To allow this modality, the modules had to have a specific shape and above all they had to be previously arranged according to the size of the spaces themselves and the methods of use that were aimed at. In this case, having something that differed from the classic structure of a desk for a workstation, it was important to take into account the ergonomics of the workstation and the minimum measures established by the workstation regulations for offices.

	Users
	Workstation
	Separators
	Space for users

03.6 STUDY OF ERGONOMICS

Work station: the legislation

The height of the work surface, fixed or adjustable, must be between 70 and 80 cm. The space available to the worker must allow both the accommodation and movement of the lower limbs, as well as the entry of the seat and armrests - if present.

The depth of the desk must ensure an adequate visual distance from the screen, while the document support must be stable and adjustable, positioned to minimize head and eye movements.

The distance between the user and the monitor must be between 50 and 80 centimeters, depending on the size of the display used. The optimal height setting is achieved when the top line of the screen is at eye level.

As for the minimum distance between desks in the office, it must be 80 cm. If the object behind the worker is a wardrobe with doors, the minimum space behind the desk must be increased by at least 30 cm to allow for its use.

Considering an area of desk space calculated based on the use of:

- Laptop
- Tablet
- Smartphones
- Agenda
- Eventual block notes

the resulting area required is 0.805 square meters per location.

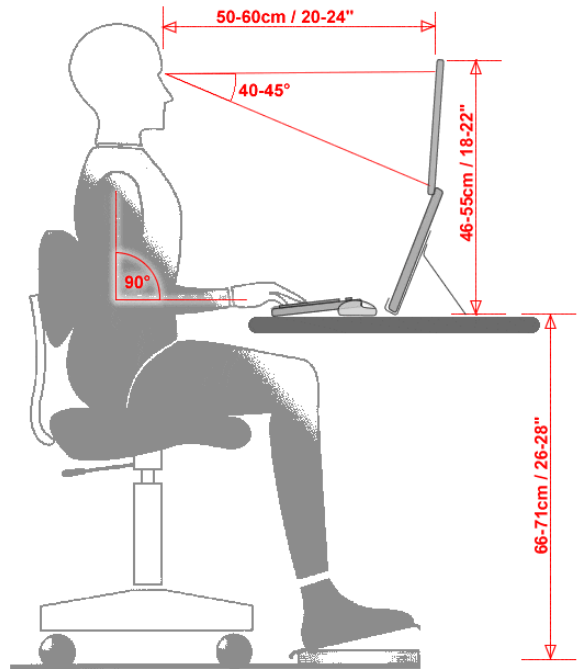
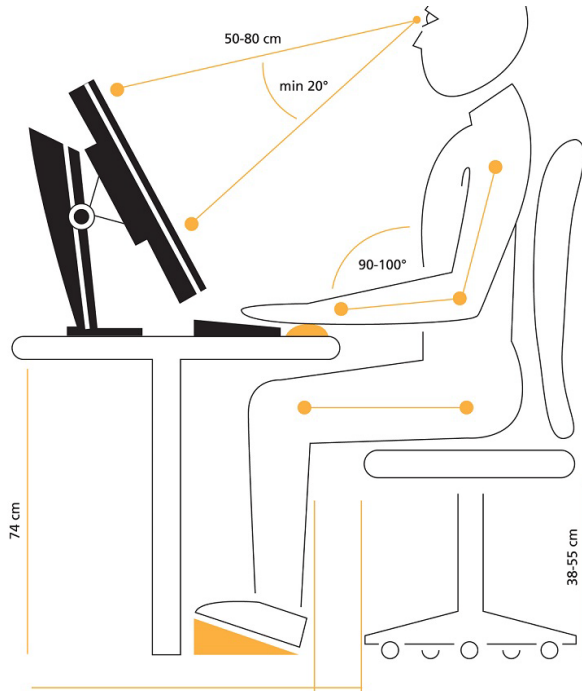
Desk from $b= 115$ cm $h= 70$ cm

An ergonomic posture is not only essential to be able to work continuously and painlessly and to prevent illness. The furnishing of the workplace also plays a central role, and the key concept is that of ergonomics. Both employees and employers benefit from ergonomic work.

An ergonomic workplace design has advantages for both employers and employees: the risk of occupational diseases and accidents at work is reduced, while the burden on employees can be alleviated through sensible planning and implementation of measures adequate. Especially in times of demographic change, you as a responsible entrepreneur can counteract this by using ergonomic workplace design. Thanks to ergonomics you will be able to keep older employees in the company longer and, at the same time, you will be able to meet the expectations of your employees for an attractive and comfortable workplace.

Furthermore, the productivity of your employees can be boosted by ergonomic computer workstations. Studies show that a dynamic sitting style or alternating between standing and sitting work reduces fatigue and prevents damage and pain resulting from poor posture. In turn, this affects the profitability of your company: you will have less sick leave and will increase the satisfaction, concentration and, therefore, productivity of your employees. Fewer sick days and higher employee productivity mean more revenue for your business.

The extent to which turnover can be increased through workplace ergonomics depends on many different factors. The industry sector, the type of business and workload, as well as the health of the employees are just some of the aspects that have a fundamental impact. Although studies mainly show a positive cost-benefit spillover through ergonomic workplace design, there is no concrete basis for the calculation. Below we present the results of a study by the Fraunhofer Institute, conducted in the USA and adapted to local conditions. The significance of the individual parameters is to be understood as a trend and not as an absolute datum, as the requirements (i.e. laws and labor relations) in the USA differ from those in Europe.



Diminuzione della produttività durante un turno di lavoro



03.7 MODULE AND DISTRIBUTION

Taking into account the data collected so far, the creation of an effective module and its distribution were linked to various stakes and essential factors, such as, for example, the ergonomics of the workstation and the minimum space for each user. As regards the distribution of the modules it was obviously necessary to follow the size and spacing of the environments, but in turn it was also very important to take into consideration what the module is and how it is set up to work, in order to guarantee good usability.

A modular structure is a particular geometric construction that graphically takes the form of a grid that divides the two-dimensional or three-dimensional space into constant units that repeat themselves with criteria of seriality.

A modular grid is often obtained starting from the serial repetition of the simplest geometric figures of the plane, such as the square, the equilateral triangle, the hexagon, etc. After defining a grid of this type, it is necessary to define the modular unit, i.e. the shape that will have to be inserted into the meshes of the structure to create the modular composition.

In simple words, it is a question of placing a particular geometric figure within each space of the modular structure, which can also be obtained through a rigorous construction, from whose repetition within the structure the modular composition sought will be born. In the case of the drawing reproduced alongside, I used a square mesh structure, inside which I inserted a particular module that I obtained through a geometric construction starting from the square.

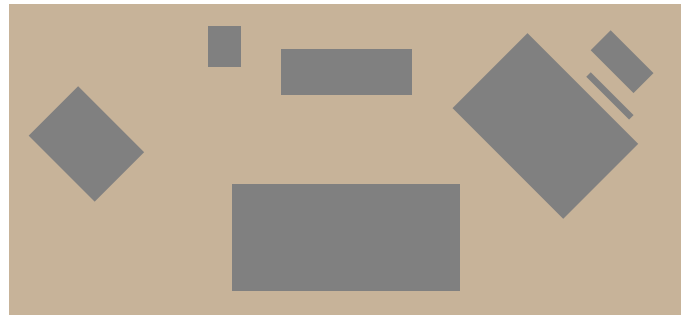
The effects deriving from the composition of the module which is repeated inside the structure can also vary according to the way in which the same module is composed in the grid: for example in the composition on the side the modular unit is inserted with alternating rotations of 90 degrees of the form, in order to create an effect of greater complexity in the composition.

I also made sure, in the design of the modular unit, to create "ligatures", or geometric elements of reference between a module and those adjacent to it, in order to create a greater fusion effect in the modular composition. It must always be taken into consideration that the final effect of a modular composition does not depend only on the design of the single module, which is still an important factor, but also on the way in which the single modular unit fits inside the structure; therefore the creation of a new modular structure always admits several possible solutions, the effect of which is often not foreseen in advance, but must be experienced during the examination of the various combinations. I truly believe that modular compositions are to be appreciated above all because they derive from research, from open experimentation, from a study that always tends to discover new and interesting solutions. As can be seen by reflecting on this, modular structures are in a certain sense not only pure geometric constructions, but also creative processes, and demonstrate that geometry can sometimes be transformed into art and aesthetic research.










Classic desk

Arrangement 1

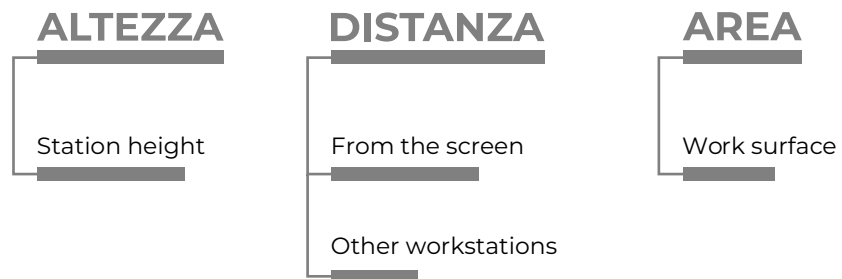


Arrangement 2

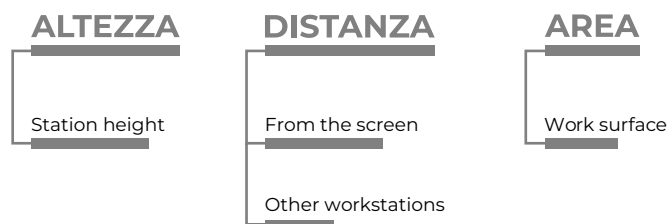


	Smartphone
	Pen/pencil
	Notebook
	PC/screen
	Keyboard
	Mouse
	Tablet

Guarantee:



Module: Guarantee:

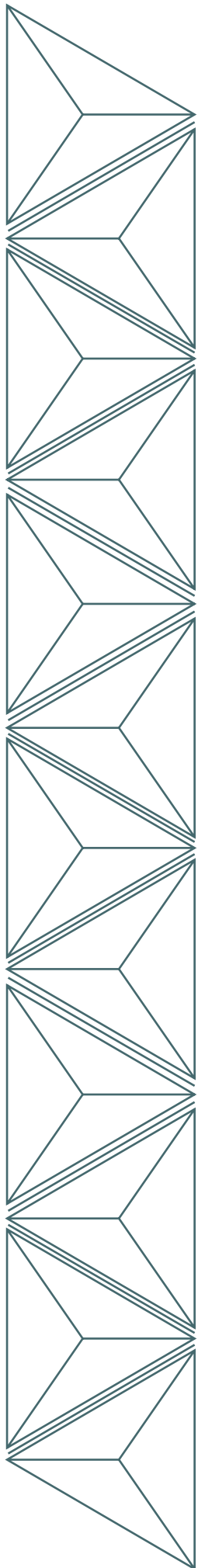


ISOLAMENTO

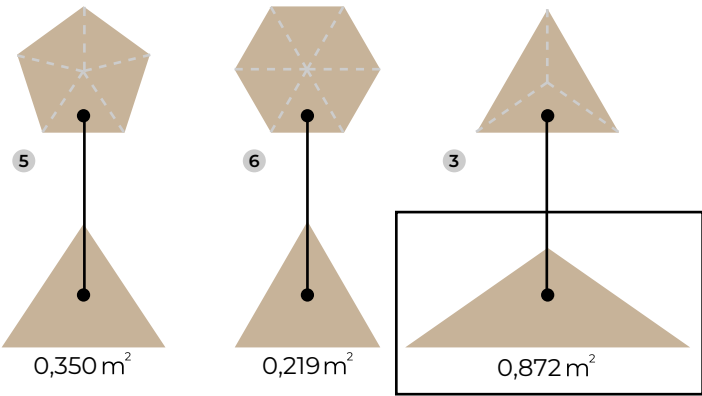
Privacy autonomomus workS

TEAM WORK

hareable space

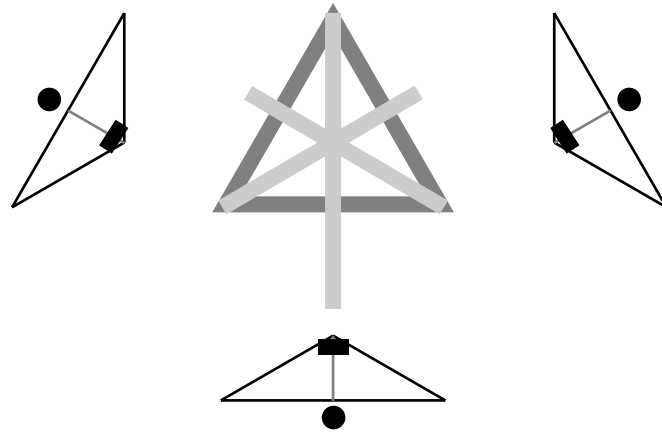
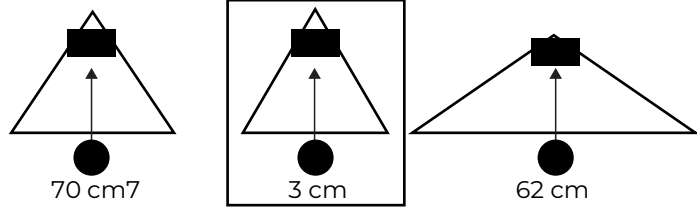


Workstation



Space for users

Distance



0,805 m²
Equivalence



Sharp corners

50-80 cm
Minimum distance

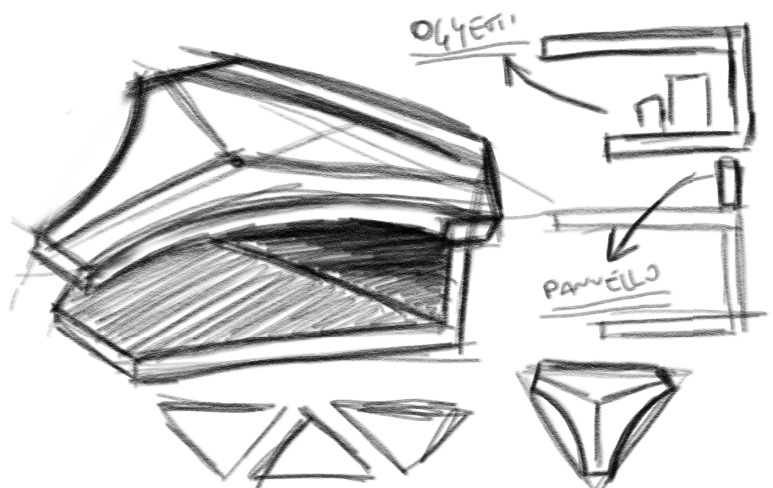
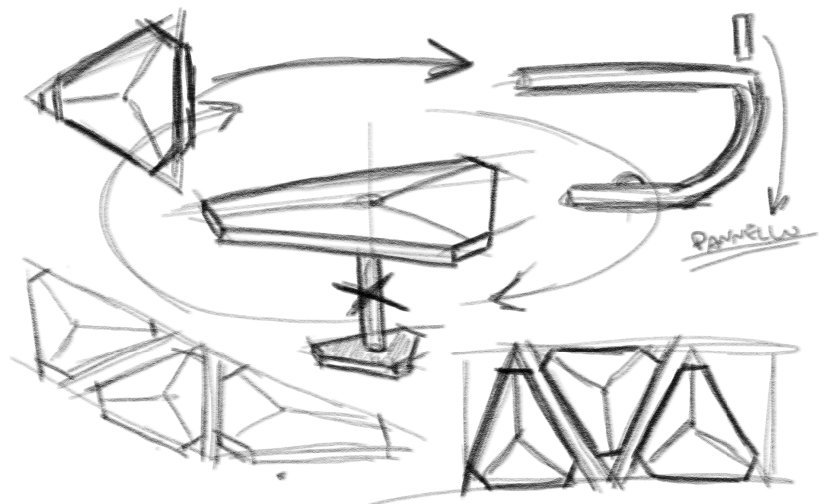


The new triangular-based modular desk represents a change in the field of office furniture and co-working. Thanks to its modular structure, this desk can be easily integrated into a distribution of similar desks, creating a unique and functional work environment.

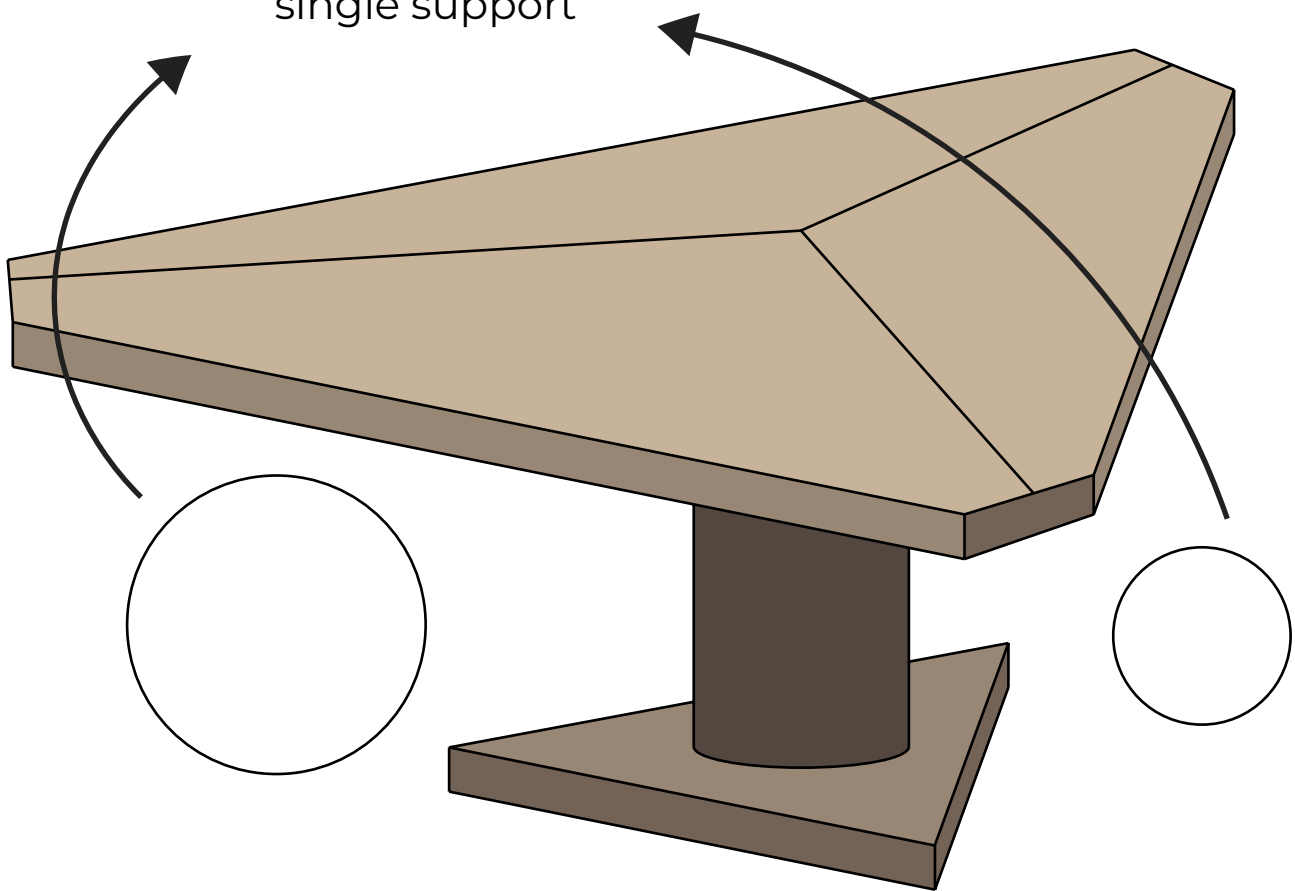
One of the main characteristics of the triangular-based modular desk is its ability to isolate itself from the surrounding environment thanks to a self-moving panel. This allows users to work calmly and concentrated without being disturbed by others. Additionally, the panel can be lowered to create a larger work table, allowing for closer collaboration with other users.

Another important feature of the modular desk is its ergonomic system. The desk is designed to ensure a correct position for all users, regardless of their height or posture. This reduces muscle stress and fatigue, allowing users to work longer and more comfortably.

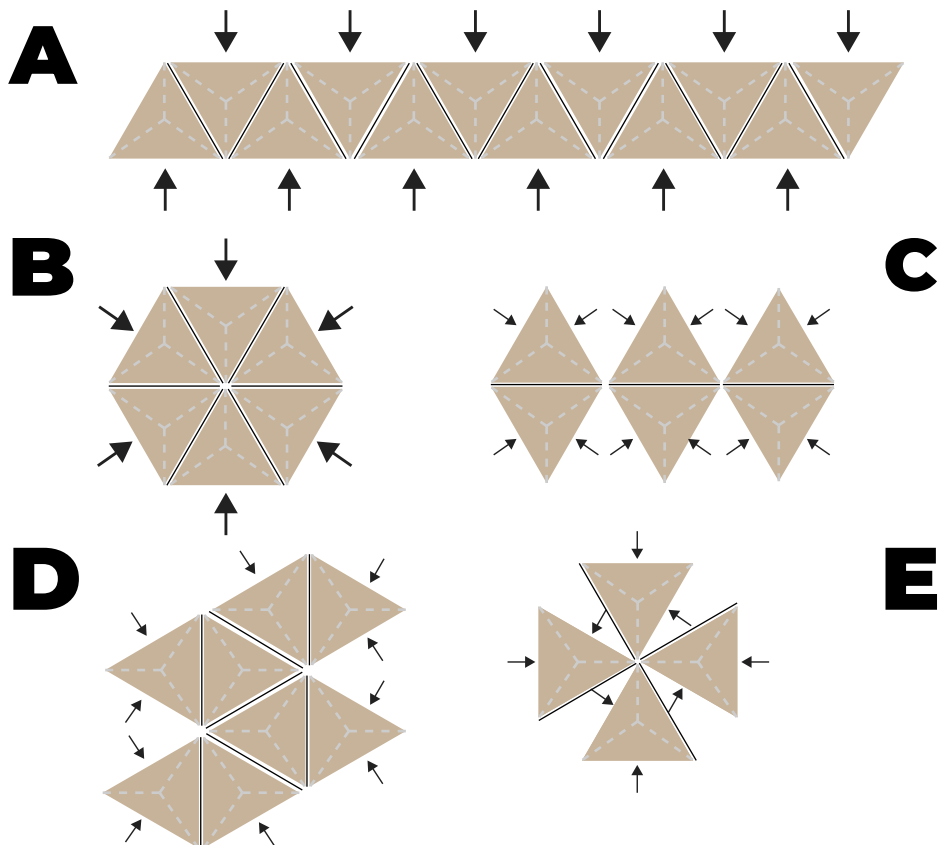
Thanks to these innovative features, the triangular base modular desk can significantly improve co-working environments and user experience. Work environments become more functional, allowing for greater collaboration and greater isolation when needed. Furthermore, the ergonomics of the desk help users maintain correct posture, reducing fatigue and improving general well-being while working.



Legroom with
single support



The arrangement must allow for 1/2
sides with the sound absorbing panel.



Flexibility of workspaces is a crucial aspect if you want to improve the productivity of your collaborators and guarantee an efficient working environment. Modular furniture for office furniture, or for your commercial spaces, is a practical solution that adapts to the dynamic growth of your company.

You may still have some doubts. However, bear in mind that you can also adapt them to existing office designs to suit the needs of the job at hand. Here are some surprising benefits you can get with modular office furniture. You will see that it will seem difficult for you not to use them.

Modular and sectional furniture: productivity and flexibility in the company
As an entrepreneur or freelancer, you know that the needs of your work can change. You may want to move, because you need more space, or you may want to redesign internal operations, to welcome a new collaborator.

Your office furniture must be flexible, to adapt and satisfy the changing dynamics you will have to face. Modular and modular furniture allows you to recreate the right atmosphere for your style, to communicate the personality of the company and offer functional spaces to your work team. And always within the budget you set.

What you are about to see are the main benefits we have found in companies that have adopted modular office design.

1) *Optimize spaces*
Modular office furniture optimizes both small spaces and larger rooms, which need to be divided into different operating environments.

An excellent example of modular furniture is archive furniture. Although, everyday, we are more and more devoted to digital, it is inevitable to have documentation, projects and advertising material to keep.

Wardrobes, chests of drawers and modular bookcases are a practical solution that adapts to the available spaces, to furnish with style and better organize your daily activities. Modular desks are also another excellent example for organizing the work of collaborators, or for creating tables for meeting rooms that can be adapted to the number of people present at the meetings.

You can create versatile workstations and modular desks that are always ready to offer you efficient workspaces. You have infinite possibilities at your disposal to plan your spaces and change the layout, as you wish.

2) *Tailor the office furniture to people*
Use office furniture that adapts to people and not the other way around. This is the heart of the concept of "design thinking". You can create modern and functional offices, which increase productivity, because they adapt, like a glove, to the needs of your work team.

Create islands with desks for group work, or separate and ensure the right privacy for individual work activities. Modular office furniture offers your collaborators a stimulating and comfortable environment. A member of staff who is at ease in their surroundings will always be predisposed to give the fullest potential of her.

You may have special needs in the dynamics of work. Perhaps you have employees who have to work in silence, to concentrate, and others who, on the other hand, need to interact with colleagues all the time.

You can create suitable spaces to meet the working needs of both, with open areas and large desks dedicated to brainstorming or small silent environments for more delicate activities. Put the needs of your collaborators first and you will always get the best from them for your business.

3) *Cut costs*
Efficiency translates into savings for your company. Although it can offer an image of luxury and style in the workplace, modular and modular furniture cuts the costs of your investments.

There are many factors that play an important role in reducing the expenses you incur for your business. Workstations, desks and modular wardrobes help you reduce the time for setting up and setting up the operating spaces.

Since time is money, they represent hidden savings that you may not have thought about yet. In particular, if you're starting your own business, you can't risk having your initial investments slow down your chances of making an early profit.

4) You save time and you can move or expand your office furniture
Modular furniture is easy to transport and takes up less space. Imagine you have a business, which you want to move to another building. The cost of managing the move with traditional furniture could be worrying and greatly affect your decision to move or expand your business.

However, modular furniture can be disassembled into small parts and reduces travel, because it allows you to optimize the loads on trucks necessary for transport as much as possible.

But it's not just about being able to marry them easily, that's just the first part of the story. In fact, if you move house it is said that traditional furniture will not adapt to the new spaces you have chosen, while modular furniture always offers you easy-to-implement solutions.

You can adapt your modular furniture to any environment without it looking out of place. This means you're saving time and worry. Also in the future, when you want to reorganize your operating spaces, to expand the workstations or to prevent them from becoming stagnant, you can do it with minimal economic impact.

How to furnish an open space office? Here are 5 effective solutions to recreate a stimulating and collaborative environment.

5) Replace only the modules you want to change and you are always ready to innovate
Sometimes, it may happen that after years of honorable service, some panels or modules of your furniture feel the passage of time. Or, they need new specifications, because technological innovation requires it.

Modular furniture lends itself easily to the replacement of some components and to be reconfigured to meet changes in layout. The modular panels are easily replaceable and functional, because they offer the space to integrate new technologies or to change the aesthetics of the interior space.

These flexible systems allow offices to meet the demands of the work environment, which are often driven by technological innovations.

These are the main advantages of adopting a modular and modular furnishing system. We can also summarize them briefly, as the ability to know how to accompany your company in the evolution of the future, from technological advances to changes in culture and work style.

Modular and sectional furniture: modern solutions for dynamic companies
Flexibility and long life make modular and modular furniture an economic and design solution. Whether we are talking about office chairs, reception furniture or ordinary desks, the atmosphere of the work environment can adapt to your needs and facilitate your collaborators.

Working methods change and furnishings, whether for the office or for your commercial space, must know how to evolve. The advantages of modular furniture are obvious: you get the best result in the shortest possible time, with an investment that pays off over time.

03.8 CONCEPT EVALUATION

The office furniture sector is saturated with various options and as far as one solution could be that of a new module would not take into account the various arrangements that shared workspaces may have.

Most of these spaces arise within cities and are often opened in buildings that were designed for other functions or that belong to a past historical period.

Designing innovative office furniture can be a challenge, as it is often assumed that existing furniture is already perfect and no innovation is needed. However, this attitude can limit the possibilities for improving the working environment.

First, it's important to recognize that modular or convertible furniture isn't the ideal solution for all work situations. Every office has specific needs for space, design and functionality. Modular furniture may not meet all of these needs, often being designed to fit a wide variety of spaces and uses.

Also, office furniture is not immutable and can be improved. While existing furniture may work just fine, that doesn't mean there isn't room for innovation. The design of new office furniture can open up new possibilities for improving the user experience, such as adding advanced features, improving ergonomics and creating more flexible workspaces that can be adapted to the user's needs .

Additionally, designing new furniture can lead to significant environmental and sustainability benefits. New furniture can be designed using recycled or sustainable materials, reducing the environmental impact of manufacturing and distribution.

It is true that office furniture has consolidated forms, but this does not mean that there is no room for innovation. On the contrary, design can be an important driver of change in the working environment, helping to increase work efficiency, improve user comfort and reduce environmental impact.

Finally, it is important to underline that the design of innovative office furniture must not be considered as a useless trend or a superfluous expense. On the contrary, it represents an investment in the working environment, which can lead to significant benefits for workers, the company and the environment. New furniture design can help create a healthier and more productive working environment, improve user satisfaction and motivation, and contribute to environmental sustainability.

In summary, designing innovative office furniture can be a challenge, but it shouldn't be considered unnecessary or superfluous. New furniture can open up new possibilities to improve the user experience and contribute to the sustainability of the working environment. The design of innovative office furniture represents an investment in the workplace, which can lead to significant benefits for workers, the company and the environment.

PART FOUR

Ideation

04 FINAL CONCEPT

Realizing that the solution couldn't be to reinvent office furniture, I went back to analyzing the data expressed in the previous chapters, retracing the design research from the foundations and focusing on one of the first points that were analysed, the spaces themselves understood as buildings. In fact, the starting environment which is immutable by the user and the manager in some cases must be the canvas on which to spread the first coats of paint. Without taking into account the environment itself, it is impossible to understand how to change the concept of the shared workspace. The second point that I have taken up again in this phase derives from my personal experience, in fact a strong point of some areas is precisely the presence of fablabs within them which allow users to prototype their ideas, but which could and can allow users and managers to intervene directly on the environment around them.

I am convinced that architecture is an expression and application of geometric order. One would expect the matter to be described by mathematicians and physicists, but it is not. There is still no clear and shared formulation of what the structural order looks like attainable in architecture. Whereas architecture affects humankind through the built environment more directly of any other discipline, it is surprising our limited knowledge of the mechanisms that create structural order. We focused in understanding biological and inanimate natural structures, but not in the systematic patterns reflected in our constructions. There are historic buildings that are universally recognized as very beautiful (see Section 2 in this Chapter, below). Between these there are the great religious temples of the past (Fletcher, 1987) and the cultural richness contained in various indigenous architectures (Rudofsky, 1964; 1977). Both are the product of empirical [constructive] rules, which can be deduced from the constructions themselves. A general set of rules of thumb was analyzed and collected in Pattern Language, by Christopher Alexander (Alexander et. al., 1977)[bib]183/[bib].

Structural laws underlie physics and biology, and I expect similar laws to apply to architecture as well. Alexander proposes a set of geometric rules that govern architecture, derived from biological and physical principles (Alexander, 2004). These are based on the hypothesis that matter obeys a complex order at the macroscopic scale. Structural order requires only that the forms are subdivided in a certain way, and that these subdivisions are related to each other. Even if the forces just as electromagnetism and gravity are too weak to explain, volumes and surfaces apparently interact in a way that mimics the microscopic interactions of elementary particles. The architecture can therefore be traced back to a set of rules related to physical laws. Structural order also refers to perceived form, and thus embraces two components of architecture that have been segregated in discussion of past decades: tectonic structure, and surface design. I don't want to mix the quality of the surfaces with the built structure; but our sensory mechanism responds to both compositional aesthetics and to tectonics. Thus, the structural order is due to both of these aspects of the built form, which are simply distinguished for the scale. This book devotes considerable effort to relating one scale to another, and to [mechanisms of] response Human. The structural order is conditioned by human perception, and therefore cannot be strictly judged by abstract criteria formal.

This is a familiar concept to physicists, where the observer becomes part of, and influences the behavior of, a system quantum. An underlying theme of this investigation is that architecture exists in the universe of human beings, and cannot be isolated in its own abstract realm. The basic criterion can be defined as: "if we react to this [system] in any way, then this [system] is a component of the structural order".¹ Through analogies with the structure of matter, three laws of the constructive order are postulated here (Section 3). These have been verified in three different ways: with a direct comparison with the greatest historic buildings of all time (Fletcher, 1987); with a comparison with fifteen principles that Alexander abstracted from creations throughout the history of mankind (Alexander, 2004); and from a comparison with the forms physical and biological. This result represents a successful application of scientific analysis (ie, the physicist's approach) to the understanding and solving a highly complex problem, which until now has resisted scientific formulation. The three laws of structural order can be used to classify architectural styles in a way that hadn't been done before (Section 4). Where most traditional architecture follows the three laws, contemporary and modernist buildings they often seem to do the opposite of what the three laws say. By "modernist", I mean the architectures introduced in the 1920s, which have led to the "International Style" and minimalist buildings. This result categorizes traditional architectures into a separate group from 20th century architecture, which is not surprising, given that architects wanted their buildings to be different. Will be useful to have a clearer idea of the corresponding structural order. It seems that all buildings are created by a systematic application of the same three laws, either by following them or by opposing them. So far, the results don't distinguish which architecture is "better". However, Alexander, along with Charles, Prince of Wales prefer one more humane architecture, which is more often found in traditional forms. Both believe that traditional architecture is more suitable to mankind for fundamental reasons (such as human physiology and psychology) and not merely for reasons of taste. There Section 5 of this chapter presents arguments to support this position. Underlying these arguments is a sense of comfort that a person feels about a building and the universality of its structural order, which is how an architecture connects together the visual, physical and tectonic aspects.

13 "A theory of Architecture" Architect Andre Bonfanti, 2006

04.1 PROJECT PHILOSOPHY

At this point I asked myself, how to collect all this information and concepts towards a concrete idea and retracing the discourse related to fablabs and the discourse of allowing users and managers to collaborate together, I remembered that in the past someone had already dealt concretely shared design with users to a level, which I personally think, has not been reached by other designers.

The designer I'm talking about is Enzo Mari.

Mari is universally considered one of the major theorists of Italian and world design.

Since the fifties he has participated in the avant-garde movements linked to design, joining the Kinetic Art group: there he has the opportunity to meet Bruno Munari, who will influence part of his future works, such as 16 animals and 16 fish.

In 1963 he became coordinator of the Nuova Tendenza Group and organized the group's exhibition at the 1965 Zagreb Biennale.

From 1963 to 1966 he taught at the school of the Humanitarian Society of Milan: it was the first of his experiences as a teacher, which continued until the 2000s in numerous prestigious institutions including the Milan Polytechnic, where he held various courses in the faculties of Industrial Design and Architecture, or in Parma where he taught History of Art.

During those years he developed his own design theory and put it into practice in the projects he worked on in the areas of product, graphics and exhibition design. For this continuous work of in-depth study, he was awarded a Compasso d'Oro in 1967 for his "individual research on design".

Also in 1967 he began his ten-year collaboration with Ceramiche Gabbianelli: faced with a request to design some decorations for "design tiles", Mari refused to play a simple role as a graphic designer and embarked on a complex philosophical path that led him to review at its roots the concept of wall decoration. For his tiles (Serie Elementare from 1968, Traccia from 1978 and Decorato a Mano from 1981, among the most important), Mari recovers technologies from the past and elaborates a poetics of shapes and colors made up of elementary signs.

In 1970 Mari published *Function of aesthetic research*, in which he shifted the attention of the debate on design from the product to the figure of the designer.

In 1972 Mari took part in the exhibition *Italy: The New Domestic Landscape*, at the MOMA in New York; the exhibition, very important, marked the birth of the fame of "Made in Italy" in the world, made known objects of the greatest designers of the time, such as Vico Magistretti, Ettore Sottsass and Paolo Lomazzi.

Mari was present at the exhibition with the reversible vase *Pago-Pago* (1969) by Danese, a molded ABS vase that could be used upright or upside down, changing its aesthetic appearance; the basic idea was to allow flexibility of use, given the impossibility of creating the perfect design for each environment.

From 1976 to 1979 he was president of the Association for Industrial Design, awardee of the Compasso d'Oro awards for design.

In 1983 the University of Parma dedicated a personal exhibition to him, thanks to a collection of 8500 original sketches and drawings donated by Mari to the University's Communication Study Center and Archive.

Works by Mari are exhibited in major art and design museums around the world, including, for example, the National Gallery of Modern Art in Rome, or the Museum of Modern Art in New York or the Triennale Design Museum in Milan.

Two days before his death, on October 17, the anthological exhibition Enzo Mari was inaugurated at the Milan Triennale, curated by Hans Ulrich Obrist with Francesca Giacomelli, a large and documented retrospective on sixty years of activity with two hundred and fifty works on display

Mari's "project" that inspired me was her book "autoprogettazione?" which I have read and re-read several times in its various editions, which also include the replies sent to him by readers and "users" of his book.

With the term self-planning Mari means an exercise individual to be implemented to improve one's awareness of the honest reasons for the project. To make the exercise possible, an archetypal and easy technique is suggested.

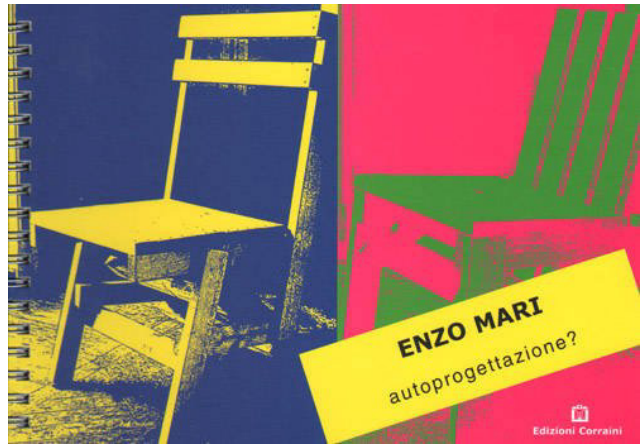
Inside the book there are various design solutions designed to be created through a simple procedure, the use of nails and a hammer with wooden planks, to allow every type of user to create their own piece of furniture inside their home with his only strength.

The project takes this concept expressed by Enzo Mari in a philosophical key, however wanting to provide users with a tool evolved, aimed at the "digitization" of this process. Providing users then with a digital tool, such as a digital configurator, which allows you to carry out the projects of own furniture and have the files necessary for digital production, therefore using CNC machinery.

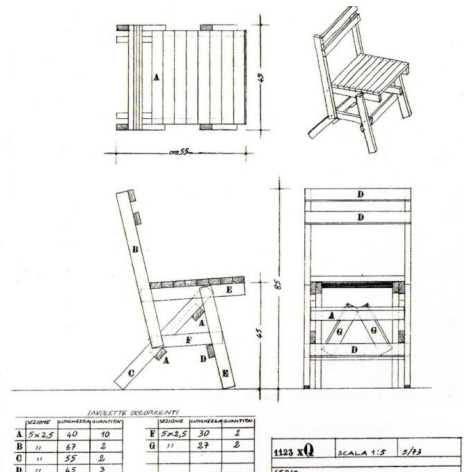
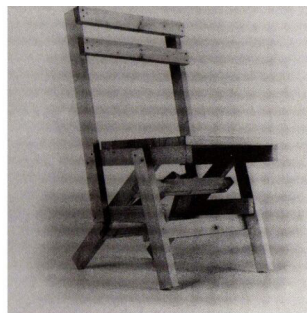
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2



3



1. Some furniture that can be made using the instructions in the book
2. The cover of the book
3. A page from the book explaining how to make a chair

04.2 IDEATION MAP

The conception of the project therefore had to be structured according to the data collected and the new awareness given by the chosen design philosophy.

The process was divided into 3 subdivided phases, to analyze each design aspect individually, in fact the hypothesized solution had to include different aspects, each of which was designed to achieve the same goal, but to provide a complete experience to the end user. The various components should therefore have collaborated in anticipation of providing a complete and easily usable output by a non-expert user.

When it comes to project management, it can be difficult to get everyone on the same page. With multiple stakeholders, different deliverables, and cross-departmental collaboration, sometimes a kickoff meeting just isn't enough.

Project conception is the initial phase of the project life cycle, in which ideas, processes, resources and deliverables are planned. It precedes the project plan, as it presents only a general overview, as opposed to the project plan, which includes more detailed information.

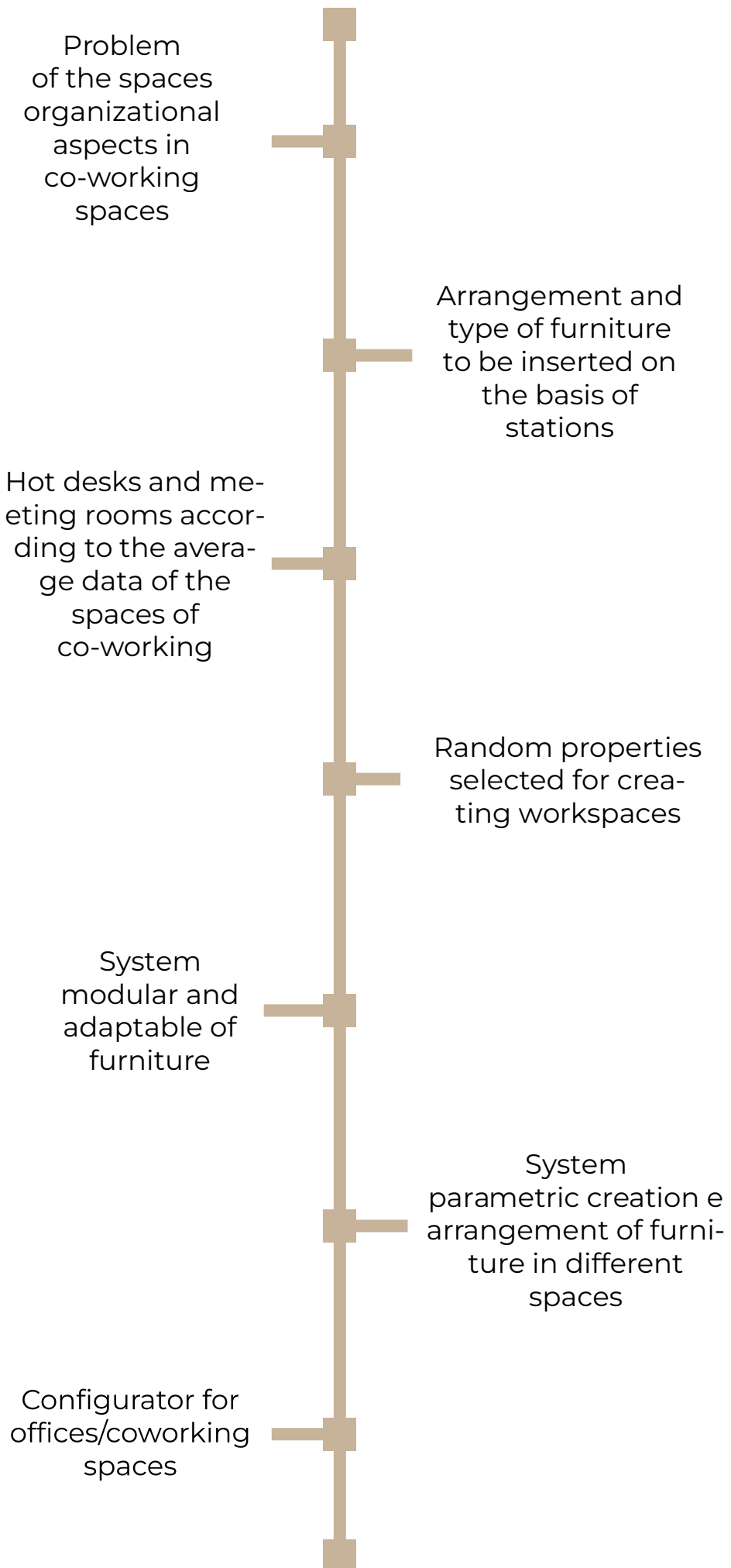
To get started, consider the needs of the project and the stakeholders. What do you want to solve? After having outlined the basic objectives of the project, the more concrete ones will have to be determined in detail.

Subsequently, the results of the project have to be defined. These are usually more detailed than the initial goal planning stage and include the specific activities to be completed during the project.

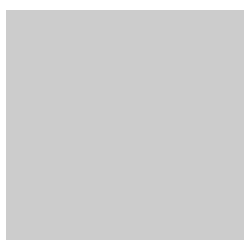
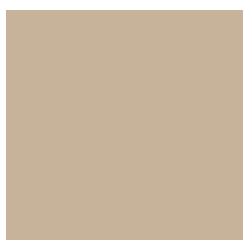
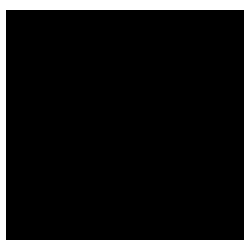
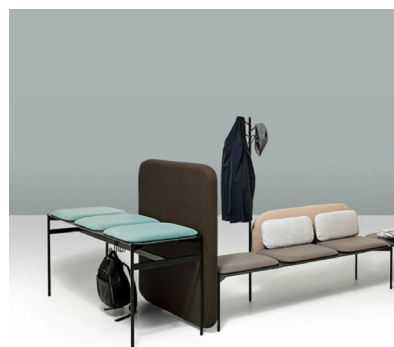
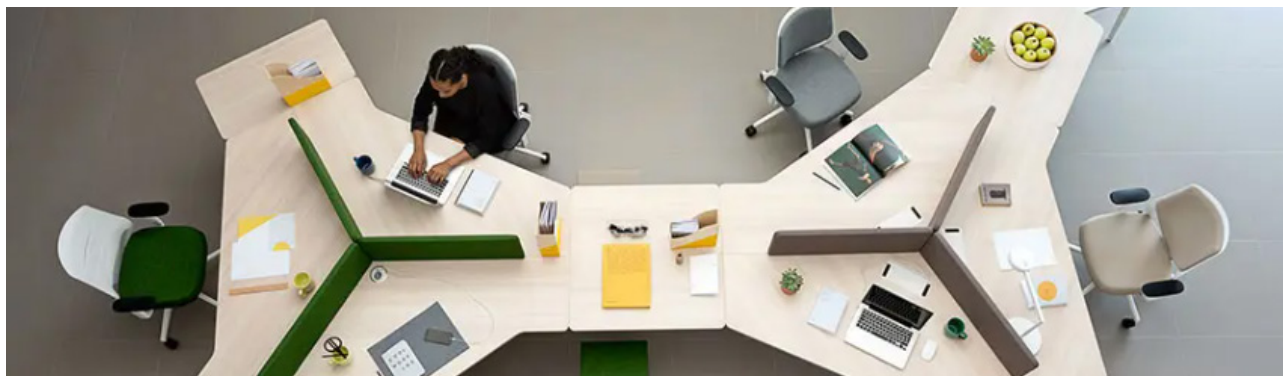
Once the results have been identified, the risks and constraints of the project need to be considered. Those aspects that could pose risks, such as the replication of an already existing or inefficient system, must be evaluated to avoid wasting resources in the future.

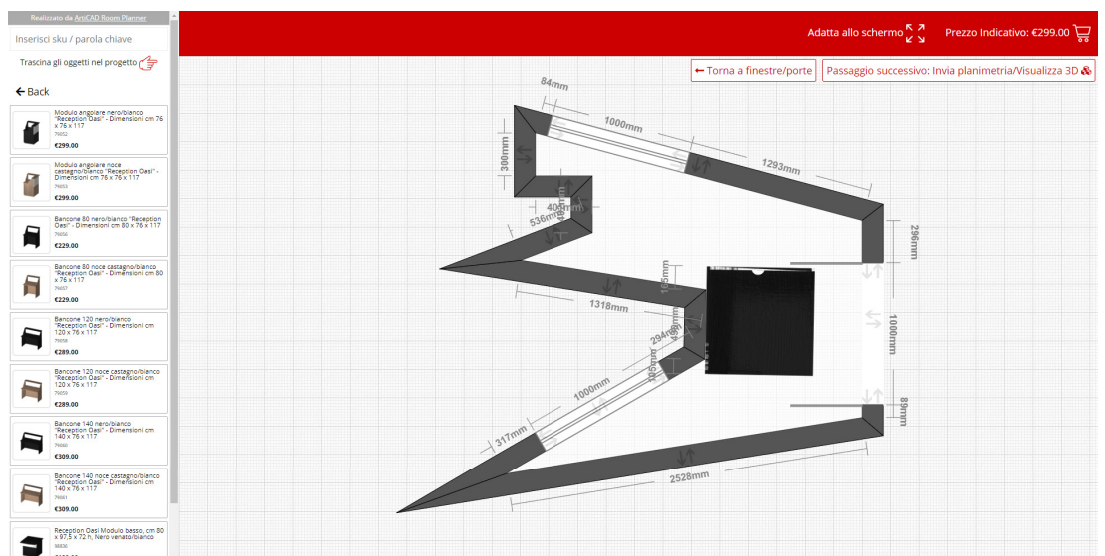
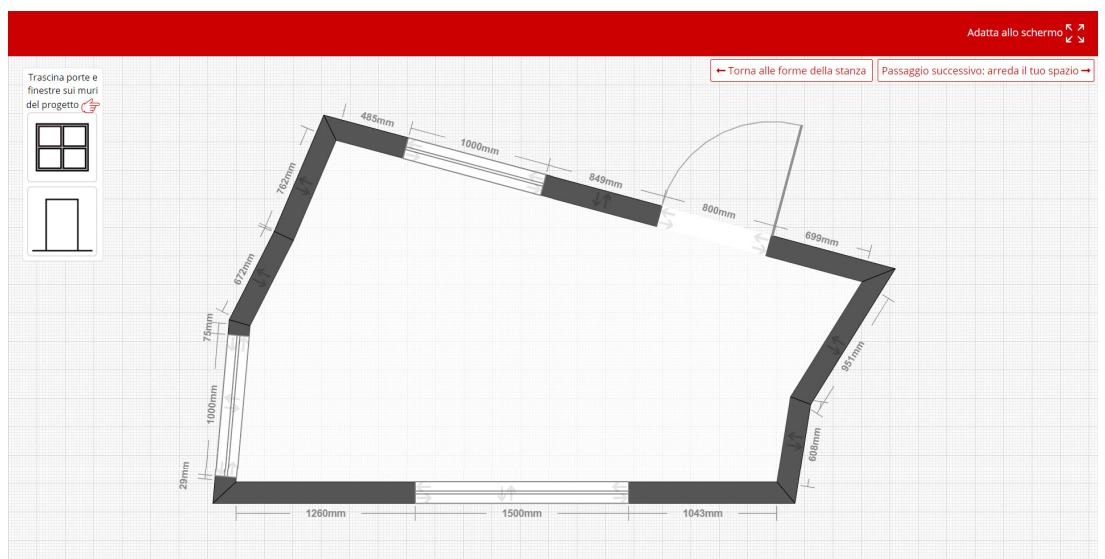
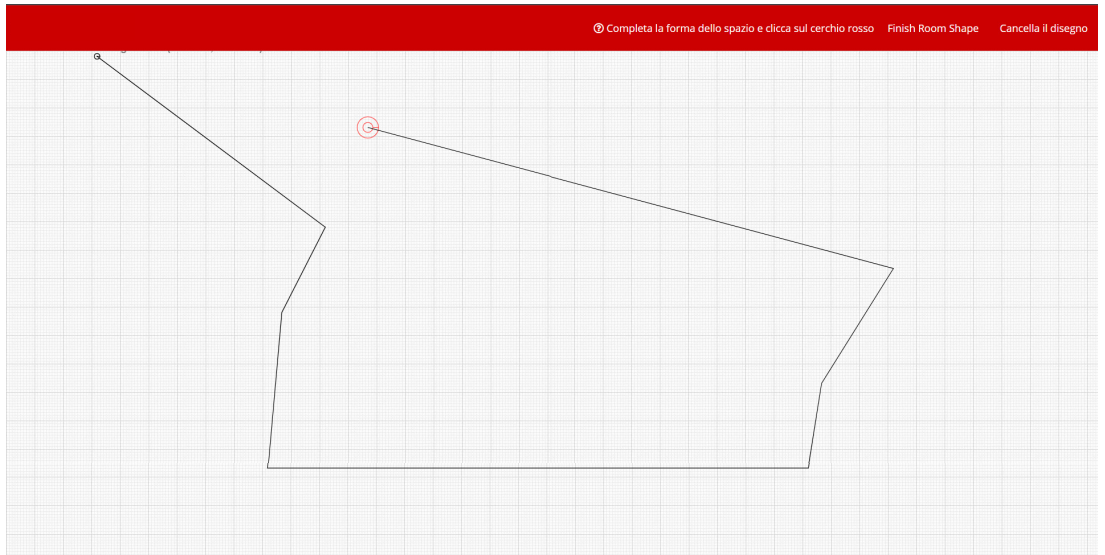
Finally you can proceed to define the concrete project in each of its aspects.

- Mobile adaptable to the conformation
- Production file output
- Self-realization process



04.3 INSPIRATION BOARD





An online configurator that allows users to design their own environment and furnish it with furniture produced by the company that publishes the configurator.

04.4 CONFIGURATOR BENCHMARK

Benchmark analysis, a point of reference for every successful marketing plan. Anyone who deals with online promotion (but not only) knows well that this junction cannot be ignored. The reason is simple: we are talking about a fundamental technique for measuring, evaluating and obtaining clear data.

A data driven marketing path and CRO, conversion rate optimization, must be based on clear numbers. Parameters that can only be generated thanks to a complete analysis job. And capable of confronting fixed points that you can take as a reference for a parallel.

Comparison with the competition, competitor analysis and measured comparison with the world around you: these are not paranoid behaviors or attempts to copy those who have done better than you.

This is the starting point for a fundamental step in web marketing: benchmark analysis. That means? What are we talking about? Is this a job to be done only towards competitors or is there also internal benchmarking? Let's tackle this important topic together.

benchmarking is an empirical evaluation strategy that allows you to evaluate a measure against a standard defined upstream. Thanks to this technical work, you monitor the results obtained in a specific field through a comparison that takes place thanks to a series of very specific metrics.

At this point it is right to clarify: benchmark is the indicator used to define the evaluation between the basic parameters and the external ones with which you want a comparison to create a juxtaposition.

And if the first term indicates the criterion of relevance, with the concept of benchmarking (translatable from English with the terms comparative analysis) we refer to the operation that allows you to compare, over time, your numbers with those of a reference that you propose as a relationship point.

The basis is this: benchmarking means using methodologies for a structured comparison of references to find out what the differences are with the best parameters (internal and external). The purpose of it all?

Understand how to improve and evaluate if progress has been made. From this starting point we can identify a series of essential points for carrying out a good benchmarking activity.

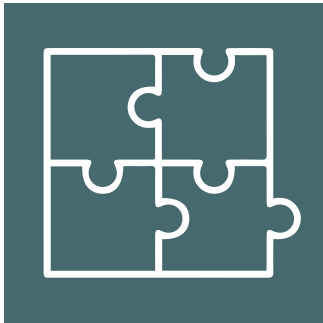
In this case, the internal office furniture configurators are analysed, using the benchmark methodology. There are several companies which, in order to increase their income and therefore the purchase of their products, put configurators online on the internet through their websites which allow the user to directly create his own configuration of internal furniture, first of all by creating the own environment, this through various supports, one of the most used methods is that of scanning the environment through photographs and photogrammetry, but the drawing system through polygonal loop is often used, to allow to be more faithful to the original, which in addition to ensure greater fidelity, it also allows late modifications and direct control over the dimensions that the user enters.

The other side of the coin are the configurators for modular furniture. Usually these two compartments are separate, simply because companies that produce classic furniture tend to create office configurators that allow you to insert only their products, while those who make modular furniture configurators want to show that their products are modular and therefore are adaptable to any environment. These configurators allow, based on fixed modules, therefore usually with a rectangular / quadrangular base, to insert more of these modules to perhaps create a different piece of furniture. An example is to stack several modular pieces of furniture to make a shelf. These two configurators want to provide the user with the same result, following two different paths and supplying two different types of products, but working in the same environment.

Definition criteria

Analysis point

Give compatible the furniture with every type of motionless like this allow to cover every space and provide workstations in different contexts respecting the distances and spaces personal.



Compatibility

Study of comparison

Universe/scenario of comparison

Analysis Scenario:
Interior configurators they exist in different contexts and allow you to define your own environment starting from pre-set setups or creating your own scheme, but always associating yourself with the products of the company that distributes the configurator.

Performance ideal

Key Performance Indicator

Comparison indicators



Adaptability



Simplicity of use



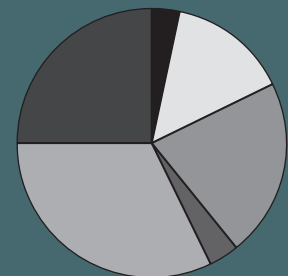
Material costs



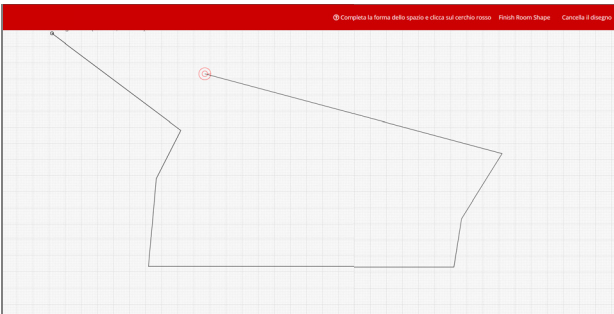
Ergonomics

Value analysis

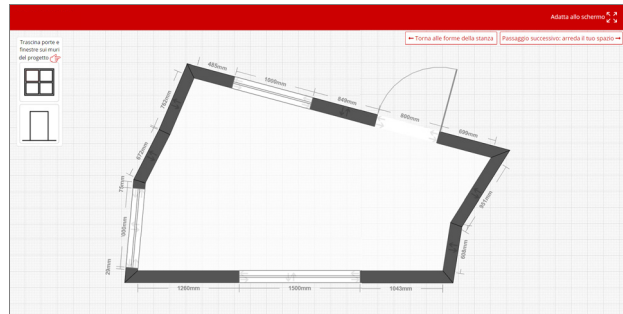
Analyses Data Obtained



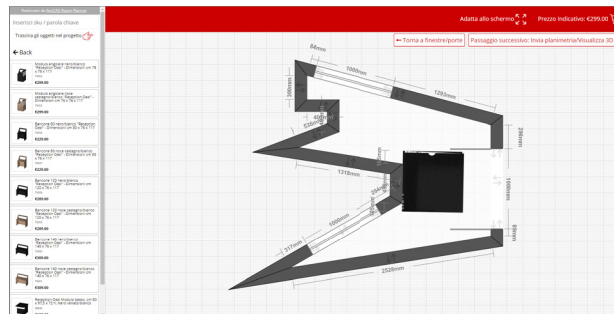
Data control through graphs.



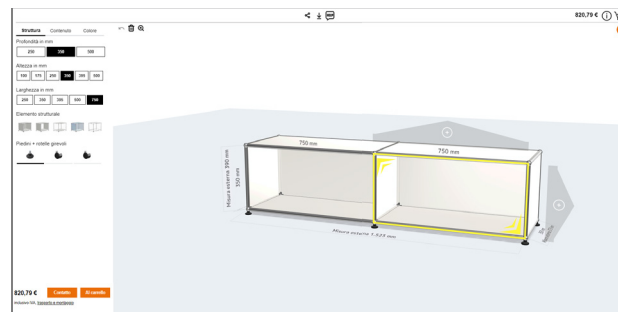
The interior configurators allow you to define the space of the area through a construction on a fixed base or a construction on a polygonal base customizable.



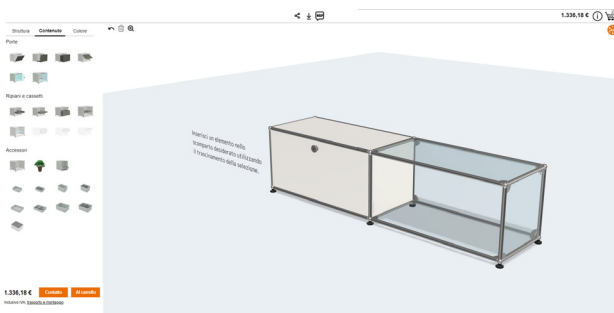
At that point the fixtures are inserted and the distribution of the interiors can begin. (customized fixtures are not taken into account)



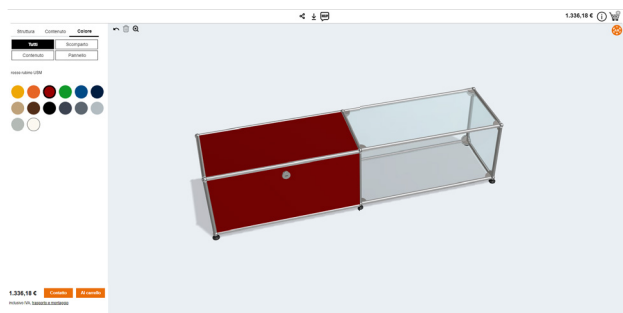
The configurators are prepared by companies that sell furniture products, therefore usually at their own internal you can simply enter i company products with their specifications.



The configurators for modular furniture come presented separately and allow a modular design that does not contemplate the internal layout of the space.



You can define the dimensions, the inserts and, if you wish, the "accessories" to match your modules and furniture. In the meantime, an estimate of the cost is indicated (replaceable with the realization time).



You can also decide the color and the conformation of part of the modular piece of furniture, but following non-deformable blocks. Desks-Chairs-Drawers

04.5 ANALYSIS POINT

The internal architecture of the building pre-establishes a typology of disposition, for this in situations where architectures are present details are difficult to obtain even the most common modular furniture correctly.

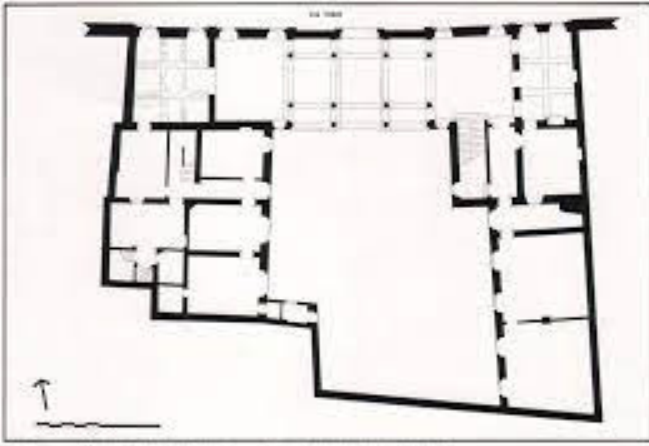
We need to isolate an element, a criterion. There are multiple circuits that can consider internal or external factors. But one element must be isolated. Benchmarking can be applied to any process: before undertaking the comparison with other conditions, it is necessary to understand what to improve.

At the beginning of the nineties the conviction that, thanks to the technological development linked to telecommunications networks, work spaces would be progressively pulverized seemed to score an epochal turning point capable of overturning all the established paradigms. There virtuality would have allowed the dematerialization of data, spaces and relationships in favor of greater accessibility and immediacy. Brothers Wachowsky – in the symbolic film of that period, The Matrix – made this transition clear by making the programmer Thomas Anderson flee from an office with cubicles, a symbol of homogenization and hierarchy, towards an unknown world made up of connections and data flows. The imminent explosion of the so-called IT bubble was not remotely predictable which, together with large amounts of money, it would have eroded the premature stinness of some certainties. In a manner similar, in the early 2000s, the theorists of work linked to decentralization and delocalization in favor of greater productivity completely decontextualized, they had not considered that the imminent economic crisis would upset the global balance causing an inverse phenomenon. Cities have once again become the ground up which to establish the new productive realities, above all in the related sectors to creativity and research, or rather to the production of intangible goods. Upon close scrutiny, both visions contained shoots that have been able to develop over time.

JOBS VS. WORKPLACES

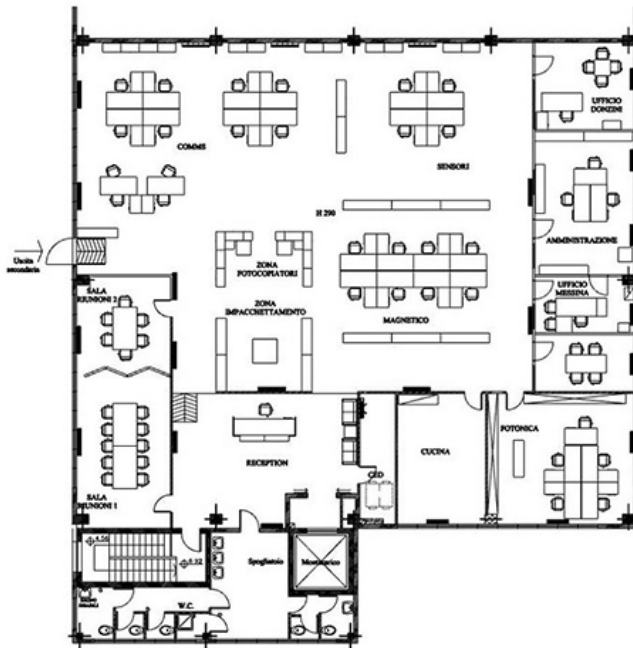
How the 1973 energy crisis spelled the end of the office model related to the theory of burolandschaft, the economic crisis protagonist of first ten years of the twenty-first century has produced radical changes in some productive sectors of society (above all, but not only, Italian) and in the organization of work. Outsourcing has become the watchword for those companies that have reduced, if not completely eliminated, investments in the research sectors and development due to low liquidity and the business risk that they they entail. This phenomenon has caused a dispersion of workers linked to research and creativity and has brought onto the market individuals willing to provide services as freelancers or to found start-ups, or rather highly innovative companies. Conscious of growth exponential of the request. The needs of the new players are quickly taking shape, highlighting some relevant aspects from the point from an architectural point of view: the lack of need for a stable and strongly representative location, the impossibility of defining a typology of space work, urbanization as an opportunity. One of the working systems who have been able to better interpret the instances just described is the coworking. The philosophy on which this type of organization is based – from open-source character – consists in allowing different subjects with not necessarily converging professional skills to share a workplace owned by a third party. The increase of this type of spaces is sharply increasing all over the world – the 20% in the last six months of 20117 – thanks to the opportunity it offers to overcome the usual difficulties encountered by those who access the world of work for the first time. That is, having the financial and logistical resources to set up an office equipped with those services and equipment necessary to maintain a high level of productivity, in to face increasingly fierce competition.

13 "Architecture of the spaces of the work" new tasks and new places of the project, edited by Sarah Marini, Albert Bertagna, Francesco Gastaldi



Redeveloped building

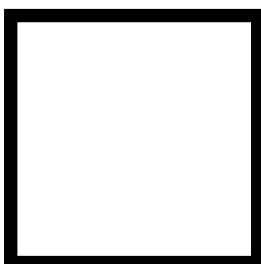
Palazzo al via Torino 8 - Piano del piano terreno (da rilievo fornito dalla progettista)



New building



**Common shapes
modular furniture**



The modules are mainly based on structures with a square base which is the most versatile in terms of space.

04.6 COMPARISON SCENARIO

The comparative test consists of evaluating the strengths and weaknesses of a product compared to other existing products on the market. The objective of benchmarking tests is to provide critical and fundamental information to the business to unveil the competitive edge of the software product in the market facing the loopholes.

Defining the comparison test criteria for a particular product is a subjective matter determined by the type of application being tested and the company's specific use cases. The test scenarios we develop depend on the type of application and specific business use cases.

This test can be performed in two distinct phases:

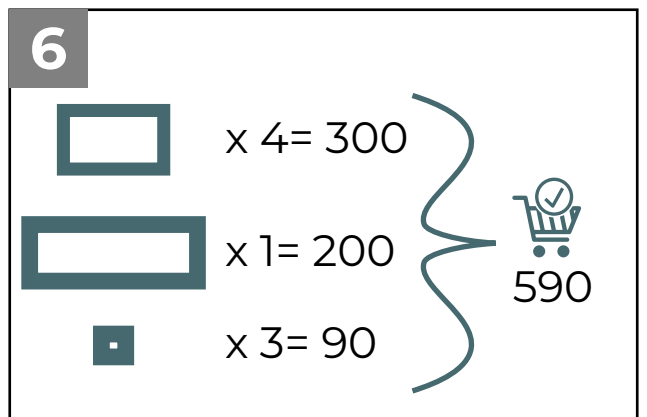
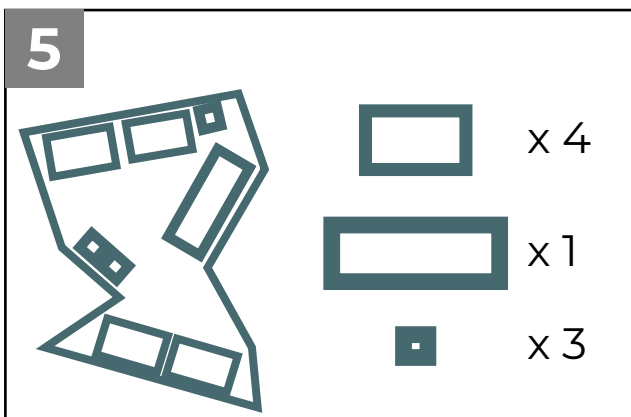
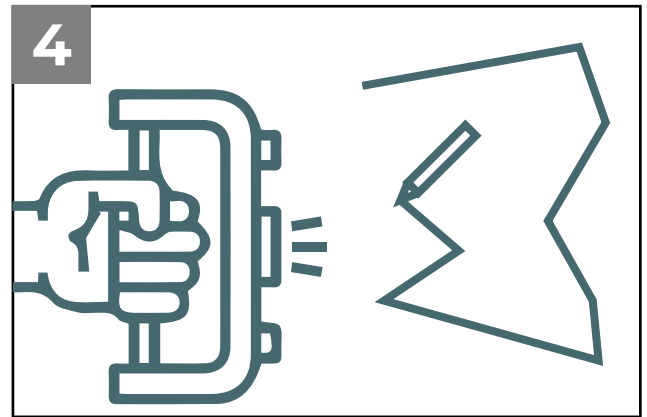
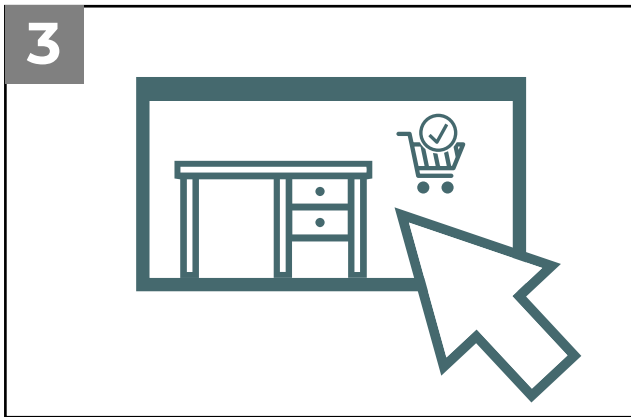
Comparison of the product with known standards or benchmarks

Comparison of the product with specific characteristics of other existing products. For example, if a configurator is being tested, we know that any configurator has modules that deal extensively with capturing customer details, processing customer orders, handling customer inquiries and customer issues.

In the first stage of testing, we can test the functionality of the application against known standards and existing features in the market at the time of testing.

In the second phase, analyze the components and phases of use of the product or service by users, to compare user interaction with the various services/products and understand if there are overlaps, similar or conflicting actions.

1. An owner of a property wants to convert it into offices/co-working space.
2. His property was just redeveloped and has an architecture particular.
3. He goes to a furniture site where want to use the configurator to define the stations.
4. Use the configurator to define the structure of your property. (3D scan, but often via 2D drawing)
5. Once the structure has been built, proceed to define the quantity and type of additional workstations and furniture
6. Lastly, he proceeds to purchase the furniture he has chosen through the configurator to have it delivered.



04.7 IDEAL PERFORMANCE K.P.I.

The study of comparison has one objective: to identify parameters, i.e. KPIs (key performance indicators) for comparison. Only by tackling the sector or area you want to improve can you identify the points that will allow you to establish the boundaries necessary for your continuous improvement. KPIs must be objective, understandable, inexpensive, representative of a process.

The benchmark is carried out by choosing a dashboard of indicators, each with a name and metric, which are objective, understandable, inexpensive to measure, representative of a critical process. The choice of the critical process and related key performance indicators (KPI = Key Performance Indicators) ends with a robustness check in which for each indicator these dimensions are evaluated together using a scoring method (for example the Analytic Hierarchy Process). The metrics must be the same for all companies being benchmarked. A common unit of measurement (e.g.: percentage, metre, pure number) ensures the comparability of the results. In some cases the companies create a network of companies, with a common Internet site with access reserved for those registered in which they measure and make the values object of the benchmark visible to the others. In other cases, companies turn to market research companies where an expert in the sector, who may have worked in some companies, estimates the required values; elsewhere consulting companies are used which use trade fairs, sector magazines, interviews with employees and managers. For the various values, it is important to specify the source of the data and whether it is final, effective, target or a mixture of these. Indicators are usually sampled on a monthly basis with samples of unit size (only one measured value, once a month). The benchmark for particular needs (especially in marketing) can be done at any time of the year. The low number and frequency of measurements do not pose a significant problem of data quality and error imputation. The use of statistical tools is limited; the quantities used are elementary such as mean, mode, median. It is established practice to benchmark companies from other sectors only if they are the absolute best in a specific process. For example, the benchmark of a logistics process will be done with a carrier-forwarder who invests all the budget in the logistics function alone and who has the shortest delivery times among all companies on the market. Following the benchmarking process there is a phase of revision of the target performance values to be achieved, identification of good practices to study and imitate. The main purpose is to study the processes of others to import them into one's own home: imitation is not always completely feasible, since change collides with the inertia, constraints and culture of one's own company. The company can choose whether to study the best in each performance or a best in class who has the best combination of values between contrasting performances and who has the greatest number of performances in which it has the best. The best of the class is chosen among companies in the same sector; if the companies with which the comparison is made are at least two others, the good practices are studied for each service, as it is a benchmark on a specific process, which one wants to get to know in depth. In each indicator (cost, service, quality divided into other subclasses) the best value of the companies subject to the benchmark becomes the target/objective of the others. A limitation of this widespread approach is that a company may not have the same budget to use as best practices, for example because it is not a transport carrier and in addition to logistics it also has other expenditure items among which it must divide its resources. Or because a strategic choice decides to favor quality over the cost and price of the product; the best value can be considered the maximum target beyond which a goal becomes unrealistic. The particular value will depend on the budget, structure (functions) and strategic choices of the company. In this sense, before tackling a study of best practice processes or in any case among the first things to understand, it is an estimate of the fixed costs that at least it is necessary to incur in order to imitate the processes and obtain some benefit. Sometimes it is possible to imitate some activities at not very high costs, but even a partial imitation has critical cost dimensions without which no benefits are obtained.

Each of configurators taken into consideration is produced and put to free provision from homes furniture manufacturers with the intent of make more simple the purchase of their products.

- Mondoffice - USM - Sedus - Micasa - Top arredi - Pickawood

Costs



Adaptability



Ergonomics



Simplicity

04.8 BENCHMARK EVALUATION

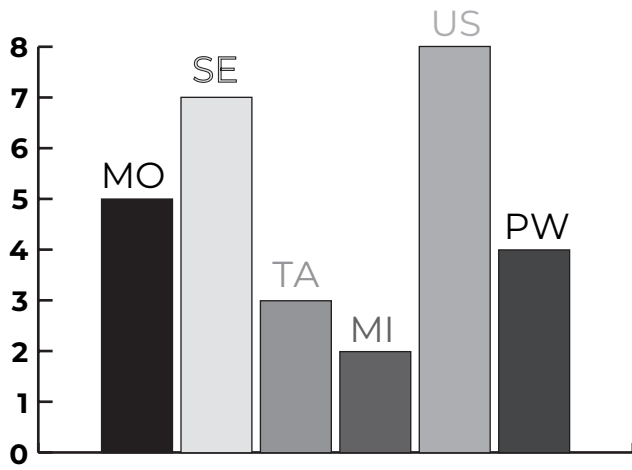
The benchmark analysis conducted on six office furniture configurators produced interesting results, highlighted in five graphs. In the first, the ability of companies not only to create functional arrangements of furniture, but also to provide modular and adaptable solutions to different environmental needs was evaluated. The results showed that all companies have a good ability in this regard.

In the second graph, the average costs of the products offered by configurators were analysed, distinguishing between expensive and less expensive markets. It has been found that most companies have quite high costs, addressing their products mainly to a high-end audience.

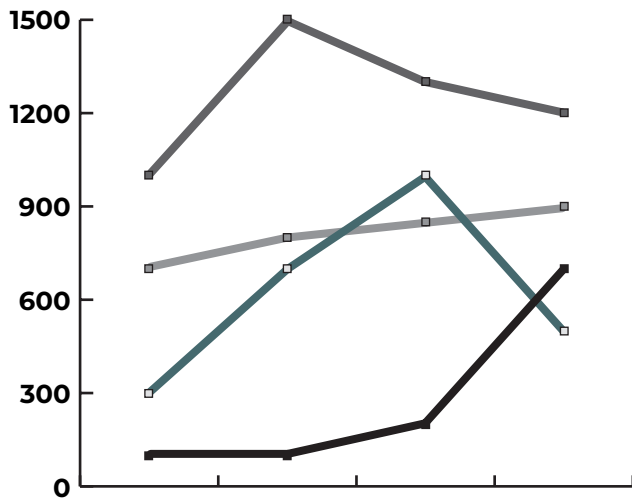
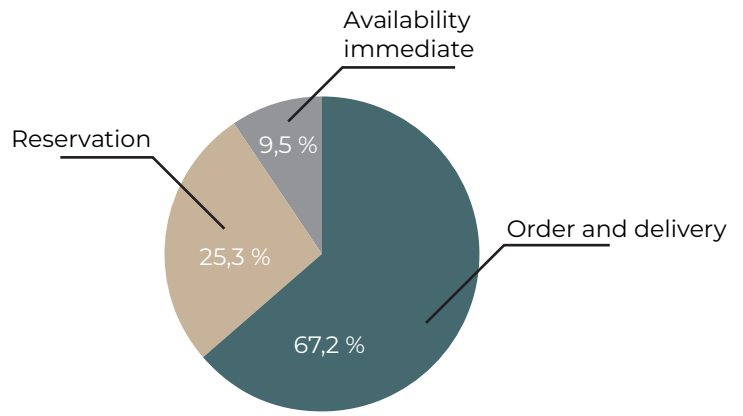
The third graph highlighted the availability of the products, distinguishing between immediate delivery, after booking and after ordering. Most companies allow you to order and quickly receive the product via delivery.

The fourth graph showed the trend of the quality and quantity of customization of the products delivered to customers. In general, the companies have demonstrated good quality and considerable attention to product customization.

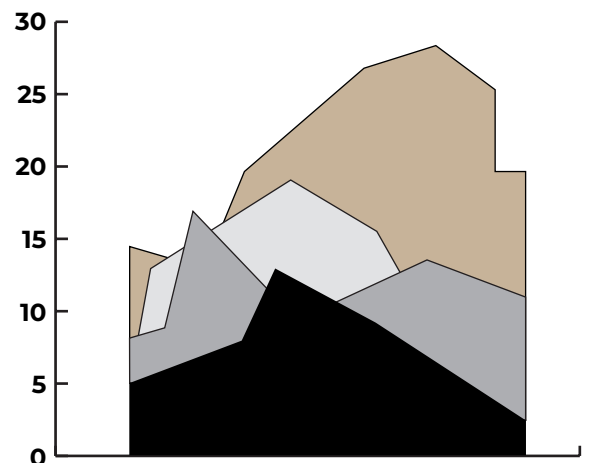
Finally, the fifth graph summarized the general trend of the companies with respect to the KPIs (Key Performance Indicators) that were considered: costs, adaptability, simplicity, ergonomics and compatibility with the environment. Most of the companies showed a positive trend on all these aspects, although there were some significant differences between the different companies. In particular, compatibility with the environment has proved to be a critical point for some companies, which have not always adequately considered the environmental needs of offices or co-working spaces.



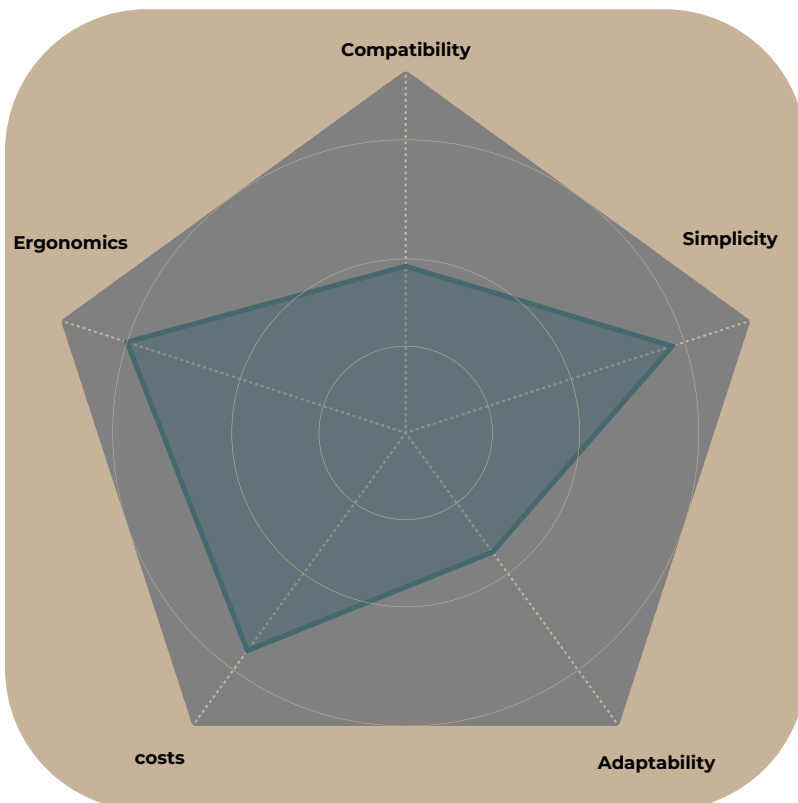
Modular furniture



Cost range for the whole market



Personalization products



Average KPIs for companies taken on consideration

04.9 LOW-END IDEATION

The project will be based on 3 main components, which will work together to produce a digital output, applicable to the tangible through digital production, i.e. the use of rapid prototyping and production tools, such as CNC machines.

The system can only work when we take into account that co-working areas are often equipped with fablabs, digital laboratories that allow the creation of objects designed using the system itself. We must also take into account the fact that on the Italian territory and especially in the Lazio region there are several Fablabs financed by the region itself through the Lazioinnova institution which allow users of each category to create free products designed to be produced with rapid production machinery digital. This factor could allow the effective functioning of the system, the basic concept, based on the philosophy of the project is to allow everyone, all the categories of users involved in the co-working / workplace environment, to create their own furnishings within the within their own environment, thus sharing the design, construction and assembly phases between the various components, among all the members of a specific co-working area also involving managers and staff, who could therefore organize the environments according to need in total autonomy .

Parametric design is a design method in which features (such as building elements and engineering components) are modeled according to algorithmic processes, rather than being designed directly. In this method, the parameters and rules determine the relationship between the design intent and the design response. The term parametric refers to the input parameters fed into the algorithms.

While today the term refers to the use of computer algorithms in design, there are precedents in the work of architects. Antoni Gaudí used a mechanical model for architectural design (see analog model) by attaching weights to a string system to determine shapes for building features, such as arches.

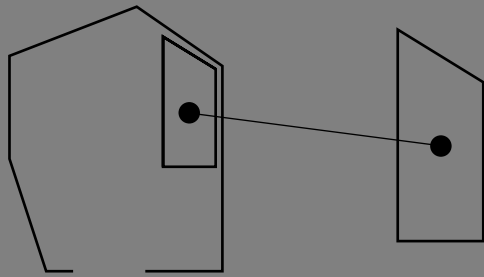
Parametric modeling can be divided into two main types:

Propagation-based systems, where algorithms produce unknown final shapes based on initial parametric inputs.

Constraint systems, where final constraints are set and algorithms are used to define the foundations (structures, use of materials, etc.) that satisfy those constraints.

So-called "shape-finding" processes are implemented through propagation-based systems. Shape finding optimizes certain design goals against a set of design constraints, which means that the final shape of the designed object is "found" based on these constraints.

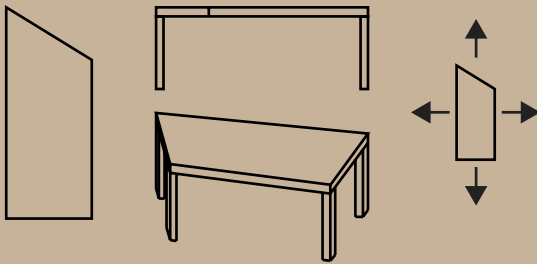
In our case we rely on the second parametric design methodology, the one based on constraints, in order to define a repeatable and applicable system to different shapes and which allows users to apply specifications that make the product **compatible** with any environment.



Space

Area/mobile

Web configurator



System parametric
(parametric furniture)



Vectorial output
(for quick implementation)

Project

(Personal configurator)

Furniture selection and placement

Registration and use of the configurator

File export of production

Purchase of materials and processing Lab

04.10 HIGH-END IDEATION

The final design has the task of defining the specific aspects of each action, through the system used previously and therefore answering design questions and providing as output in addition to the answers a possible solution to the problem highlighted. Starting from the problem analysed, all aspects of the project must then be covered, initially in its components and then more specifically in the parts that characterize each component.

Definition of product functions and purposes through design questions.

What do we have to build?

What are we being asked to do?

Improve the usability of coworking areas.

Thinking about users with needs details.

Define a standard of use of areas and workstations making them adaptable to multiple structural contexts.

Why do you do what you do?

Coworking areas are increasingly becoming our offices, now even companies carry their own employees to work within these areas, therefore transform the old concept of being inside an area used for work and bring it towards a perspective in which each of these areas is your office and therefore you are comfortable inside it.

What thoughts, constraints, barriers? Which affect the design the most

The need to be able to work without being disturbed, having your own workstation.

The possibility of working together with colleagues on a single hot desk, to avoid the expense of a meeting room.

The problem of the space needed to store the user's materials and personal effects.

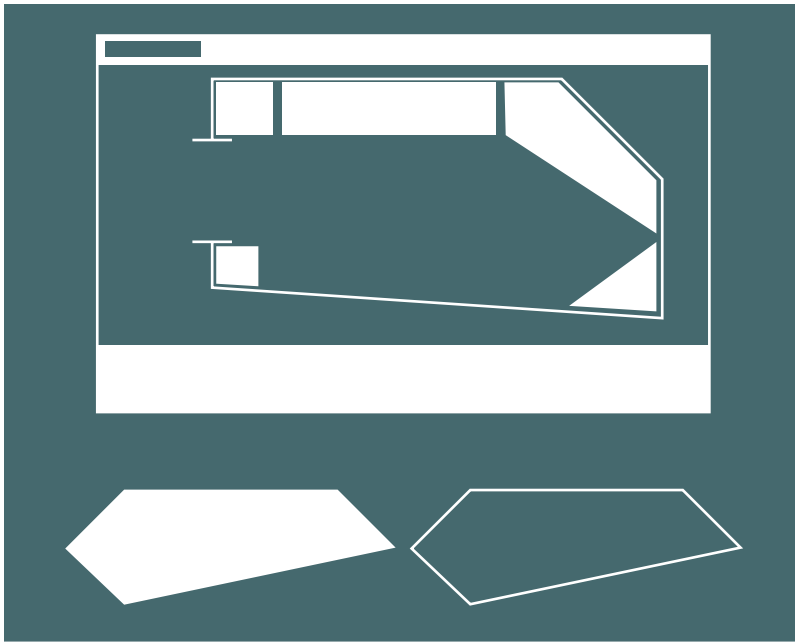
A clear signaling system of the position of workstations and services that facilitates the usability of the space.

What are the most appropriate functions for our solution?

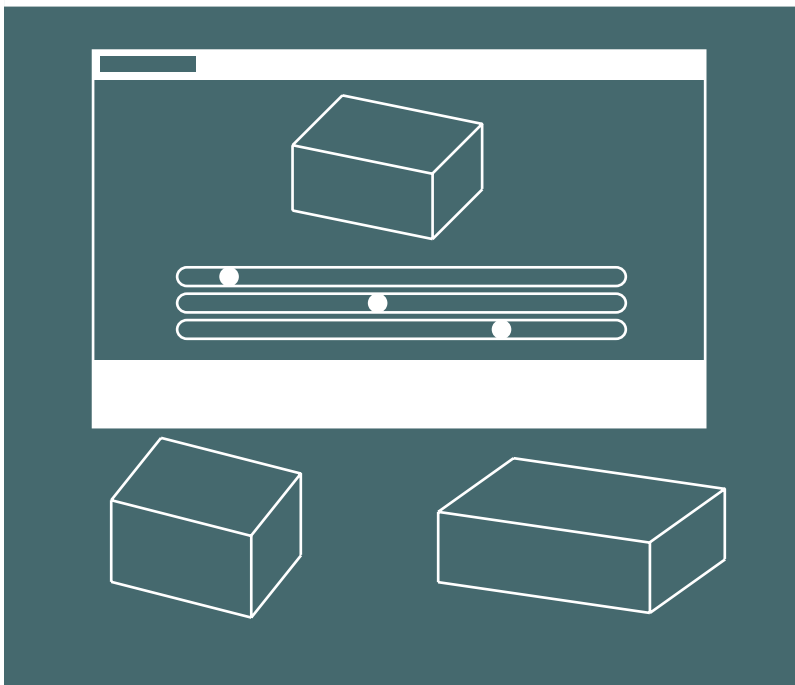
1. Configurator: Online platform with building environment architectural through polygonal lattice inserting fixtures for spacing.

2. Parametric modeler: A parametric 3D model is extrapolated from the shape drawn with the polygonal lattice customizable through simple commands.

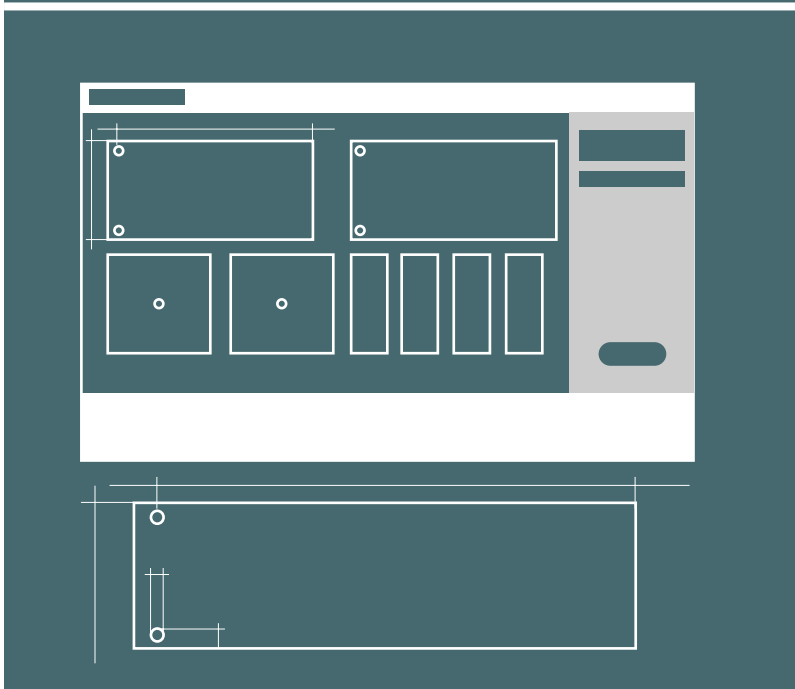
3. Vector file export: From the 3D model comes extrapolated the file in 2D vector necessary for digital production subtractive within a laboratory.



1



2



3

1. Web configurator for buildings planimetry
2. Web modeler for parametric furniture
3. Web exporter for vectorial files
All in the same web platform

04.11 PROJECT NAME AND LOGO

The name of the project is "Namiko" the name comes from the reflection deriving from the basic concept of the project and its philosophy, or being compatible with different types of environments and users, knowing how to adapt, being in motion, being dynamic. The name of the project comes from the word dynamic.

dynamic adj. [from gr. δυναμικός di'namiko, der. of δύναμις dinàmikos «strength»] (pl. m. -ci).

The choice to associate with dynamism derives from the nature of the project, in fact the beauty of parametric design is being able to change the project, its specifications, its dimensions and configurations, acting on simple inputs, a factor that makes it dynamic in all respects. Dynamism is also recalled by the adaptation to the environment itself, which can be defined by the user and always modified. In addition to dynamism, however, balance must be maintained, the balance between environment and product and between user and product, guaranteeing the usability and ease of use of the product itself, for this reason balance is the second fundamental component of the name.

For this reason the name Namiko was extracted from the etymology of the word. The name Namiko is a Japanese baby name, traditionally, it is a girl's name. The name Namiko has a numerological value of 2.

In numerological terms, this means the following:

Equilibrium

A state of balance or equilibrium; equal distribution of weight, quantity, etc.
Something used to produce balance; counterweight.
Mental stability or emotional stability; habit of calm behavior, judgment, etc.

and

Union

The act of bringing two or more things together.
The state of being united.
Something formed by the union of two or more things; combination.

For this reason, through the name "Namiko" we enclose the two fundamental concepts that characterize the project, dynamism and balance, adding that of union, the union between users, managers and the environment, to cooperate with the aim of improving one's own work environment.

Logo

Being a service, for clarity of expression the logo should have contained the name of the service itself, also for a factor of recognition and association. I started the development of the logo, as always working exclusively with black and white, this in order to be able to define a logo that could work in any context and not exclusively based on the color palette to which it was associated or in which it was found as a context. The idea was to let the identifying aspects of the project shine through: dynamism, balance and therefore parametric modeling and compatibility and adaptability. The initial idea was to create a series of structural components, therefore rectangles, which had to adapt to an environment, in this case a clipping mask, which enclosed them and demonstrated their adaptability. The idea was functional, but did not convey the desired feeling of movement and adaptability. So the final version brings with it the legacy of the previous versions, introducing the breakdown between 3 different sections, as if to recall the 3 parts of the project, the name, the full part and the empty part, which help to show the relationship between two entities, two objects that come into contact with each other, in a certain sense, the void that adapts to the full and vice versa.

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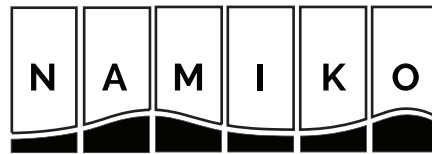
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1. Rectangular frames with mask and text
2. Rectangular frames with text
3. Rectangular frames with text extension
4. Rectangular frames with mask and text
5. Rectangular frames with lines texture and text
6. Rectangular frames with shape cutting and text
7. Different version/ colourways of the final version
8. Final version with project color palette

PART FIVE

Project

To introduce the project, the most effective way is to see it already in terms of a ready-to-use service, asking the user what the service is, how it works and how he can use it.

Welcome to Namiko, the parametric furniture configurator for workplaces and co-working areas. With Namiko, you will be able to create your own customized furniture with ease and precision, thanks to an intuitive interface that allows you to modify the specifications of the furniture in real time. Once you have created your project, Namiko will give you the possibility to export a workable file directly from the configurator, so as to be able to create your piece of furniture through a fablab inside the workplace or co-working area.

But that's not all. Namiko will also give you information on the manufacturing process of your furniture and assembly instructions, whatever the configuration of the furniture itself. This way, you can be sure that you are getting a high quality product, made to your specifications and at an affordable price. We are excited to offer you this innovative solution for custom furniture design and manufacturing and are ready to support you in every step of your project.

Why should this configurator be used?

There are several reasons why it would be convenient to use Namiko, the parametric furniture configurator for workplaces and co-working areas.

First of all, thanks to its intuitive interface, Namiko allows you to design customized furniture quickly and easily, without the need for specific technical knowledge. In this way, you can obtain unique furnishing solutions that are perfectly suited to your needs, without having to spend a fortune to commission customized projects from architects or designers.

Furthermore, Namiko allows you to preview the piece of furniture you are designing in real time, with the possibility of making changes in real time until you reach the desired solution. This way, costly design mistakes are avoided and valuable time is saved.

Finally, Namiko also offers the possibility of exporting the workable file directly from the configurator, so as to be able to create your own piece of furniture with the support of a fablab inside the workplace or co-working area. Thanks to this approach, it is possible to obtain a high quality piece of furniture, made with precision and at an affordable price, without incurring the production and transport costs of traditional furniture.

How can I access Namiko?

Currently, access to Namiko is not yet available as this is a project under development. However, once the project is completed and ready to be used, the configurator can be accessed via the official Namiko website.

Access to the configurator will be free for all users and will not require any type of installation or download of additional software. Simply log in to Namiko's official website and follow the instructions to create an account and access the parametric furniture configurator.

In addition, Namiko's team will provide the necessary support for the use of the configurator and for the realization of the furniture, through a technical support section on the website and through a dedicated assistance team.

How much does it cost?

Namiko's goal is to provide a subscription-based service that allows users to create an unlimited number of parametric furniture design files for office and co-working areas.

This approach would allow users to have more flexibility in designing their furniture, without having to incur the high cost of custom designing through architects or designers. It would also allow users to have complete control over the process of making their furniture, from choosing materials to crafting the pieces in fablabs.

The fact that the subscription allows you to create an unlimited number of project files could be a significant benefit for users who need to design and build more furniture for their workspaces or co-working areas.

However, it is important to note that once the project files have been created, users will be responsible for purchasing materials and crafting parts in the fablabs. Therefore, the final cost of making the furniture will also depend on the costs of materials and the services offered by the fablab.

05.1 PROJECT COMPONENTS

The Namiko service consists of three main parts:

Room configurator: This is the first part of the service and allows the user to design the plan of the workplace or co-working area where they want to place the furniture. The environment configurator provides a 2D or 3D view of the environment, in which it is possible to select the dimensions, shapes and positions of the various elements, such as walls, doors, windows, and other elements that characterize the environment.

Parametric Furniture Configurator: This is the second part of the service and allows the user to select the type of furniture they want to create, such as desks, bookcases, meeting tables, and so on. Once the type of furniture has been selected, the user can customize it according to his needs, selecting the dimensions, shapes, materials and other parameters, in order to adapt the furniture to the specifics of the working environment.

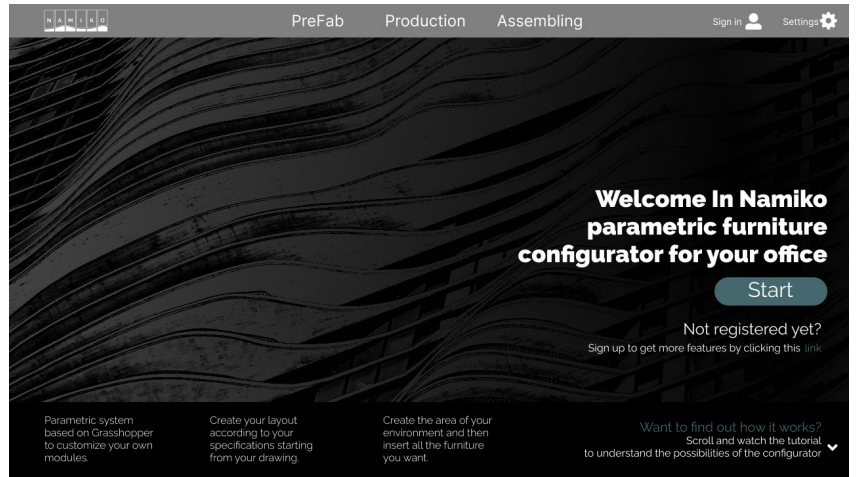
File export page: This is the third part of the service and allows the user to export the furniture project file, once the configuration is complete. The project file contains the information necessary for manufacturing the furniture in the fablabs, such as the dimensions of the pieces, material specifications, assembly instructions and other important details. The project file can be exported in various formats, such as CAD, PDF or other formats used by fablabs.

In summary, the Namiko service provides a complete and integrated design experience, which allows the user to create customized parametric furniture, adapted to the specifics of the work environment or co-working area, in an easy and intuitive way, without having to use advanced design tools or have particular technical skills

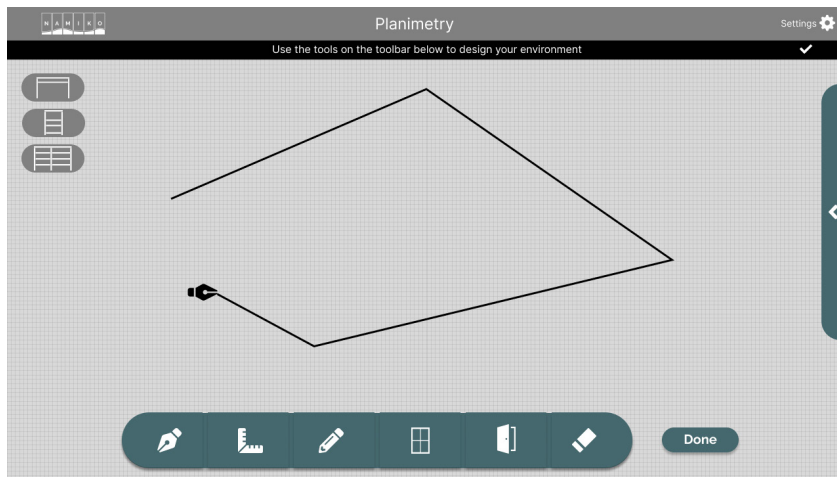
Each of the components of the project depends on the other, for this reason the whole is contained in a website on the web, which allows through a clear user interface the possibilities expressed by the service, in addition it guarantees that the user correctly follows the process, bringing through the various passages chronologically until obtaining the final file. The service is designed to be used under subscription, in order to collect data relating to the most requested types of furniture and to provide the end user with an easier processing methodology, in fact, once a planimetry has been set, the user can save it on his profile and use it again whenever you want without having to rebuild it at each access, as happens on many other configurators.

Now to better understand the components of the service, it is convenient to analyze them separately and understand each step that constitutes the various components..

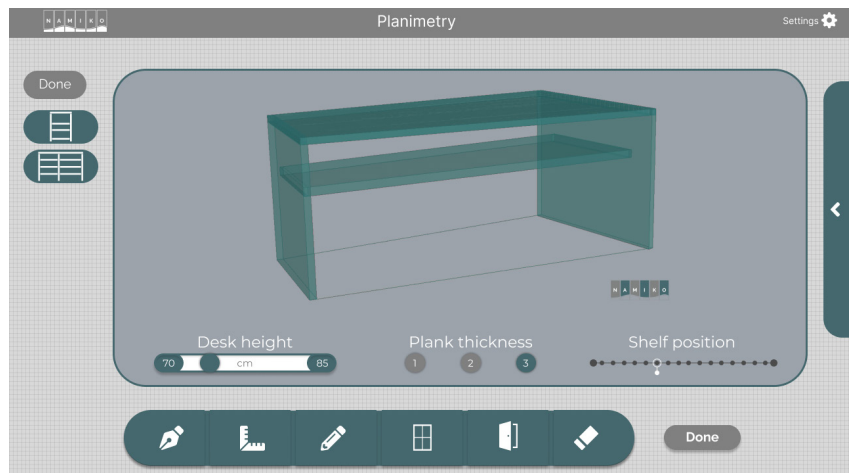
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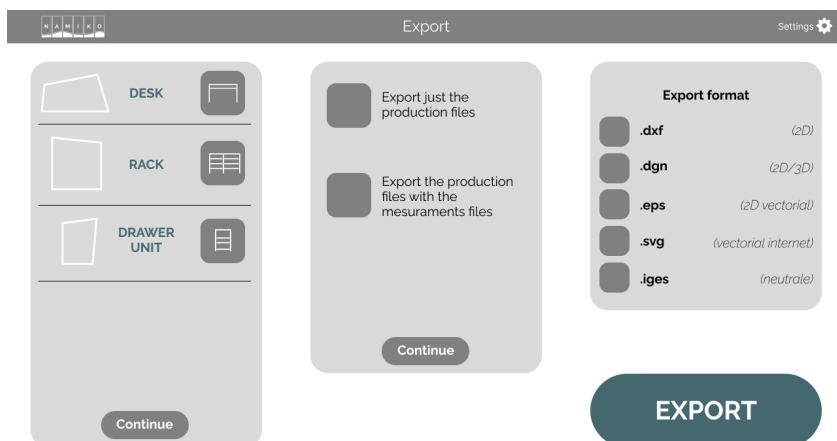
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- 1. "Namiko's" home screen
- 2. Floor plan configurator
- 3. Parametric mobile configurator
- 4. Export page

05.2 WEB CONFIGURATOR

Namiko's site will be a real configurator, divided into 3 main components, which allow you to follow the entire design process of your furniture and set your preferences.

In the initial screen you can proceed to create your own account and then start the design process, but if you want there will also be other sections to view. The first section is the pre-fab section, in case users simply want to download existing models or models created by other users, they can visit this section and download models ready for production, without following the design process. The second section is dedicated to digital production, in this section users will be able to understand how to use the files provided by Namiko to create their own projects by laser cutting or CNC milling, this through simple tutorials that explain the basics of these processes. The third section is dedicated to the assembly of the pieces that will be made using CNC machines, in fact, although each model may be different from one another, the production method of the 3D model is designed to allow an assembly methodology that is always the same between the furniture of the same category (as we will see later the categories are: desk, chest of drawers and shelf). Finally, there will be a section dedicated to a tutorial on using the site itself which can be accessed by scrolling down the main page. From the moment you click on Namiko's start button, the process will begin, going through the three fundamental components:

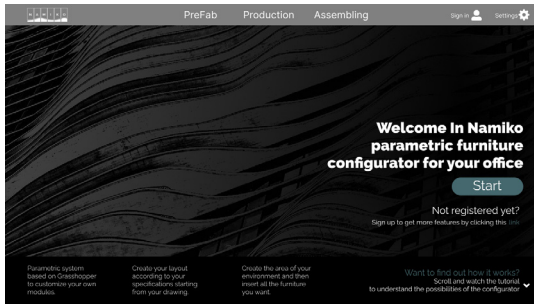
The first is dedicated to the configuration of one's environment of interest, within which the user will draw the walls that enclose the space of his environment, therefore of his entire office or room, using a polygonal loop (a continuous polyline). specific, being able to view the measurements of what is being built inside the configurator using the other tools. The other tools available to the user (which are distributed in the lower toolbar) within this screen will allow you to draw your furniture or spaces freehand, to measure every aspect of the project they will create and to insert the fixtures and entrances in the project, so as to consider the dimensions of each space.

The second component can be accessed directly from this screen, once the planimetry has been defined, the user will be able to select the type of furniture he wants to make, draw the contours on the 2D plan directly within the planimetry and then proceed to modify the parametric 3D model which will be automatically generated from the 2D figure in the next tab, where you can modify the model specifications using simple commands. once satisfied, he can insert the model in the cart and proceed to insert other models or go on.

Before proceeding to the last component, the user will have a report of the projects created and will be able to keep only those that he wants to export.

The last component is to export files for digital production. At the end of the parametric configuration process, the 3D modeler will produce a vectorial 2D version of the components that make up the designed piece of furniture. This vector data packet can be exported in various formats, accompanied or not by instructions and technical tables showing the general dimensions of the product.

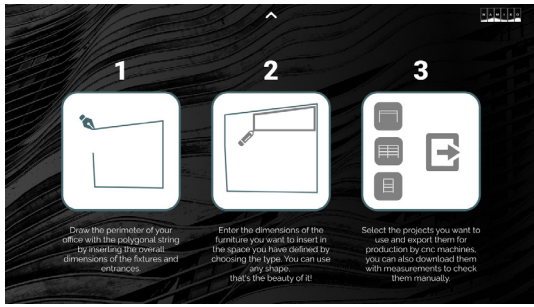
Once the process is finished, the projects produced can also be saved in the user's profile or simply downloaded via the web page, before the user is redirected again to the main Namiko page, where he finds all the information he can be useful or where a new project can start, with another environment or by reusing the same one previously designed.



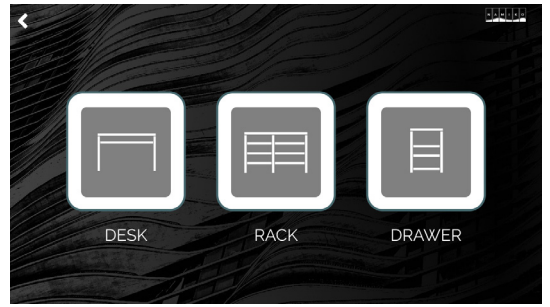
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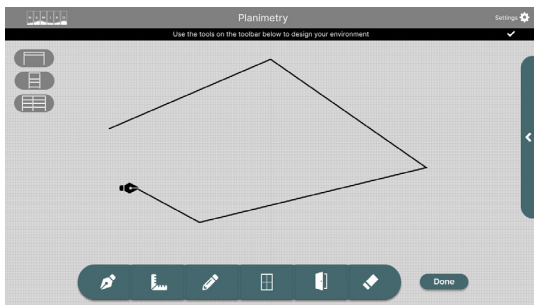
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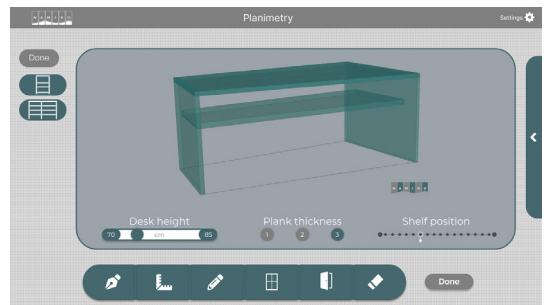
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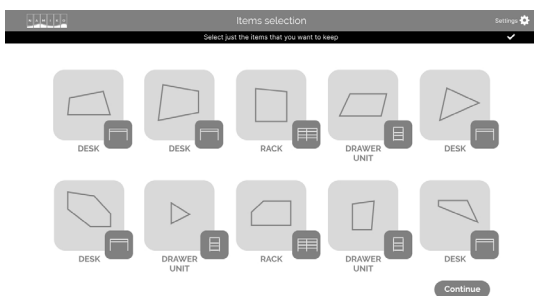
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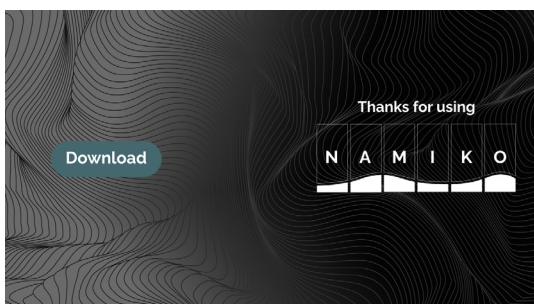
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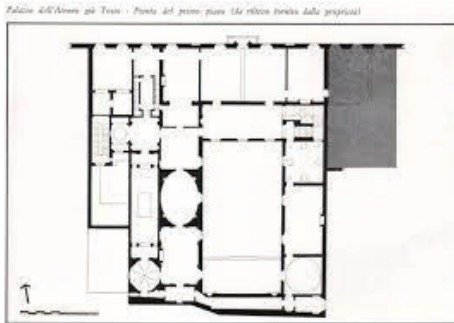


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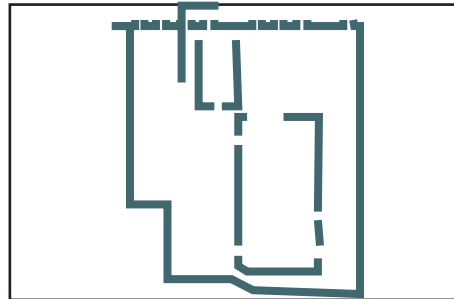
1. "Namiko's" home screen
2. PreFab page
3. Website instruction
4. Assembling instructions
5. Floor plan configurator
6. Parametric mobile configurator
7. Projects selection
8. Export page
9. Download page

05.3 CONFIGURATOR FUNCTIONS

Reproduce the layout of your environment in 2D

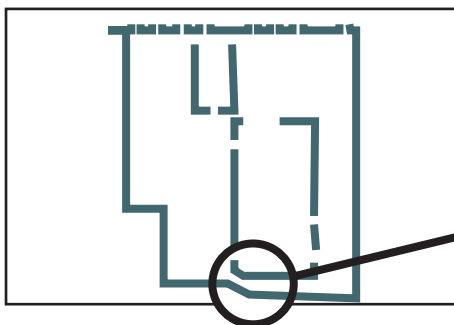


Real planimetry

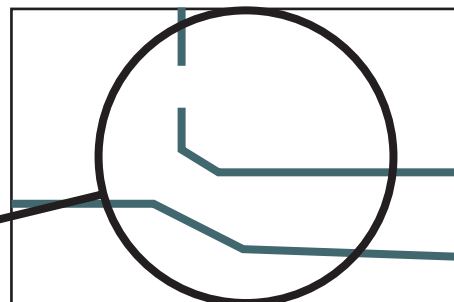


The one made in Namiko

Insert the shapes of your furniture inside, as you want them with the shape you want

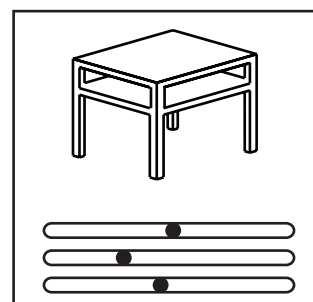
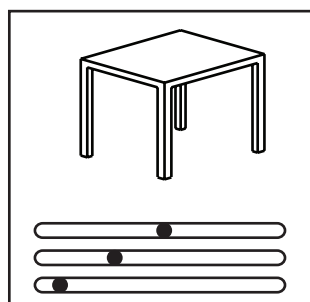
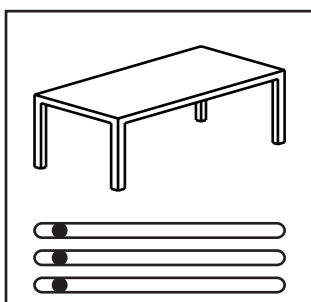


Before the furniture

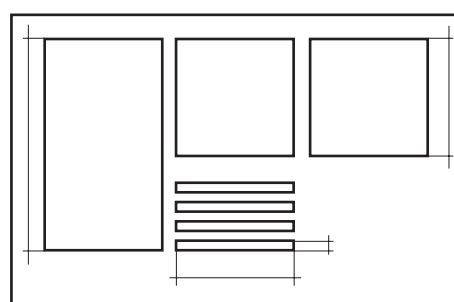
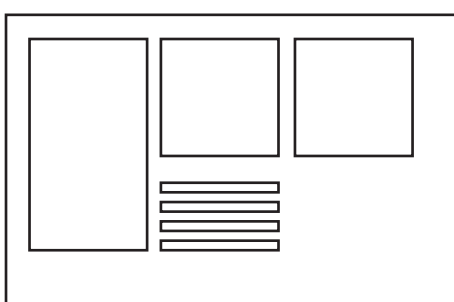


After the furniture shape

Modify the 3D model produced starting from your 2D drawing



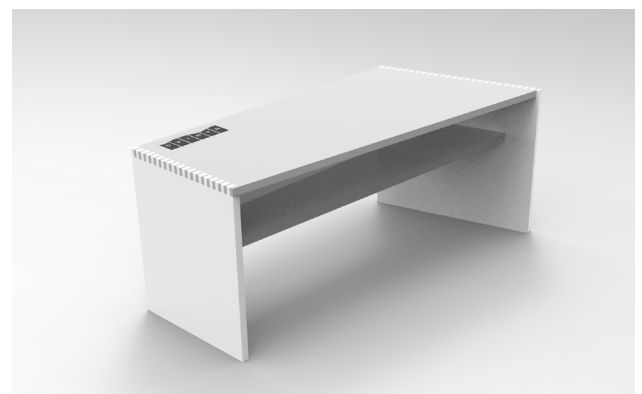
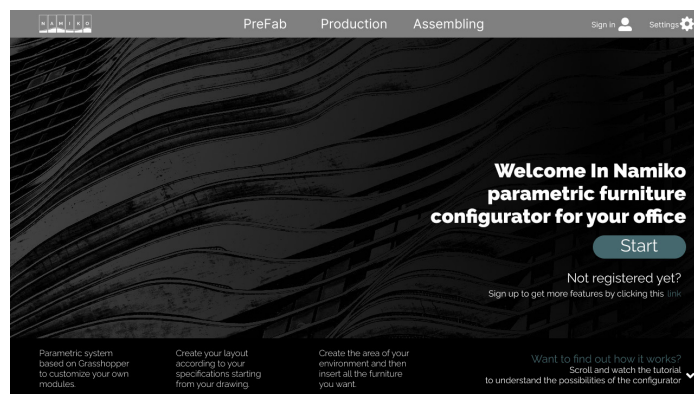
Export ready-made 2D vector files for machining on subtractive CNC machines



05.4 CONFIGURATOR AESTHETICS

The aesthetics of the project and therefore of the configurator and of the furniture itself is very simple, it does not want to clutter up and therefore annoy the user and distract him from what is the main concept, its function, therefore it limits itself to a dull color palette, on dark tones, which draws attention to the function keys and the actions possible only through a color, with a concept of affordance and mapping of the actions that the user can perform. The appearance of the interaction steps and the modification methods is inspired by the inputs of Grasshopper, the software used for the creation of the parametric system, all to, in addition to recalling the software, make the use more intuitive, in any case the the system does not allow errors and the constraints prevent you from going beyond the project margins. The screens are few in order not to create confusion, those of project and interaction have a light base, to reconcile the reader's attention, those of information and dissemination have a dark theme to facilitate reading and relaxation of the eye. The information screens have a clear reference to parametric design, created by inserting a texture that accompanies the user in all these screens. The overall impact is not bulky and, albeit loaded with content in some of the screens, is easily understandable.

The furniture that is designed has a rough, minimal and simplistic appearance, given the nature of the design process, they do not visually recall the appearance of objects designed using parametric systems, but on the contrary they have the appearance of objects designed by novice users, which recall the appearance of the prototypes made in the fablabs, despite this they are provided with the various joints necessary for the assembly and with the possibility of being embellished with the insertion of the logo of Namiko or of the user who produces them. The intention is to obtain furniture with the classic look of something produced in a fablab, with materials such as plywood or plexiglass.



05.5 CONFIGURATOR UX/UI

To better understand the different nuances of the concept of usability, it is good to better understand the difference between UX and UI.

If the UX (User Experience) encompasses all aspects relating to the user's browsing experience, thus including the functionality, speed and intuitiveness of the website, the UI (User Interface) instead refers to its visual and aesthetic part. In fact, we speak of UI when we refer exclusively to the graphical interface, which must be designed to reflect the communication standards of the brand and offer a stimulating and pleasant visual experience.

To ensure that the site satisfies the principles of UX (User Experience) and UI (User Interface), it is advisable to involve specialized professionals right from the design phase (although many interventions in this area can also be implemented later). Although fundamental, these two areas alone cannot fail to "communicate" with the front-end development part.

The role of the front-end developer, in fact, lies precisely in creating the code that connects the layout to the user flow we were talking about just before. To acquire all the technical skills necessary to become a front-end developer, an online course such as the [HTML.it](#) one is ideal.

User Experience (UX) literally means "user experience" and is an expression that refers to everything that affects the user's degree of satisfaction during interaction with a product (in this case a website). The user is therefore placed "at the center", so as to design a site that responds to his needs at every moment of the flow.

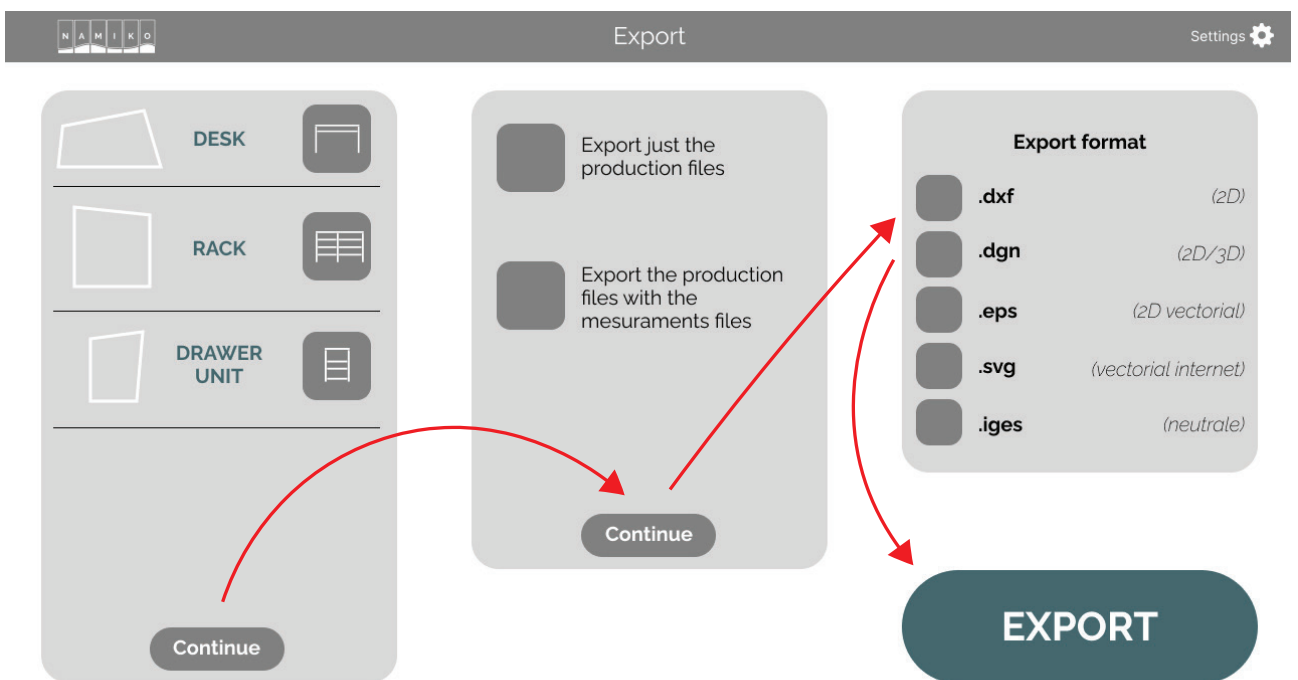
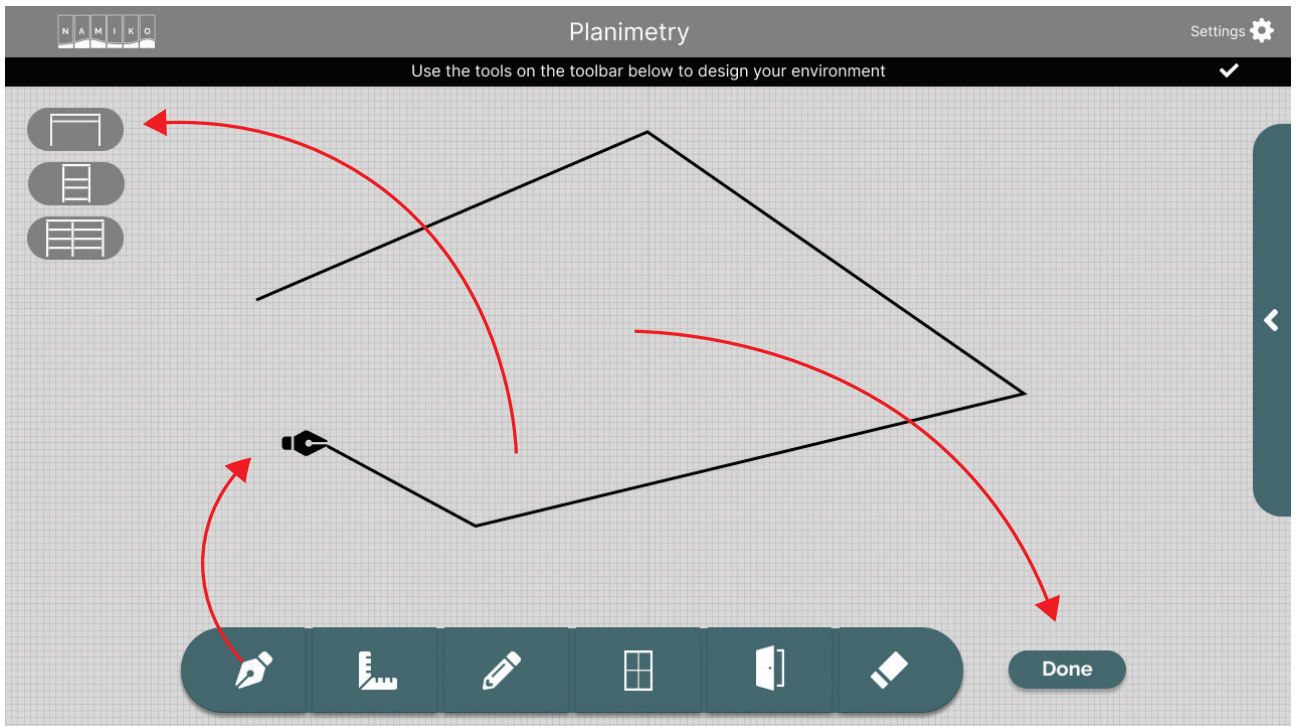
Thanks to the accurate analysis of the type of user, a fluid and intuitive experience is designed to simplify the user flow (ie the "journey" that the user takes within the site) and make navigation on the site more effective. By doing so, the user will be guided and directed to the completion of certain actions (tasks), such as the purchase of a product or service or subscribing to a newsletter, for example.

Furthermore, the usability of a website also involves aspects such as the speed of response, the intuitiveness of the CTA (call to action) and the graphics of the user interface. Every little interaction must therefore be absolutely intuitive, fluid and pleasant for the user.

Otherwise, all the efforts made for the activities that precede this phase (marketing in primis) will be in vain, as the user will encounter difficulties that will not allow him to complete fundamental actions. It follows that also the perception that the user will have of the brand will not be positive, also negatively influencing any future interactions.

Think, for example, of the classic moment in which a user decides to abandon the cart after a long time spent on a company's e-commerce site; in a crucial phase such as the completion of the purchase, the UX (User Experience) must be impeccable to avoid problems of this kind and allow him to achieve the established goal. If the cart abandonment rate is very high, it is good not to underestimate the issue, trying to improve the User Experience in that particular phase and, if necessary, on the entire website.

Precisely for this reason, each screen of the service has been designed to bring the user to be able to conclude the overall action, despite the various steps, in the fastest and most efficient way possible. Although there is not a large recirculation of screens, the user is invited to continue thanks to the activity of the interaction keys, which guide the user through the various steps.



05.6 PARAMETRIC MODELER

The modeling of the furniture starting from the 2D is completely entrusted to a parametric system developed through the Rhinoceros software and more specifically, through its plug-in Grasshopper.

Grasshopper for Rhino is one of the most powerful algorithmic modeling software for the generation and control of simple and complex shapes in the fields of architecture, engineering and design.

Unlike Rhino Script, a scripting tool based on Microsoft's VBScript language that allows you to quickly add functionality to Rhino for Windows or automate repetitive tasks, Grasshopper requires no programming or scripting knowledge; however the software allows designers to create generators of different shapes, from the simplest to the most complex.

Grasshopper for Rhino allows you to generate complex 3D shapes by defining a node diagram (algorithm) that can describe the mathematical and geometric relationships present within a model.

The three-dimensional models developed with Grasshopper are dynamic systems that can be modified in real time through the variation of the parameters defined during the construction of the diagram, with immediate advantages in the control and rationalization of the shape.

Given the associative logic of the software, thanks to it it is possible to create conceptual links between the different levels of design detail.

The modification of a parameter on a larger scale can in fact generate a series of modifications such as to arrive at the consequent redefinition of details on a small scale. It is possible to hypothesize a direct link between the parameters relating to the general shape of a complex surface and the geometric characteristics of a structural node.

through Grasshopper it has been possible to generate architectural and engineering projects of international echo which above all concern the design of large stadiums, airports and arenas.

An example of working with Grasshopper is given by Studio Mode, which was commissioned by Populous in the city of New York, to design a customized parametric model and digital environment related to the development phases of the structural scheme for the realization of the football stadium in Monterrey, Mexico.

The China Pavilion, created thanks to the collaboration between Tsinghua University and the Link-Arc Studio, was one of the main examples of applied parametric design: the theme of the pavilion was "The land of hope" and it was designed entirely using Grasshopper.

The project embodies this idea through its undulating roof shape, resulting from the fusion of the profile of a city skyline on the north side of the building with the profile of a landscape on the south side, expressing the idea that "hope" can be realized when city and nature coexist in harmony.

Conceived as a wooden structure that references the "beamed" system taken from traditional Chinese architecture, the roof of the pavilion uses modern technology to create long spans appropriate to the public nature of the building.

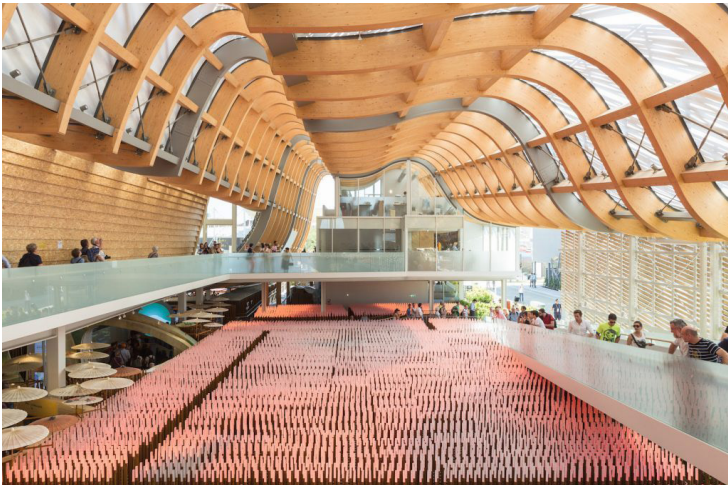
In this way it is possible to understand the potential of this software which is also able to work remotely, by adding its "flow" the flow of nodes that produces the 3D model, to whatever type of input it was decided to give at the start, surface, line, or 3D solid.

As previously explained, this software is often used to create structures and have the possibility to change the configuration of the same through simple parameter changes, but this can also allow a user to customize their products independently and through Namiko, therefore starting from the design of a user, can allow you to create new projects every time that arise directly from the user's will.

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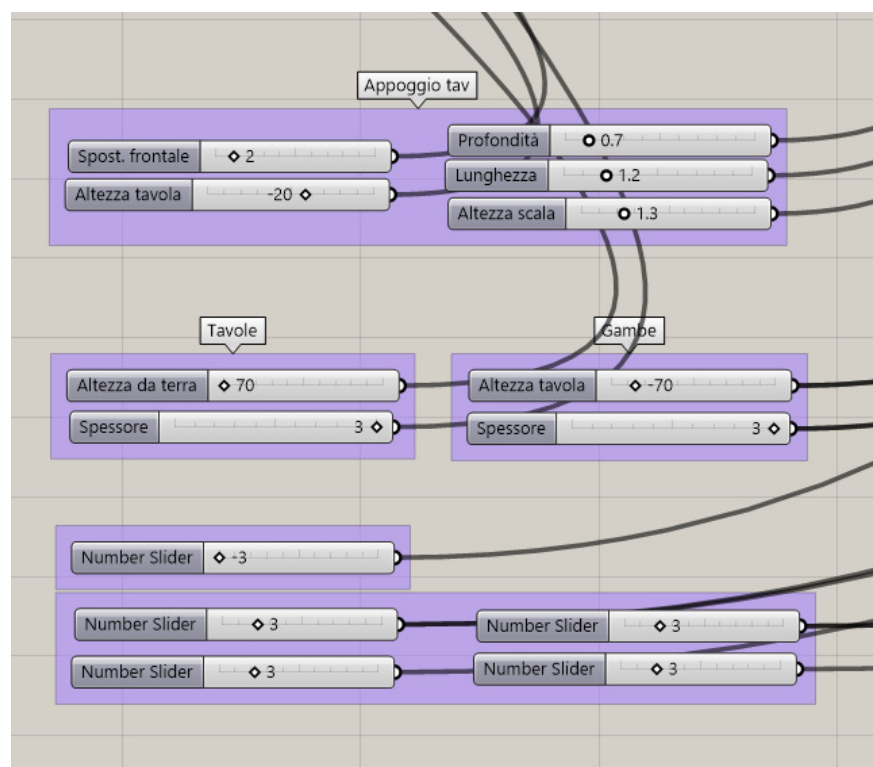
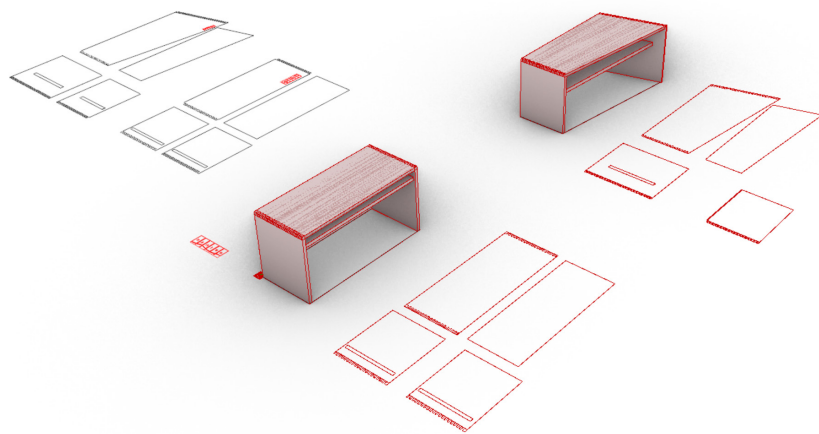


- 1. Football stadium in Monterrey, Mexico
- 2. Interior of the China pavilion at the 2015 Milan Expo
- 3. Exterior of the China pavilion at the 2015 Milan Expo

05.7 SLIDER FUNCTIONS

To test the effectiveness of the system, i.e. that it is able to take a 2D drawing and transform it into 3 different types of furniture according to the user's choice, I used the sliders, a type of input present within Grasshopper, which allows through an action now common to all, which has been taught and imprinted in our minds also through social media, i.e. the slide, to move between different numerical values and then go and modify through these values, the final appearance and very configuration of the model that is produced by the flow of nodes.

The sliders are the most intuitive input method and I wanted to use them, even though they weren't intended to be the definitive input method for users, to understand if it was actually possible to obtain the desired results through simple settings.

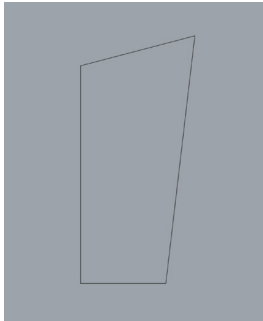


05.8 PARAMETERS

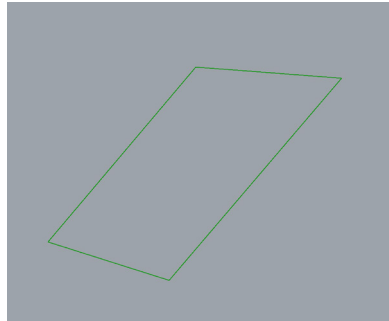
The modification parameters were selected based on 3 categories of furniture. The 3 categories have been selected because they are among the most used and useful pieces of furniture in an office and therefore they are:

the desk, the chest of drawers and the shelf. Each of these furniture has different specifications and therefore must be set via different parameters, for example, for the desk we simply have a basic structure with a high shelf, but for the shelf we should have the ability to change the amount of sections or shelves, while for the chest of drawers we have the same problem, but we must consider that it is a closed piece of furniture and therefore with a back wall. Even the joining methods are different and for this reason it is necessary to pre-set in the design phase from the 2D what the output piece of furniture will be, making the software understand which of the different flows it will have to use to model the object.

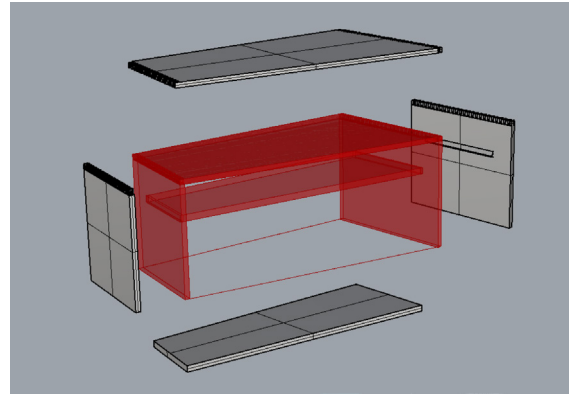
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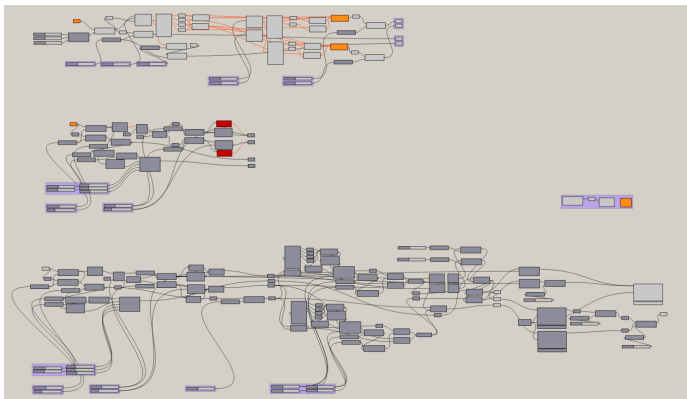
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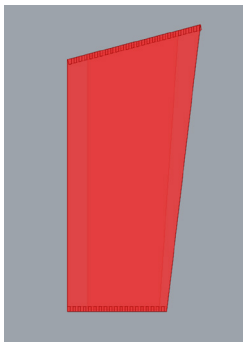
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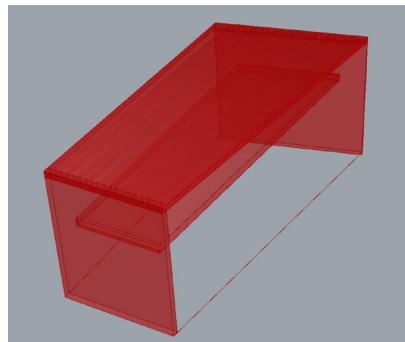
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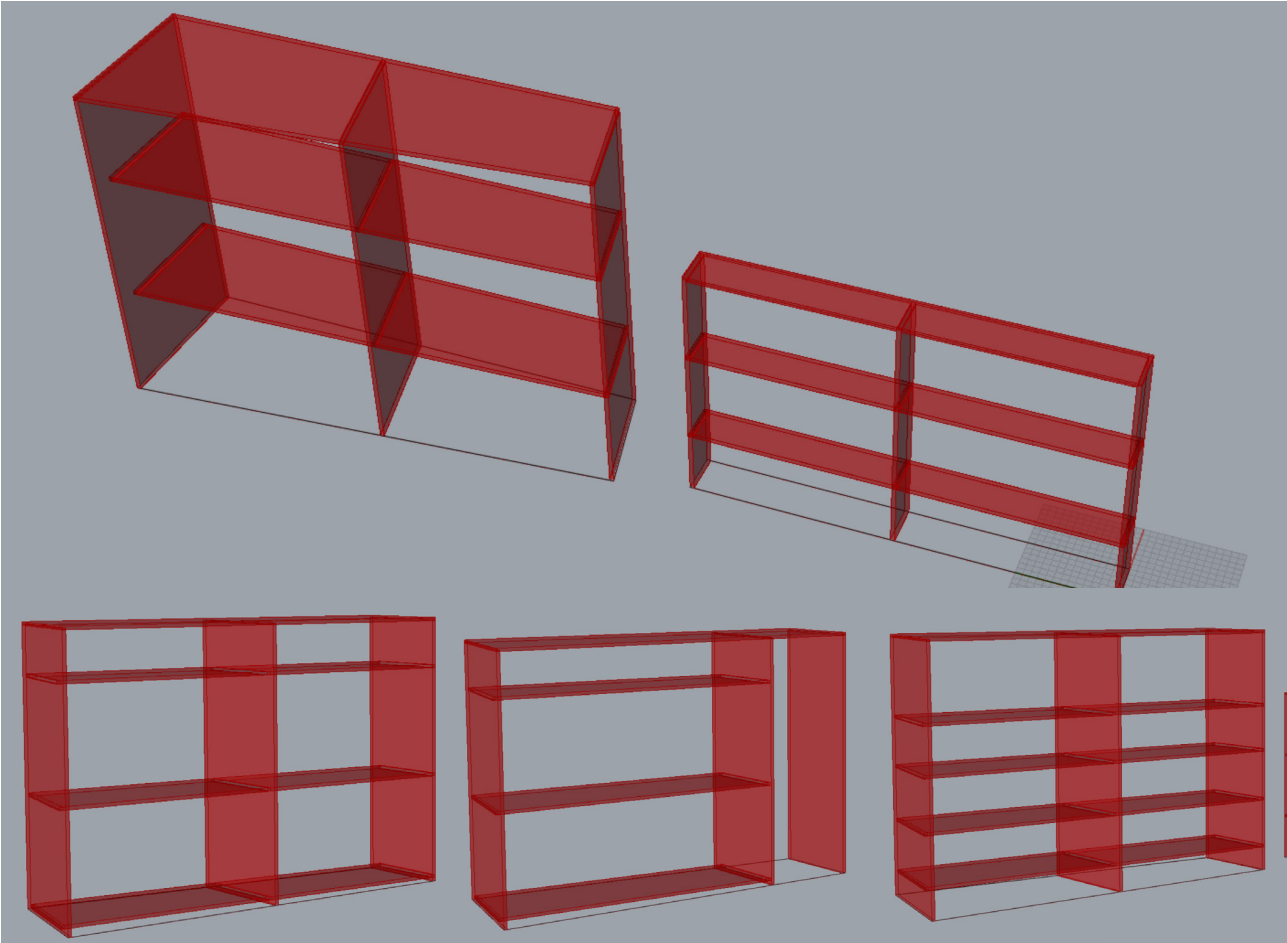


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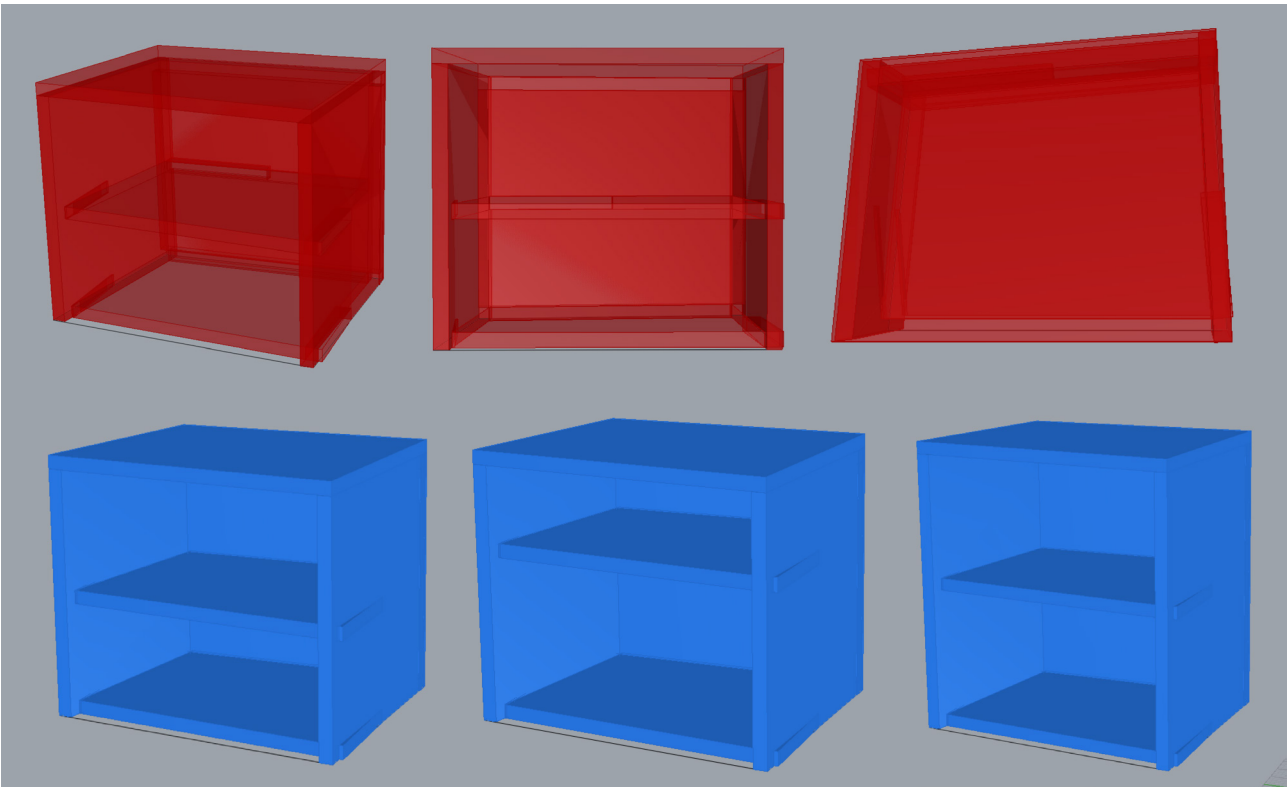


1. 2D creation
2. Importing 2D into Node Stream
3. Node setup
4. Modeler result
5. Modeler result
6. Actual 3D model

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- 1. Changes to a shelf version via parameters
- 2. Changes to a version of the chest of drawers via parameters

05.9 FILE TYPE AND RECEPTION MODE

the output files must be interchangeable files that can be worked with different types of CAM software.

CAM (acronym for Computer Aided Manufacturing) refers to a category of software that allows you to generate the instructions necessary for a machine tool to create a specific product starting from a CAD project.

The machine in question must be equipped with a CNC numerical control (Computer Numerical Control), to which the information necessary to allow the definition of the tool path is forwarded.

Generally the classic process that leads to the creation of most of the artifacts consists of the following phases:

- Concept phase
- Planning Phase
- Production Phase

After the design phase it is necessary to extract the idealized shapes from a raw material, to do this you can use manual machines controlled by specialized workers, or machines equipped with CAM software, in this case the CAM software can be installed directly on the machine, or on other devices. Within the CAM software environment, the operator will decide which operations and which paths the tools with which the machine is equipped must follow in order to create the designed object.

To avoid data loss between the design phase and the production phase (e.g. characteristics of the material), CAD/CAM software (e.g. Inventor HSM or Fusion 360 by Autodesk) can be used which combine the design phases in a single environment and that of defining the path of the machine tool.

Once the path of the machine tool has been defined, the designer will send this information to the controller that manages the CNC of the machine. In order for the information defined in the CAM software to be readable by the CNC controller of the machine, it is necessary to perform a post-processing operation. The postprocessor, made to measure for the customer's machine, translates the path of the machine tool defined in the CAM into the programming language used by the machine, called G-CODE or more commonly ISO.

All the information necessary for the machine to carry out the machining will be entered inside the G-CODE, obviously the user will still have to be able to open the file via the CAM software which, however, at that point, for different types of software now, is able to independently extrapolate information for production.

The download of the file will take place through the browser so it will be up to the user to decide how to download the file and insert it in his software.

After searching to confirm my thoughts, I selected 5 interchangeable file formats, which were able to cover most of the CAM software on the market, thus providing equal opportunities for all users.



05.10 PROTOTYPING MODE

The last few decades have seen the diffusion in practically every production sector of production systems based on the CO₂ laser.

Traditionally operations on materials have been performed with mechanical tools. Drilling, welding and cutting were operations that involved the material to be cut and a tool, usually metallic.

All these operations are now carried out with great profit by the CO₂ laser. But it's not just about substituting one tool for another. Digital production has revolutionized the work of materials bringing some notable advantages.

Here I have listed 8 benefits of CO₂ laser, focusing on laser cutting.

1. No need for heavy fixture for the work piece

CO₂ laser cutting is a non-contact process. The laser head will send the laser beam directly onto the surface to be worked producing the desired results. There are no mechanical forces at play.

This means that CO₂ laser systems are much lighter and more flexible than mechanical systems. For example, it is possible to change the materials to be processed within the same production cycle. Or try different design or cut patterns on the fly without having to completely stop the production cycle.

2. Cutting flexible materials will be very easy

Cutting flexible materials such as plastic film or paper is a delicate operation. With mechanical means there is often a very high risk of accidentally damaging the material.

The CO₂ laser, on the other hand, does not imply the use of mechanical forces. It is as precise and delicate as a surgical scalpel and is therefore suitable for cutting flexible materials.

3. You have computer power on your side

CO₂ laser production systems are computer controlled. In this way you will be able to manage all the important parameters of production in a millimeter way. Laser systems are thus very powerful and flexible tools. Thanks to the computer, they can make cuts of all kinds, with angles that are unthinkable for a traditional machine.

4. Waste fewer resources

The lack of mechanical and physical limits combined with computerized control allows the CO₂ laser to reduce processing waste.

Here's how: you will be able to program the arrangement of the pieces to be cut out on the base material with extreme flexibility. This way you will minimize wasted space and optimize your source material.

5. The heat does not damage the material to be worked

CO₂ laser cutting uses the energy and heat generated by the beam to vaporize a set amount of material. Depending on the power used, the result ranges from cutting to simple marking.

But, even though it uses heat, the CO₂ laser is extremely accurate. The laser beam will only hit the part to be machined and there will be no burns or unwanted marks.

6. Cutting operations will be performed at lightning speed

A CO₂ laser cutting system is very fast. It takes seconds to make cuts with the most complex and intricate patterns on any material.

7. Perfectly finished and uniform parts

The cutting precision of a CO₂ laser is amazing. The laser beam works by instantly vaporizing the material it comes into contact with. This operation leaves no residue and, above all, leaves no imperfections. A piece cut with the CO₂ laser will not need to be finished further.

8. Reduce the cost of maintenance

A major advantage that CO₂ laser cutting has over traditional methods is that it predicts tool wear.

05.11 CONCLUSION

In conclusion, this is a project I care about, not so much for the effective contribution it can or will have towards these environments, but for the philosophy that accompanies it. During my experience as Technical manager of various FabLabs I was able to touch what the co-working environment is, what is most often needed, it's just a little help, the last push to allow great works, new start-ups and designers to make that leap forward necessary to become great. The service aims to help amplify that sense of collaboration and sharing that is experienced in co-working spaces and fablabs, where I have seen users bend over to tidy up the floor tiles in order to keep the environment intact and functional for all its visitors. First of all, I have seen firsthand the willingness of some to do, but that without the support and knowledge they remained helpless, with no possibility of actually doing anything. Working together, is not simply a factor of sharing a space or an end goal, as can be the delivery of a project or the creation of something, but for me it is working together, on issues that affect all members of the space, each individual is part of the system and as such can help improve it. The support of a project like this could be minimal in practical terms, but very high in conceptual terms, making users understand that they can support and help and managers that they can collaborate with them also to improve the area itself. Prototyping and digital production plays an important role in all of this, a great modern designer Francesco Puzello often mentions his idea of the future, perhaps a utopian project, but which aims to provide the skills and knowledge to every citizen to to use these extraordinary machines and autonomously produce not only objects for one's own home, as Munari had suffered with his book, but for the entire neighborhood or for the city, expanding one's vision and thinking of the collective. I want to believe in this utopian future and I want to try to provide everyone through my projects with the possibility of achieving this goal and making everyone, if not designers, builders, because if there is one thing that distinguishes us as human beings it is our ability to invent and build, build solutions, build supports, build the present and plan to build the future. For everyone.



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