

# Architecture of the Pandemic

A photograph of a snowy outdoor area. In the foreground, there are snow-covered trees with bare branches. In the middle ground, a long white tent structure is set up. Several people are standing in a line outside the tent, some facing away from the camera. The background shows a building and a hazy sky.

A compendium of COVID-19 responses  
in the built environment

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# Preface

The COVID-19 pandemic has forced us in many ways as a society – in Denmark and in the rest of the world – to organise ourselves differently and to change our behaviour. In a very short time, the virus has mobilised governments, altered markets, and, not least, changed people’s everyday lives.

The pandemic has led to major shifts in both everyday routines and the physical environment, including new boundaries between work and leisure, social distancing, and new hygiene routines.

But the pandemic has also given rise to novel solutions in response to the immediacy and intensity of its impacts. Some of these solutions are temporary measures, while others have potential, beyond the pandemic, to contribute to increased quality of life in the buildings where we spend so much of our time.

These are examples from which we can learn, and which may help society to emerge from the pandemic more resilient than before when it comes to the physical environment, which affects so much of our everyday lives.

The purpose of this compendium has been to collect and highlight examples, in cities and buildings, of responses to the needs arising from COVID-19 – both in Denmark and internationally. These examples may inspire and contribute to the discussion on how we can add value to pandemic preparedness in the built environment through a ‘Build Back Better’ approach. And, while novel today, these examples may someday become a natural part of everyday, post-pandemic life.

This compendium is part of an effort to collect knowledge in connection with Realdania's initiative "RESPOND – the framework for the new everyday life". The initiative focuses on how COVID-19 affects our behaviour and our physical environment. It aims both to gather knowledge and examples from the pandemic and to inspire and initiate completely new solutions for more resilient construction. With this publication, we are also pleased to contribute to the UIA "Year of Design for Health".

We look forward to continuing the work of mapping the changes that COVID-19 brings to our everyday lives in cities and buildings – and not least to supporting the innovative solutions that can contribute in the future to raising the quality of life for all in the built environment.

Happy reading!

**Jesper Nygård**

CEO, Realdania

# Architecture of the Pandemic

One of the most significant statements of the Union Internationale des Architectes [UIA] “Health Facility Design and Planning” document is that “each design be approached and focused to meet the needs of the respective scenario”. The underlying philosophy of **Architecture of the Pandemic** leads us to exactly this. Because, although the case studies depicted obviously cannot cover the whole spectrum, they do, nonetheless, show the way. They provide the tools and the architectural thinking for the elaboration of future case-specific examples. In so doing, the spirit emanating from “Architecture of the Pandemic” sets standards and opens doors. This is particularly important given that its “audience” is the whole world, privileged and less privileged alike – and with varying conditions on the ground.

The quality of the built environment as it relates to public health and healthcare facilities differs greatly from country to country and from one medical facility to another. People are not equal when faced with illness and death. The end target can only be to aim for ideas that will eventually lead to more socially just access worldwide to uniform health-care services and healthy environments.

Although this sounds utopian and difficult to implement, we have the duty to grasp and use every opportunity that comes our way. The UIA Year of Design for Health 2022 is such an opportunity because it asks us to stop and think on a universal scale. It invites architects to learn from examples of pandemic response through architecture. The present compendium **Architecture of the Pandemic** gives invaluable innovative indicators on how to make implemented architecture a vehicle for better health for all people.

Although all of us no doubt firmly believe that knowledge belongs to all humanity, we also know that the transfer of technology and ideas from the more developed countries often has strings attached. Yet there is another approach, and it is not costly: design

with the human being at the centre – all human beings throughout the world. This is an ethical choice, and we need to uphold it. **Architecture of the Pandemic** shows the way for a world with more equal opportunities for healthy living for all.

This publication features ideas and proposals that have the potential to radically change one's concept of pandemic and post-pandemic health in the built environment. It does so with a combination of photos, sketches, and texts intertwined in a way that challenges the reader's creativity. It provides pointers to possible solutions that can be adapted depending on local conditions. It does not set down rules. It hints at more extensive use of exterior areas and rethinks interiors and circulation. Overall, it represents a wealth of ideas that can be modified in different climate zones. It is also remarkable for the way in which it orientates its subject matter towards architectural proposals that are people-centred. This is one more reason why it stands likely to be embraced by architects and lay persons of varying cultural and economic backgrounds across the globe. It also shows the way for our teaching institutions worldwide. It shows that, as a result of what we have learnt from the pandemic, we need to rethink the way we practice healthcare architecture and the way we are taught about the relation between health and architecture. In short, that we need to continuously regenerate both our profession and our universities.

But in order to start doing this, we need sparks that will trigger this new approach. **Architecture of the Pandemic** provides such sparks. All the more so because the thinking behind this compendium and the examples cited highlight the fact that size and budget are not essential prerequisites for meaningful results. Hence, by studying it and applying its principles, the less privileged countries and the less "connected" architects stand equally to gain from implementing the principles and guidelines of this publication.

It is an undoubted fact that during the pandemic years, architects have significantly contributed, and continue to contribute, both as individuals and as collectives. But even if architects give their all to designing facilities attuned to the needs of the pandemic, it does not necessarily follow that architecture will leave a lasting imprint. This may appear to be too subtle a difference, almost a play with words, but it is not. Because leaving an imprint is a much taller order. This compendium, in navigating us through the work of architects, allows readers to draw their own conclusions.

It is important to remember that this publication is also a contribution to the "UIA Year of Design for Health". Hence, it highlights the essence inherent in the 2022 World



Architecture Day theme “Architecture for well-being”. The fact that this publication is created by editors of **An Architecture Guide to the UN 17 Sustainable Development Goals**, I can only interpret as a happy foretaste of what is to come during the Copenhagen 2023 UIA World Congress and also as further proof, for those that still need it, that environmental issues cannot be disassociated from any of our endeavours.

As one continues to turn the pages of this publication, what unravels is a fascinating and expertly set up journey through the potential of architects and architecture during the pandemic years. Combining real-life examples and ideas across all continents, **Architecture of the Pandemic** can truly be termed a universal publication whose legacy will most certainly keep on surprising us.

**Vassilis Sgoutas**

UIA Honorary President







# COVID-19 and responses in the built environment

## Health begins in the home

In January 2020, Chinese authorities imposed lockdowns in Wuhan and other cities in the Hubei province. In March, large parts of Europe shut down, and soon after the rest of the world followed.<sup>1</sup> In April of that year, more than 3.9 billion people – half of the earth’s population – were affected by closures.<sup>2</sup> Since then, the COVID-19 pandemic has wavered back and forth, and from December 2021 the omicron variant has again given rise to restrictions and new ways of adapting.<sup>3</sup> As expert risk analyses have become commonplace, we have learned to read curves, graphs, and statistics for different infection prevalence scenarios. A central concept is “flattening the curve” and the graph that illustrates the connection between capacity of the healthcare system and the ability of society to keep infection rates low. Treatment of very ill patients takes place in hospitals, and capacity in hospitals is therefore absolutely central to the efforts of health services. But the ability to keep infection rates low relies on dynamics in the community or in the home. Therefore, the way we plan and use our buildings plays a crucial role in how disease spreads and in our ability to withstand a threat like COVID-19.

## An architectural tragedy?

In recent times, quarantine and isolation had become peripheral concepts in the built environment. But as the COVID-19 pandemic materialised, we were reminded of the origin of these concepts and their crucial importance in the human struggle against disease throughout time. Architect and founder of MASS Design Group, Michael Murphy, described the situation as an architectural tragedy: “We’ve lost touch with the public’s understanding of what the built environment is supposed to do. Until recently, those questions were somewhat academic, but now they are present in everyone’s daily life. The built environment is threatening us.”<sup>4</sup>

With COVID-19, the importance of the built environment has become a very tangible thing. In hospitals, it became necessary to [re]establish isolation rooms and other facilities on a larger scale, and boundaries and thresholds within the home became a crucial tool for many against infection. But the spaces we inhabit have also had to deliver in new ways, and it has prompted reflection and innovation, for example, to ensure that the home could become a workplace, a school, and an after school centre. In this way, the pandemic can be seen both as a state of emergency in the built environment and as a laboratory for exploring the ways in which we adapt. It is through this lens that – with this publication – we want to approach COVID-19 and the many responses of the built environment.

The challenges have been particularly great for society's most vulnerable groups. For those with the fewest resources, the intimate connection between health and the built environment was increased by the pandemic. When zooming in on cities, both in high- and low-income countries, it is clear that the poorest neighbourhoods were hit hardest. Housing and income inequalities became evident through the effects and the prevalence of the pandemic, and the living conditions of the lowest-income earners resulted in increased vulnerability during the COVID-19 pandemic.<sup>5</sup> Microbes thrive best where there is the least mutational pressure. This is where they can spread quickly and effortlessly. People who live close together, with very little space, in homes with a poor indoor climate and limited access to outdoor areas, are therefore more exposed both to infection and to negative effects of the closure of society. Existing social housing challenges were thus highlighted and further exposed by the COVID-19 pandemic.<sup>8</sup>

As the COVID-19 pandemic has evolved, it has gradually become clear that as a society we are not moving "back to normal". The challenges that the pandemic has highlighted in society and in our built environment make that option inviable. We must therefore move forward, improving on what "was" in order to build back to something better.

### **Build Back Better – to rebuild better**

Build Back Better, first described in the UN Sendai Framework for Disaster Risk Reduction 2015-2030, is an approach to decrease the risk posed by future disasters. To 'Build Back Better' is to learn from disaster in order to better inform decision-making.<sup>7</sup> The concept is central to many recovery plans and strategies, including at EU and UN level. Keywords that recur in the discussion on how to rebuild better include: equality, green solutions, and biodiversity.

This compendium of examples adds a number of very concrete solutions to the list for ensuring survival, good living conditions, and quality of life during the difficulties imposed

by the COVID-19 pandemic. Of the 35 projects presented in this compendium, many will be temporary, some could inspire design innovation, and others will be lasting and might become new best practices. Together, these 35 examples trace a trajectory of opportunity to fundamentally reconsider the principles we follow when we develop our buildings.

### **Connectedness**

On a more fundamental level, we must get used to the idea that we are not alone. Viruses live and spread in the ecological niches that humans create. We are in them, and they are in us – not only as antibodies in our immune systems but also as more or less visible parts of our societal immune system in the form of sewers, city plans, furniture design, building regulations, rules for animal husbandry, materials, hospital design, parks, etc. They are also in our global infrastructure – on planes and in the peripheries and the centres of cities. They are in wet markets in China but also in our intensive animal production, which leads to antibiotic resistance, undermining our ability to resist viruses that occur in the same environments – all because we need to cultivate more and more natural areas to maintain global supply chains. It is all connected, and our buildings, spaces, and the way we organise ourselves physically are crucial to our ability not only to survive but also to live well. The smallest and the largest building blocks are intimately entangled.

### **Examples to inspire**

#### **The approach**

This compendium contains 35 projects, each an example pointing to a potential to Build Back Better. The collection of examples has been carried out via desk research and with the help of a broad network in Denmark and internationally. For the Danish examples, outreach work and documentation have also been carried out on site where the examples are located. As many of the initiatives in the built environment were carried out within short time periods, and as some of them are of an ad hoc or temporary nature, many of the examples had not been described prior to this publication. Thus, the collection also serves as documentation of the solutions created during the pandemic.

#### **Tendencies**

The projects have been selected because they show, in specific ways, how architects, authorities, institutions, and a large number of other actors in the built environment have created solutions that support transmission control while also improving quality of life.

The examples have been selected with the intention of spanning the wide range of functions that buildings generally contain. In this collection, we refer to these functions as “spheres”. They are explained in the “Reading guide”, p. 26. Although the 35 projects

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have been carried out in different places, meeting different needs, there are tendencies that recur across projects. In the following paragraphs, we outline four of these tendencies to illustrate a potential to Build Back Better.

### **Reconfiguring Interiors**

Many tables and chairs have been moved around since the first COVID-19 restrictions came into force. In many places, the immediate reaction to social distancing and assembly bans was to move furniture around and to change daily routines with curfews, entry requirements, and meeting times, among other things.

The restrictions were intended to prevent the spread of infection. Therefore, social distancing is a key goal of COVID-19 measures in the built environment. Spaces sized for a large number of people were suddenly too small to meet the requirements, and in many places it has been challenging to direct flows of people, for example around entrances where queues form. At the same time, a great focus on the connection between infection and hygiene has led to increased cleaning efforts in places where people gather.

Several of the examples in this compendium rethink the interior design of buildings in order to create a safe and secure environment for work and leisure. At a restaurant in New Delhi, India, RENESA Architecture Design Interiors Studio has created decor that supports social distancing while at the same time giving guests a novel and different restaurant experience. At LOQI's office in Berlin, the "office of the future" uses colour and shape in a completely new interior design concept to support new ways of working in all parts of the office. But there are also examples of more radical rethinking of the interiors of buildings, such as The Playhouse in Tokyo, where the store's premises are designed to offer customers completely new experiences in a future – or present – in which a large part of our shopping takes place online.

Interior design and behaviour are intertwined, mutually influencing each other. For this reason, the projects show not only how to create office environments that are safe here and now, but also how solutions can support hybrid working life which combines remote work and physical presence at the office. The examples indicate that 'flexibility' is a key consideration in interior design, but also that furniture, graphic elements, and digital solutions play key roles in creating robust solutions. In addition, the physical environment has an aesthetic dimension. A surface is a concrete physical thing with materiality and with a form. Likewise, signs have colour and a graphic language. The examples show how, while sometimes overlooked, aesthetics are a strong and relevant tool when refining the use of buildings.



These ways of rethinking buildings at the interior design scale are also related to ongoing sustainability discussions about the lifespan, renovation, and reuse of buildings. With limited material and resource consumption, interior design measures can change the functional possibilities of buildings, and if a function moves to a new building, the interior can move along with it.

### **Moving activities outdoors**

During the COVID-19 pandemic, the boundary between indoors and outdoors has been blurred. From ad hoc initiatives such as community singing from balconies to large-scale drive-in concerts, a wide range of activities and events have moved to a new frontier between indoors and outdoors.



In Colombia's capital, Bogotá, a church has been relocated to a car park, and in Copenhagen, one of the city's oldest cafés has moved its arrival desk onto the street. In California, increased outdoor dining has sparked a debate about the use of street space. From services to restaurant visits, activities that previously took place indoors have been moved completely or partially outdoors. This has been done in part to preserve social meeting places and functions that are crucial for businesses and cultural life to continue despite assembly bans, social distance requirements, and other restrictions. Additionally, activities that already took place outdoors, such as urban gardening, have gained a new significance during the COVID-19 pandemic. In Mexico City, an urban garden has become a safe meeting place for young people prevented from going to school because of restrictions. The many and varying solutions point to a growing resilience to both the cur-



rent crisis and future situations where restrictions may limit where and how people meet. From ad hoc solutions created by a few people to larger movements in our attitude to the use of outdoor space, the examples show that the pandemic has revealed a great creative potential among the users of the built environment – and that norms and rules have adapted to a new reality.

The solutions also indicate that zones between inside and outside are changing. They show that indoor spaces can benefit from being supplemented by spaces and elements that expand the interior outward: balconies, covered areas, and spaces that can be opened up. There is potential for both reduced material and energy consumption as well as added value for users to gain from these spaces which, through their open-air nature, reduce the spread of infection.

### **Spatial organisation**

In recent years, long corridors, multiple room divisions, and large façade areas have been targets for optimisation in the design of homes, workplaces, and schools. From the kitchen-dining room of the home to open-plan offices and the 'fluid spaces' which are found in many new school buildings, design has moved away from delimited space and toward space for flexible utilisation with open and uninterrupted flow. But the COVID-19 pandemic has brought into question this way of thinking about the organisation of spaces and buildings. The ability to clearly delineate, direct, and distribute users' flow through a building has proven to be an important tool in preventing the spread of infection.

The Danish Association of Architects [Akademisk Arkitektforening] is housed in a nearly 300-year-old building in central Copenhagen. The building was originally built as two separate parsonages and was only later merged into one lease. But its symmetrical organisation was preserved, and the building still maintains its two separate staircases – one at each end of the structure. This special feature of the building's organisation proved to be precisely what made it possible to establish one-way circulation on its floors, in response to restrictions introduced in the spring of 2020. In this way, The Danish Association of Architects could meet social distancing requirements without having to invest in major initiatives or make significant changes in the number of daily users. The inherent flexibility of the building's architecture simply made another flow possible. In a high school in the city of Silkeborg, the potential of the building's architectural plan was also exploited when students returned after being sent home in the spring of 2020. The building is typical of the Danish school building of the 1970s: a large, flat building that branches off into several wings opening up to a number of courtyards. All classrooms face, and have direct access to, a courtyard. This access was put to use, and the many entrances became the solution to the challenge of keeping classes separate. In Copen-

hagen, a new hospital building is under construction: Rigshospitalet's new hospital for children, young people, expecting mothers, and their families. The architects worked to create flexible architectural solutions that ensured the robustness required in a modern hospital. This creates benefits in everyday inpatient life but also makes the building well equipped for a crisis situation like COVID-19 pandemic.

These cases demonstrate how buildings that can be partitioned, subdivided, or accessed at several points, for example, and whose spaces and areas are not necessarily optimised for one particular use, have proven to be robust in meeting the ever-changing demands of the pandemic.

The solutions are relevant to the discussion of the lasting benefits of building with a robust distribution infrastructure, good access to all main rooms, and generously sized spaces. This increases the sustainability of the building by increasing its potential for change of use and function and the possibilities for ongoing adjustments in flow and logistics.

### **Industrialised building**

The speed of response has been paramount during the COVID-19 pandemic. Days, sometimes hours, have been crucial in slowing down an outbreak, and intensive care of COVID-19 patients has been a top priority in healthcare. Likewise, in the built environment, rapid conversion of spaces has been of utmost importance. In Denmark, the increased pressure on the country's hospitals has been handled by increasing capacity within the existing medical buildings. In other countries, however, there has been an urgent need to expand capacity beyond what the existing buildings could accommodate.

Several of the projects in this compendium highlight how the COVID-19 pandemic has accelerated developments already underway in some countries, while in others the need for rapid responses has prompted new and more efficient ways of building. In Kenya, for example, the Oak Tree Centre for Kidney and Chronic Diseases has built a new care facility from prefabricated building elements. Elsewhere, innovative construction methods and cutting-edge processes, such as rapid upscaling through open-source design, have made it possible to alleviate the pressure on the physical infrastructure of healthcare, as demonstrated by examples from Hong Kong and the Philippines.

In Denmark, industrialised construction is well established. Here, the big questions in the industrialisation debate concerns how buildings can be made more environmentally friendly and healthier for the people who inhabit them. From an infection perspective, it is relevant to discuss, among other things, materials, ventilation, and intelligent solutions.







As shown in Hong Kong, new technological processes can also create speedier, higher quality construction, and in the Philippines architects used open-source design as a tool to improve the efficiency of the construction of quarantine facilities, during a time when the country urgently needed to expand the capacity of the health care system.

Overall, the solutions indicate that time is a crucial factor in construction's contribution to current challenges. This renews the discussion on how we best optimise environmental sustainability in regard to industrial production, including the transportation of materials and goods to and from production facilities. As the cases show, speed and efficiency of a building process can contribute to social sustainability but must be balanced with consideration of the environmental footprint.

### **Looking ahead**

There are many ways to stop an epidemic. Vaccines, for example, are an invaluable weapon but cannot stand alone. A number of other measures are needed to limit the factors that give rise to epidemics and their spread. Historically, the built environment has been a central protection. Even today and during recent outbreaks such as the SARS epidemic, architecture has been our most effective instrument in terms of slowing the spread and flattening the curve. There is a basis for expanding the arsenal of possible interventions not just for survival but also to ensure value-added reconstruction. In the vast majority of cases, it is not the virus but rather the immune system's response to the virus that kills. In the same way, one should weigh the effects of the strategies that are supposed to protect us from infection against the consequences of those same strategies – such as the loss of basic interpersonal and psychological conditions. This importance of the built environment is nothing new for those who already deal with quality of life in the built environment. What is new is that everyone who experienced isolation or quarantine during the COVID-19 pandemic has been prompted to evaluate the quality of their home and local environment. In this way, the pandemic has provided a unique opportunity to ask questions about what we are building, what we have built, and what we are investing in for the future. These are the questions that have motivated the actors behind the projects selected for this publication. With great ingenuity and under immense pressure, their responses have managed to challenge and expand the boundaries of the “architecture of epidemics”. They have made life in the “buffer zone” that the built environment provides for the health care system a bit more interesting, efficient, and not least dignified. Taken together, these examples indicate that interventions in the built environment have greater potential than just to protect against the spread of infection. What they have in common is that they support transmission control while sustaining or even increasing quality of life for people.

# Reading guide

# Between quality of life and transmission control

The purpose of this publication is to highlight interventions in the built environment in response to COVID-19, in Denmark and abroad, which can inspire post-pandemic efforts to “Build Back Better”. The criterion in selecting the 35 projects was that they demonstrate and offer transmission control while simultaneously creating co-benefits in the form of sustained or even increased quality of life for their users. This is what is defined in this compendium as “Build Back Better”.

“Quality of life” is used in this publication as a term to cover different elements that characterise “the good life”. There is no single definition of quality of life, and what constitutes a good life differs from person to person. Yet there are elements of living that people have in common across culture and other differentiators and that can be formulated in general terms. Quality of life is based on people’s personal experience of central aspects of their lives. Inquiries about people’s satisfaction and well-being are therefore at the core of attempts to measure quality of life.

The term “transmission control” is used to describe measures in society to reduce the risk of a new epidemic or to limit the spread of an existing epidemic. Transmission control can relate to how the interior design of buildings affects people’s movements or which materials are used on surfaces where there is a lot of hand contact. With the COVID-19 pandemic, there has been a lot of focus on transmission control in the built environment and, following from this, how the built environment can provide protection in the future.

The projects in this publication are examples of disease transmission control measures that also maintain or increase quality of life. In other words, the projects create co-benefits and point to a potential for building back better in a broader perspective. The selection of examples focused on projects that have either been built, are under construction, or have been built and later dismantled after having been in use during the pandemic. There are many exciting unrealised scenarios and visions for how the built environment can be changed after the COVID-19 pandemic. However, the purpose of this compendium has been to shed light on the implemented responses in the built environment, and therefore the selection of projects is limited to specific, initiated initiatives.

# Taxonomy

Each of the 35 examples is accompanied by a four-part taxonomy.  
The concepts of the taxonomy are explained in the following page.

## **Spheres**

Spheres are defined as the everyday spaces and places of buildings. Together, the spheres cover what we define as the building scale – i.e. buildings and their immediate surroundings. The spheres are divided into Travel/Hospitality, Education/Institutions, Trade/Service, Culture/Leisure, Housing, The workplace, Transportation, Civil associations, and Treatment.

## **Timescale**

Timescale is indexed according to levels of emergency. In this compendium, we distinguish between short-term, long-term, and tactical projects or solutions. Short-term projects are solutions that are established in response to guidelines or requirements. They are typically fast, agile, and work in conjunction with the physical building. Long-term projects are built-in solutions that have a more permanent character and can typically be generalised. Tactical projects are ad hoc solutions that are not the result of guidelines or requirements but have arisen in response to restrictions. They are characterised by creativity and ingenuity and are typically user-driven.

## **Type**

We distinguish between four different types of projects: graphic applications, interior design, building intervention, and smart solutions. Graphic applications are, for example, signage and floor markings. Interior design projects cover, for example, regulation of access, screening, and refurbishing. Building intervention projects affect, for example, building parts, systems, furniture, and surfaces. Smart solutions are digital or so-called intelligent technologies.

## **User group**

The user group descriptions are broad and simplified in order to accommodate as many people who occupy the built environment as possible. In addition to age and family status, the categories “employees/service providers” and “customers/users” are used, as a number of cases are primarily aimed at those who either work on site, are provided with a service, or act as guests.

See how the examples are distributed in the taxonomy in the index from page 164.



# 35 selected examples





# Reconfiguring interiors

Infection control by design

Activity-based design before and after COVID-19

Rooms for hybrid meetings

Guided by graphics

Assistance from sensors

A room in a room

Touchless access

Clean hands

"The new normal"

The shop of the future

Playful social distancing



Project and location: LOQI Office, Berlin, Germany

Contributor: Studio Aisslinger

Established: September 2020

# Infection control by design

## Challenge

Since the spring of 2020, many sets of restrictions have come and gone in German workplaces. Employees working in open-plan offices have experienced the reopening as a gradual return to a normal work situation. However, some changes may have come to stay. Limiting contact and assemblies remain important considerations that characterise the daily lives of many. These are also the considerations that companies now try to incorporate into their office interiors. With workplaces reopening, in whole or in part, the COVID-19 pandemic acts as a significant 'driver' in workplace design, with flexibility and control being key.

## Solution

The LOQI Activity Office in Berlin serves as the European headquarters for the global design company. Work areas are designed to support creativity and collaboration while ensuring a safe and secure environment for staff in light of the COVID-19 pandemic. To meet both of these requirements, Studio Aisslinger planned the space as a series of separate but flexible zones for solo and group work, with a range of other activities made possible between them.

The office space has an open plan, so the designers had to find creative ways to delimit different zones. Partitions were designed to be as flexible as possible and took the form of heavy fabric curtains and perforated metal screens. Strong colours were used to define clearly where one zone ends and another one begins.

The project is an example of how well-considered interior design can increase the usability of a room even during COVID-19 restrictions and limitations – and how aesthetic choices such as colour and texture can support the safe use of a space.

## Taxonomy

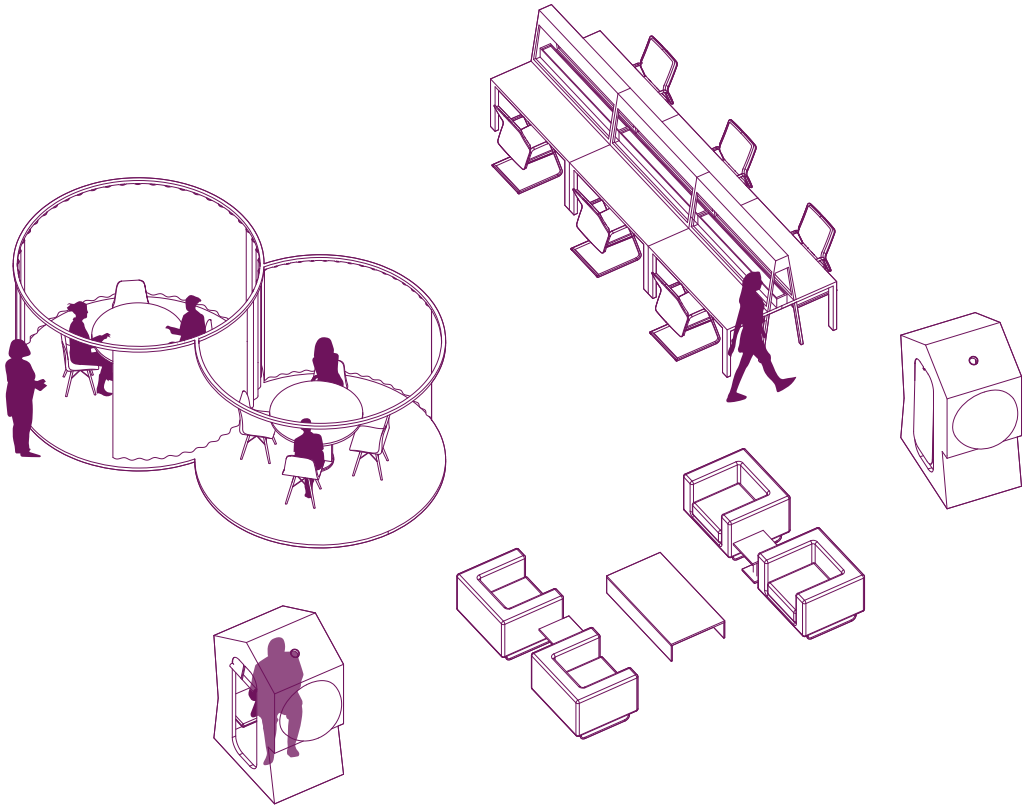
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**Sphere:** The Workplace

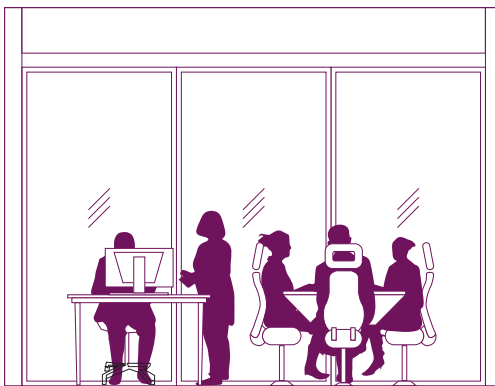
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**Type:** Interior Design

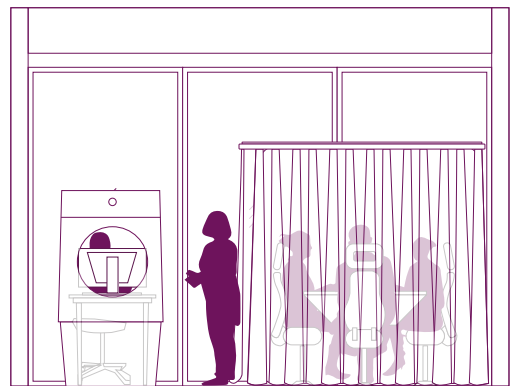
**User Group:** Employees/Service Providers



The LOQ! Office combines various types of workstations



Open-plan office space: no divisions



The new office space: with spatial divisions





Project and location: KEID's Offices, Copenhagen, Denmark

Contributor: Municipality of Copenhagen, Copenhagen Properties and Purchasing [KEID]

Established: 2020

# Activity-based design before and after COVID-19

## Challenge

When COVID-19 hit Denmark, Copenhagen Properties and Purchasing [KEID] was in the process of implementing a new design concept for their organisation's workplaces: activity-based design. The basic idea in activity-based interior design is that in modern everyday life, work is not a place, but an activity that is carried out where the surroundings best support the task.<sup>1</sup> In contrast to the traditional open-plan office, activity-based office design is built around zones for different types of tasks. Employees do not have fixed work-stations but move during the working day and find the zone that best suits the current task. There are zones for teamwork, for meetings, for focused work, etc. In the Municipality of Copenhagen, each team unit maintains a "home area", but employees may freely use all zones across the organisation. From an infection perspective, however, this kind of free movement between zones and the large open-plan office itself became a challenge.

## Solution

During lockdown, remote working became commonplace for many people with office jobs. With the gradual return to the norm, it became

necessary to lay out strategies for hybrid working life. In KEID's buildings on Borups Allé in Copenhagen, the activity-based layout has been adapted so that the organisation and its employees can continue to explore the benefits of the zoned office without the employees' mobility posing a risk of infection. All employees who show up start the day at their team base, where personal belongings can be stored during the day. But instead of moving around freely between different zones, employees must now choose to work in one zone that day. Throughout different phases of the pandemic, the activity-based design provided different options for the use of the office space.

The example shows how activity-based interior design can support hybrid working life, which has in a very short time become the norm for many. The notion that work is an activity and not a place did not arise during the COVID-19 lockdowns, but the experience that was gained during the pandemic may help to qualify and strengthen the design of the office of the future.

## Taxonomy

**Sphere:** The Workplace

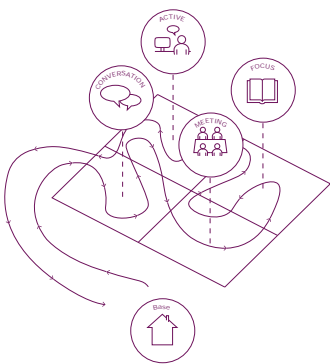
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**Type:** Interior Design

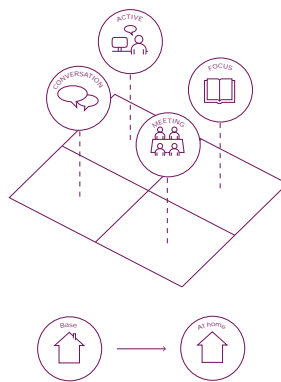
**User Group:** Employees/Service Providers



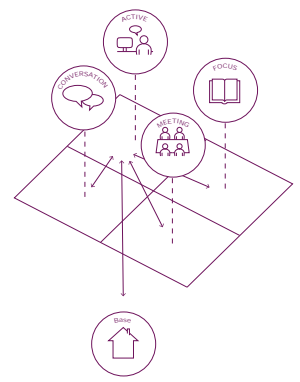
The different zones in KEID's offices are used for different types of tasks



Before COVID-19:  
Employees move freely  
between zones



During lockdown:  
Employees work from  
home



During reopening:  
Employees select  
hotdesks for the day



Project and location: KEID's Offices, Copenhagen, Denmark

Contributor: Municipality of Copenhagen, Copenhagen Properties and Purchasing [KEID]

Established: 2020

# Rooms for hybrid meetings

## Challenge

In recent years, the meeting culture in Danish workplaces has been the subject of much attention – through research, debate, and tools that have been developed to support more efficient and satisfying meetings.<sup>1/2</sup> The discussion about meeting culture received an extra dimension when lockdowns began, and a large part of activities became digital. For the Municipality of Copenhagen, everything from citizen meetings to conferences, planning, and coffee meetings had to be conducted digitally. There are indications that online meetings may be more effective than physical meetings for certain purposes.<sup>3</sup> However, although conference calls have been used for a long time, the physical meeting remains an important element in everyday work life. And for the Municipality of Copenhagen, good meeting facilities were a priority in the redesign of their offices. In the 'Copenhagen Properties and Purchasing' [KEID] premises on Borups Allé in Copenhagen, a major redesign of the office spaces was underway when the COVID-19 restrictions hit. The municipality's transformation toward activity-based office design meant that meetings had been given more space and consideration. For example, the offices had been

fitted out with additional zones for informal meetings and discussion.

## Solution

With the gradual return to normal, hybrid work has become commonplace for many Danes. New forms of work require a rethinking of the office interior. In the meeting room, this means that the space must be able to support both physical and virtual participants. In KEID's premises, the new meeting facilities have been developed to support hybrid meetings. In the new design, a distinction is made between traditional meeting rooms and meeting rooms with technical equipment for hybrid meetings. In addition, the activity-based design also includes "phone booths" for participation in virtual meetings and special areas for passive meeting participation – i.e. when an employee attends a virtual meeting without speaking.

The example shows how new ways of working place new demands on the physical design of the workplace, and how technological solutions and design solutions can support a successful hybrid working life.

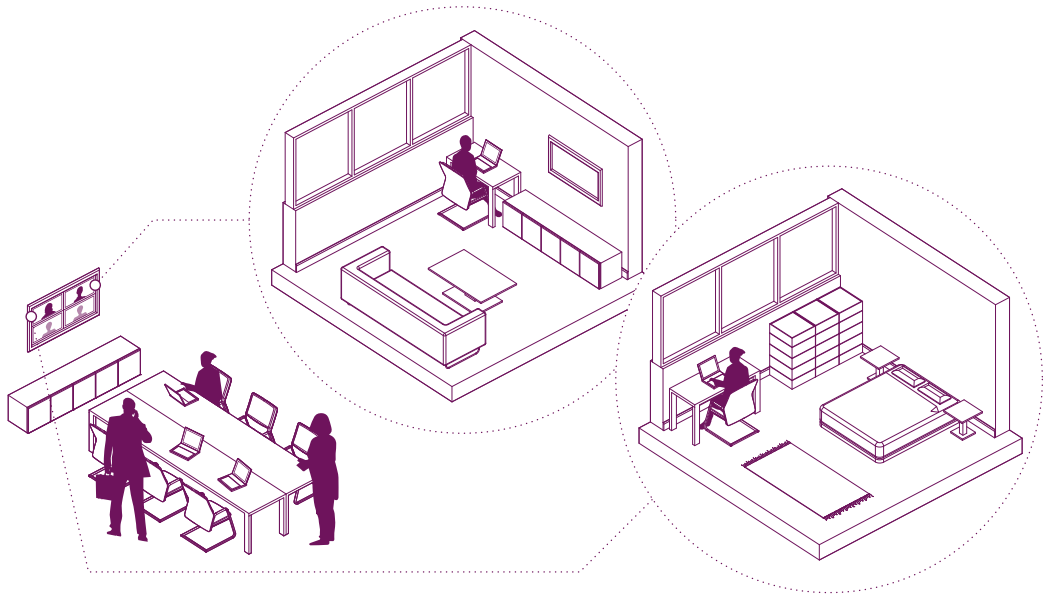
## Taxonomy

**Sphere:** The Workplace

**Timescale:** Long Term

**Type:** Interior Design, Building Intervention

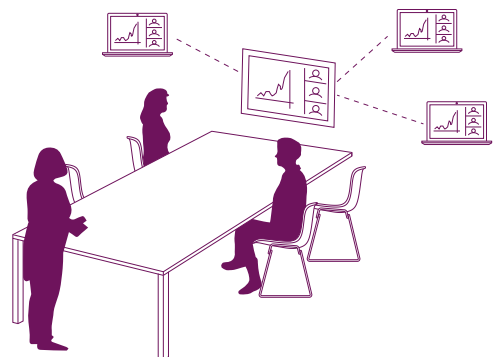
**User Group:** Employees/Service Providers



In KEID's offices, the meeting rooms are set up for the hybrid meeting



Typical meeting room before COVID-19, all employees on site



COVID-19 has resulted in hybrid meetings with both physical and virtual participants

Project and location: Copenhagen Municipality, Copenhagen, Denmark  
Contributor: Municipality of Copenhagen, Copenhagen Properties and Purchasing [KEID]  
Established: 2020

# Guided by graphics

## Challenge

Signs, text, and graphics guide us through daily life. Visual communication has also been an important tool in communication from authorities to citizens during COVID-19.<sup>1</sup> In Denmark, the Danish Health Authority [Sundhedsstyrelsen] created blue posters with instructive text and graphics that became ubiquitous throughout public space, the distinct blue colour functioning as a visual identity for the COVID-19 strategy.<sup>2</sup> The posters form one of the Danish Health Authority's communication tracks, focused on direct, objective, and action-oriented messages. But private actors have also needed to communicate via signs and other graphic means, such as painted arrows and markings on the floor. In larger organisations, where communication has to be broad, continuous, and convey credibility, signs have had to be updated and adapted to the situation and across the organisations consistently.

## Solution

The Municipality of Copenhagen has set up an internal COVID-19 signage service to unify the

graphic and linguistic expression in the communication to employees and guests in the municipality's buildings. However, restrictions and instructions have changed continuously, creating a continuous need to respond quickly to new conditions with new graphic communication. This had to be done in a way that ensured that employees and guests had no doubt that signage was an expression of the organisation's policy and was up-to-date. The Municipality of Copenhagen's COVID-19 signage service therefore offers a large catalogue of different signs. The signs are intended to help all areas within the municipality, including offices, nursing homes, housing, and activity facilities.

The example shows that signage and graphics are important communication tools in a crisis situation. When the demands on our behaviour change, visual communication helps us to navigate; but it is crucial that communication remains unambiguous and credible in order to maintain confidence and adherence to guidelines.

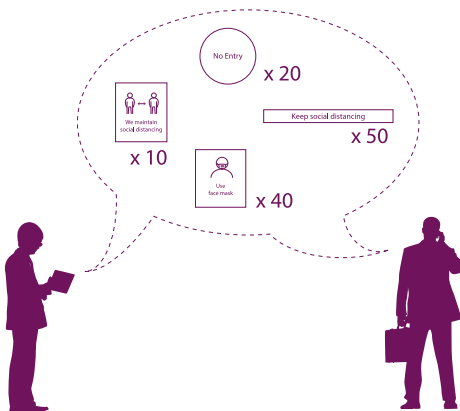
## Taxonomy

**Sphere:** Culture/Leisure, The Workplace, Civil associations  
**Timescale:** Short Term

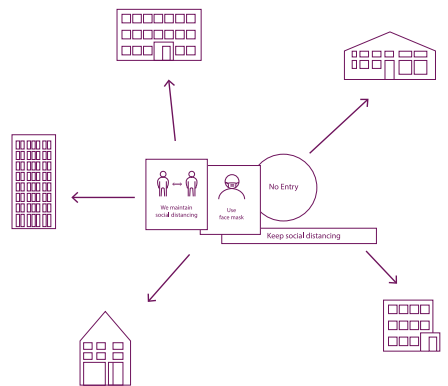
**Type:** Graphic Application  
**User Group:** Youth, Adults, Elderly, Employees/Service Providers, Customers/ Users



Signs can be ordered and picked up at Copenhagen Municipality's COVID-19 sign service



Employees from different departments can order signs for the municipality's properties



Signs have been developed to meet various needs throughout the municipality





Project and location: KEID's Offices, Copenhagen, Denmark

Contributor: Municipality of Copenhagen, Copenhagen Properties and Purchasing [KEID]

Established: 2020

# Assistance from sensors

## Challenge

During the spring and summer of 2021, there was a gradual return to full attendance in many workplaces in Denmark – from 20% to 50% and eventually 100% attendance.<sup>1</sup> But even in situations where all employees can return to the workplace, many employers agree that hybrid working life is here to stay. With the need to control attendance as it relates to infection risk, new management tools are also needed to ensure that organisations can manage the presence of employees. In the reopening phase, many workplaces developed ad hoc systems to manage attendance – from spreadsheets and phone calls to “task forces” and applications. Common to these solutions, however, is that they increase the administrative burden for the parts of the organisation responsible for compliance with the guidelines.

## Solution

To facilitate the workflow, the Copenhagen Properties and Purchasing [KEID] has initiated a pilot project with heat-sensitive sensors in a

number of the municipality's office premises.

The small sensors are located under desks, on columns, in the ceiling, or on the walls, continuously recording the number of people in the room. This tool can be used to register how many people are present in a given room and the number of workstations and spaces in use. The pilot project is part of the transformation of the organisation's offices toward activity-based design. As such, the sensors are going to work together with the organisation's system for registering employee attendance to assist each employee in finding a vacant workstation.

The example shows how a hybrid form of work and continuous changes in restrictions place new demands on the design of the workplace. Our buildings and the spaces we use are increasingly monitored by sensors to control indoor climate and air quality, for example, and now also attendance. This type of technology allows the optimisation of spaces throughout the workplace to improve safety, comfort, and access.

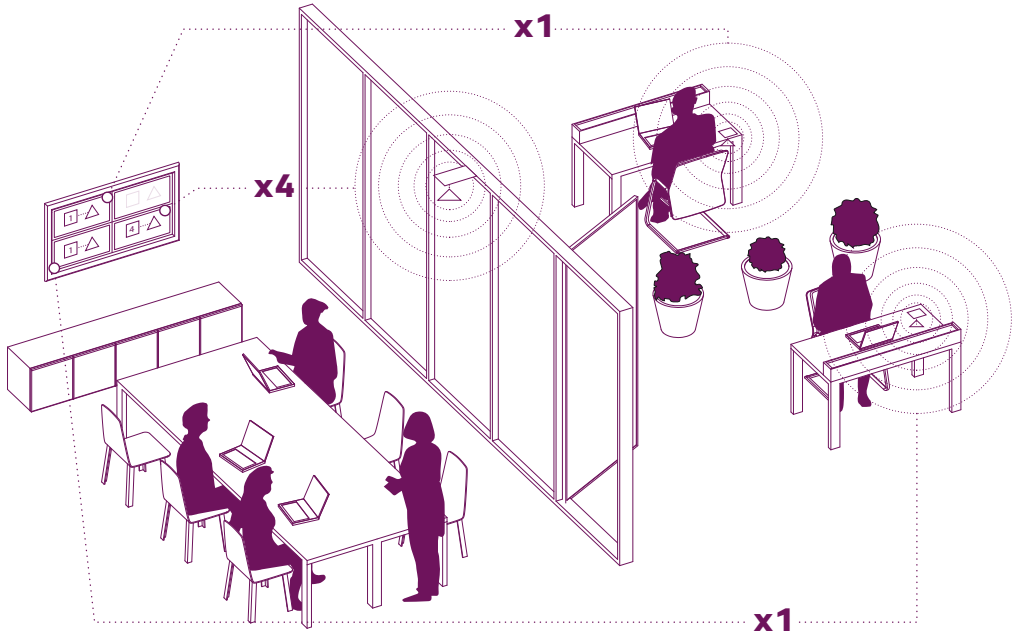
## Taxonomy

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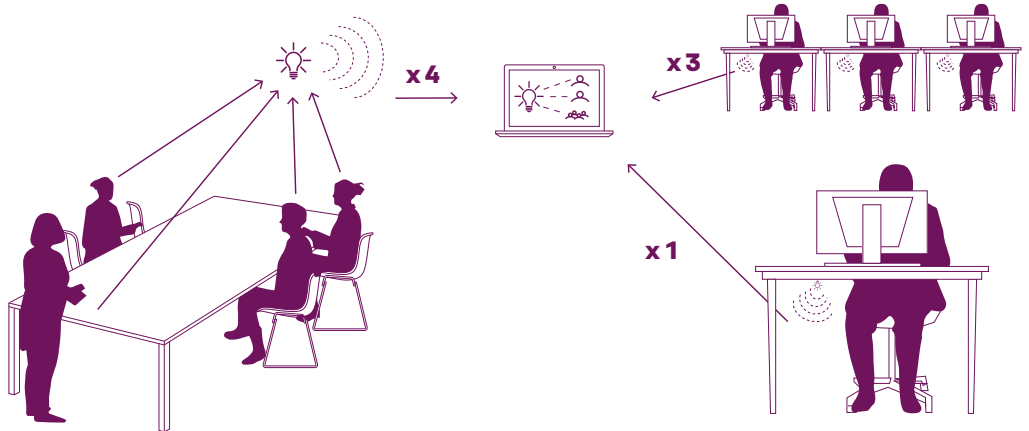
**Timescale:** Long Term

**Type:** Interior Design, Smart Solution

**User Group:** Employees/Service Providers



In KEID's offices, sensors are located in the ceiling above meeting tables, on walls, and under work desks



Sensors send information to a computer, which registers the number of people in the building



Project and location: Koshitsu-Dana, Japan

Contributor: Tachibana

Established: 2021

# A room in a room

## Challenge

The open-plan office characterises the working life of many Danes today. We are accustomed to being able to see and hear our colleagues around us, but there is debate about the benefits and disadvantages of open-office environments.<sup>1</sup> COVID-19 has brought a new perspective into the discussion: the risk of infection. New research indicates that crowded open-office environments can pose a significant risk of infection for the people who work in them.<sup>2/3</sup> And while the trend is moving towards smaller offices, there is a need for good solutions to the acute infection challenge within existing open-plan offices. While the Danish Working Environment Authority [Arbejdstilsynet] has laid out guidelines for employers to prevent the risk of infection in office environments<sup>4</sup>, architects and designers have thrown themselves into the question of how the interior design of offices can help us keep our distance and increase hygiene in the workplace.

## Solution

Koshitsu-Dana is a system of mobile partition modules that can be assembled into small, closed-off spaces around one or more workstations in an office. The partitions can be quickly set up and taken down, and their smooth surface makes them easy to clean after use. Koshitsu-Dana has been designed as a consumer product and can be purchased online.

The example shows how interventions can be made playful and accessible, and how restrictions such as distance requirements can be made visible using furnishing.

## Taxonomy

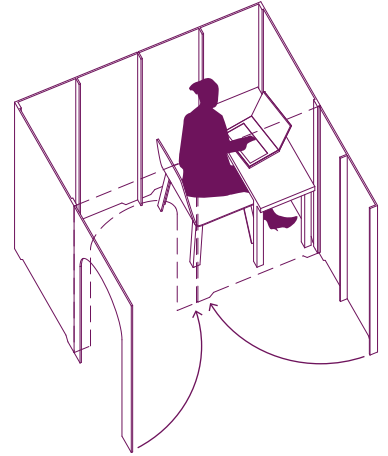
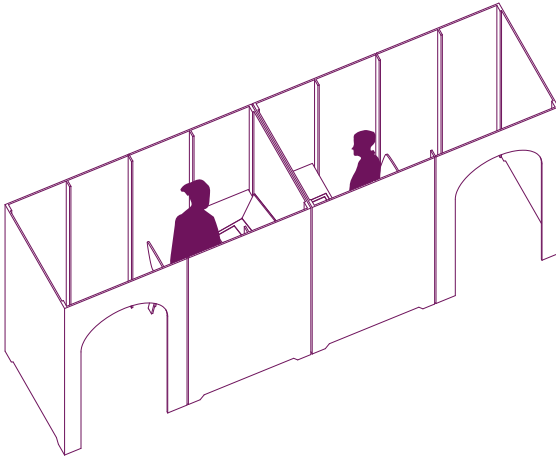
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**Sphere:** The Workplace,

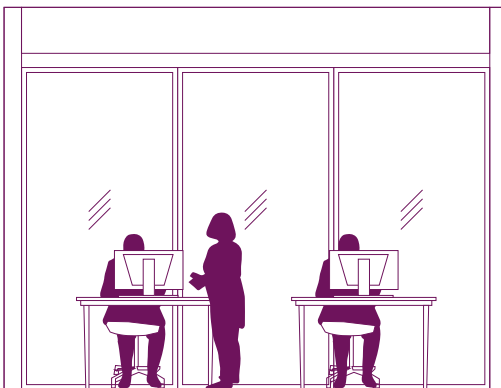
**Timescale:** Tactical

**Type:** Interior Design

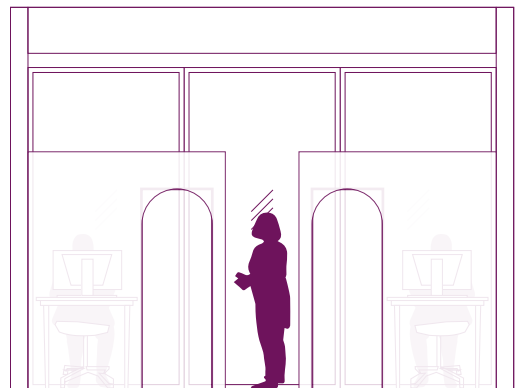
**User Group:** Employees/Service Providers



Koshitsu-Dana quickly and easily create room divisions in open-plan offices



Open-plan office space with no partitions



Individual workstations are screened

Project and location: Shoe Pull, Nottingham, England

Contributor: Philip Watts Design

Established: June 2020

# Touchless access

## Challenge

While physical distance, face masks, and ventilation mitigate the spread of airborne infections, high-contact surfaces such as railings, push-buttons, and door handles are transport routes for indirect contact infection.<sup>1</sup> Although contact transmission is likely to be less important than airborne spread<sup>2</sup>, there is still good reason to explore new ways of operating typical contact points. It is not only COVID-19 that can be transmitted through these pathways but also diseases such as influenza and the common cold.

## Solution

Non-contact fittings and contactless payment terminals are examples of new technologies that make it possible to continue our daily lives and chores without having to worry about the risk of becoming infected through contact with objects in public space. "Shoe Pull" is a consumer product that can be bought and easily mounted on most types of doors – at home, in the workplace, or any other space where there is risk of infection spreading via touch. Shoe Pull makes it possible to open a door without touching the handle, even if you are wearing high heels.

The example shows how solutions can be low-tech, cheap, and innovative. It demonstrates that a 'building intervention' can also be something that people can buy and install themselves. The example also shows that ingenuity and small, simple "hacks" have a place in the discussion of how we solve serious problems such as the spread of infectious diseases.

## Taxonomy

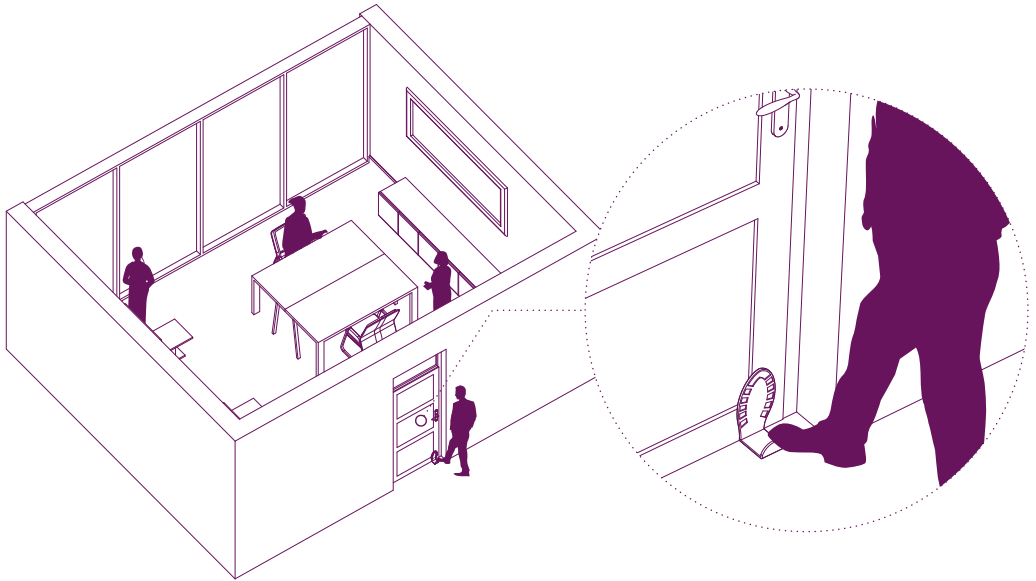
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**Sphere:** All spheres

**Timescale:** Tactical

**Type:** Interior Design

**User Group:** All user groups



Shoe Pull can be mounted to any door



The door handle is a high-touch surface



Doors can be opened without touching the handle

Project and location: Various restaurants, Copenhagen, Denmark

Contributor: Sovino Brands

Established: 2020

# Clean hands

## Challenge

COVID-19 and other viral diseases can be transmitted through common touchpoints. Good hand hygiene has been an important part of reducing the spread of infection for many diseases. During the COVID-19 pandemic, efforts against indirect contact infection have led to new standards for cleaning everything from elevator buttons to microphones. Hand hygiene has become a crucial tool in the fight against COVID-19.<sup>1</sup> Shops, restaurants, schools, workplaces, etc. have all set up alcohol dispensers, making it quick and effortless to clean your hands, thereby reducing the risk of transmission. Hand sanitizers, however, are not the only way to clean your hands. A classic washbasin with soap and water can similarly reduce the number of unwanted microorganisms on the hands.<sup>2/3</sup> Even in settings where alcohol, water, and soap are readily available, studies show that both culture and infrastructure to support hand hygiene have a long way to go in many places around the globe.<sup>4/5</sup>

## Solution

The Danish restaurant chain Sovino Group has chosen to install a washbasin at the entrance of

several of the group's restaurants, including Café Victor and PS Bar & Grill in Copenhagen. In this way, the restaurant sends a clear message that on these premises you have to wash your hands on arrival. The staff use the sink in the restaurant instead of in the back room, making guests aware of the need and desire for frequent hand washing in order to fight COVID-19. The installation was initially intended as a temporary solution, but Sovino Group has decided to make it permanent. The hope is that the visible washbasin will change guests' views on hand hygiene. Before COVID-19, hand washing was a private matter, and it was up to the individual whether and when it was necessary. But by setting up a sink in the middle of their restaurant, Sovino Group lets its customers know that they want guests with clean hands, sending a clear signal while responding to COVID-19.

The example shows how an ordinary installation, such as a washbasin, can be used in an inventive way in the prevention of infection. By placing the washbasin in the restaurant's common space, the restaurant makes its function visible to guests and staff, and washing one's hands is made a common responsibility.

## Taxonomy

**Sphere:** Trade/Service, Culture/Leisure

**Timescale:** Long Term

**Type:** Building Intervention, Interior Design

**User Group:** Employees/Service Providers, Customers/Users



At Café Victor, a newly installed washbasin is located directly at the entrance



Before COVID-19: Hand hygiene is a personal matter that takes place in the washroom



After COVID-19: Hand hygiene has become an integral part of the restaurant experience







Project and location: Social With Distancing, New Delhi, India  
Contributor: RENESA Architecture Design Interiors Studio  
Established: 2020

# "The new normal"

## Challenge

In 2020, the Danish tourism, hotel, and restaurant industry lost DKK 21 billion in turnover due to COVID-19-related restrictions.<sup>1</sup> The gradual reopening of restaurants was regulated through mandatory area requirements, table reservations, and limited opening hours, among other things.<sup>2</sup> In other countries where COVID-19 has resulted in restrictions, similar effects are seen: In the US, the National Restaurants Association concluded in their 2020 annual report that more than 110,000 restaurants in the country had been either temporarily or permanently closed in the past year.<sup>3</sup> At the same time, it is clear that restaurants, bars, and similar places where people meet have played a central role in the spread of infection in several countries.<sup>4/5</sup>

## Solution

The Indian restaurant chain Social was also hit by tough restrictions. However, the owners accepted that social distancing and ongoing changes

in area requirements would remain part of reality going forward. At one of the chain's restaurants in New Delhi, restrictions have been translated into a new interior design concept, in which the restaurant's guests are separated by means of interior design elements that also create spatial and visual interest and support the restaurant's atmosphere. The concept consists of a 'breaking up' of the room into smaller zones, and guests are separated by transparent walls or curtains or simply placed on different, staggered levels. Together with initiatives such as procedures for disinfection and increased ventilation, the decor ensures that restaurant guests can eat and drink safely, in accordance with safety regulations.

The example shows how innovative design solutions can solve a specific problem and create safety for users – helping restaurants continue to do business despite restrictions – and at the same time create an aesthetic experience beyond the usual.

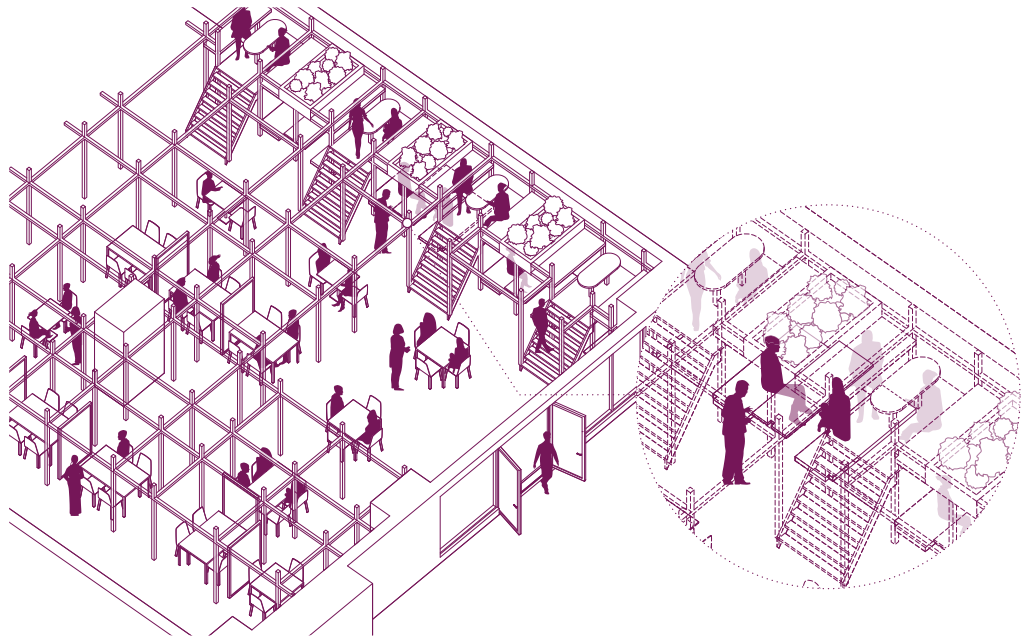
## Taxonomy

**Sphere:** Trade/Service, Culture/Leisure

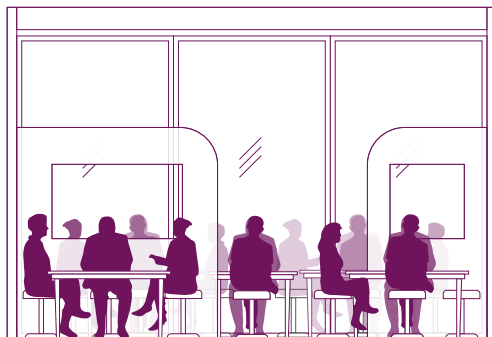
**Timescale:** Long Term

**Type:** Interior Design, Graphic Application

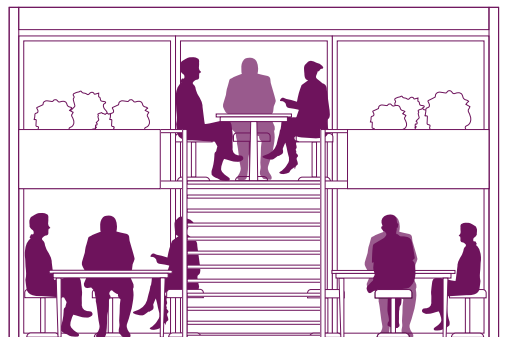
**User Group:** Employees/Service Providers,  
Customers/Users



Social With Distancing is the restaurant chain  
Social's answer to "the new normal"



Typical restarant seating



Seating according to Social With Distancing





Project and location: The Playhouse, Tokyo, Japan  
Contributor: Haruki Oku Design and PAN- PROJECTS  
Established: 2020

# The shop of the future

## Challenge

COVID-19 has further accelerated a trend that was already underway before the pandemic hit: e-commerce. Purchases of both services and physical goods have increased during the pandemic, and compared to other EU countries, Denmark is at the top when it comes to online shopping.<sup>1/2</sup> This development brings into question the future of physical stores. However, in the retail sector, some argue that there is no contradiction between offline and online. Rather, the trade of the future should be seen as a relationship between “marketing channels” and “sales channels” – where the online store sells the product, while the physical store offers an experience.<sup>3/4</sup>

## Solution

In Japan’s capital, Tokyo, a store has opened which is more theatre than sale of goods. ‘Playhouse’ opened in the fall of 2020, while the COVID-19 pandemic – and bankruptcies – raged, and the future of physical retail was being questioned. The architects behind the store call

the project an exploration of the future of physical retail – in a world in which e-commerce and COVID-19 have to be considered a continuous presence. The answer is a rethinking of the purpose and the architecture of the physical store. The new Playhouse is designed as a flexible setting that can accommodate varying types of events, from fashion shows to lectures and theatre performances. It is, in fact, theatre that has provided the inspiration for the store’s interior design. Whereas the traditional store exhibits and sells goods, the store of the future is a scenographic setting for the consumer experience. And just like in the theatre, the stage can be changed as needed with the use of mobile walls and curtains to create different experiences.

The example shows how COVID-19 has added an extra dimension to the question of the future of physical stores. Although the ‘sales channels’ are becoming digital, there are many indications that the role of the store has not been played out, and with Playhouse we may be looking at elements of the shopping experience of the future.

## Taxonomy

**Sphere:** Trade/Service

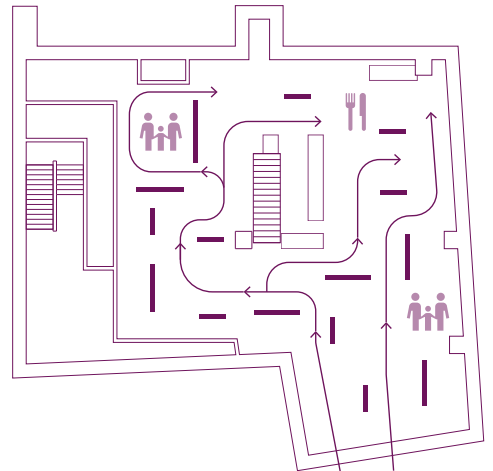
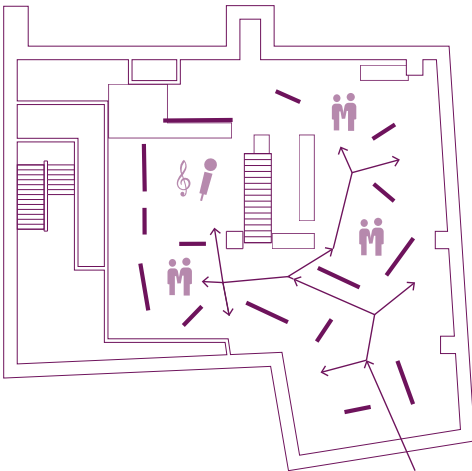
**Timescale:** Long Term

**Type:** Building Intervention, Interior Design, Graphic Application

**User Group:** Employees/Service Providers, Customers/Users



The Playhouse is inspired by the theatre's scenography



The interior is flexible and can support different uses of the space



Why don't you  
grab a drink at the pub?



BOND S





Project and location: Social Harmony Installation, Yokohama, Japan

Contributor: NOSIGNER

Established: November 2020

# Playful social distancing

## Challenge

Social distancing has become a focus of attention in the built environment, and many people are trying to solve the problem of how to illustrate and enforce distance between people in a meaningful way.<sup>1/2</sup> Painted lines and signs with friendly reminders have guided us through the pandemic so far, but most of these solutions only serve to remind the user of a rule.

## Solution

In Japan's capital, Tokyo, the 'social design activists' NOSIGNER have made an attempt to turn social distancing into a game. They have created an installation, Social Harmony, that aims to accustom us to social distancing, using

interactive audio as the tool. At the entrance to a trade fair hall, NOSIGNER has installed an oversized sheet of music on the floor. The notes play when a visitor steps on them, and if visitors keep the right distance to each other, they will play Erik Satie's *Gymnopédie n°1*. People can also work together – at a distance – to create their own melody.

The innovative installation shows that the way we interact with our surroundings can change our behaviour and experience. By turning social distancing into a game, NOSIGNER has created a new way of learning and remembering the rules – without stripes and signs.

## Taxonomy

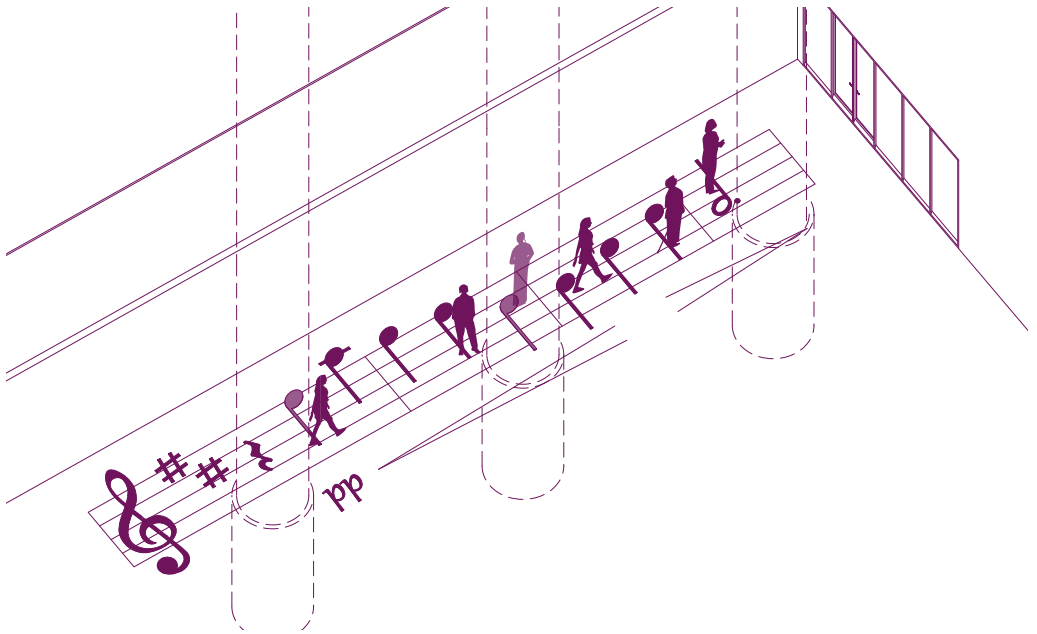
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**Sphere:** Culture/Leisure

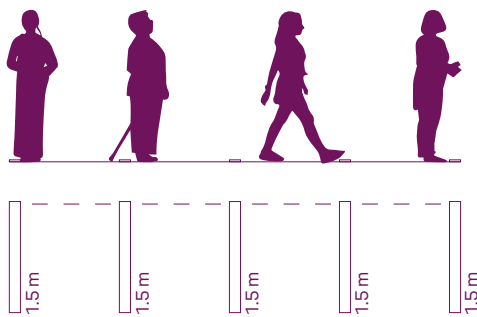
**Timescale:** Tactical, Short Term

**Type:** Graphic Application, Smart Solution

**User Group:** All user groups



Social Harmony Installation uses notes to mark safe distances



Typical markings: safety as the primary argument



Note demarcation: interaction as the primary argument





# Moving activities outdoors

A building without walls

Rediscovery of outdoor space

Arrival moves outside

Local food production

A pop-up church

Community garden

Integrating COVID-19 testing in urban life

Temporary housing for healthcare professionals



Project and location: La Concordia, Bogota, Colombia

Contributor: Colab-19

Established: December 2020

# A building without walls

## Challenge

The capital of Columbia, Bogotá, has been hit hard by COVID-19, and government restrictions have put immense pressure on many cultural institutions and businesses. The city, which has 7.2 million inhabitants<sup>1</sup>, has experienced an economic downturn during the severe lockdowns<sup>2/3</sup>, but the difficult situation has also created fertile ground for innovation and ingenuity.

## Solution

The local architectural firm Colab-19 has designed a temporary building, La Concordia, that can host various activities – from dining to film screenings and theatre – in an outdoor setting with a low risk of infection. La Concordia allows businesses to stay open without breaking the restrictions and provides cultural institutions a legal and safe setting for their events. For the physical structure, Colab-19 used scaffolding

because it is a fast, inexpensive, and easily accessible building material. Curtains made of jute – a fabric made from natural fibres traditionally used in Colombia to make sacks for coffee and potatoes – hang as screens between dining areas and other zones. All the materials used can be disassembled and used for other projects when the temporary building is dismantled. However, the architects hope that the building will remain standing long after the pandemic is over and that interventions such as this can help change residents' views on how public space is utilised.

The project shows how ingenuity and a creative use of available materials can make architecture with unique aesthetic and spatial qualities while helping to solve an urgent practical need. The project also provides new perspectives on the way in which the people of Bogotá use public space.

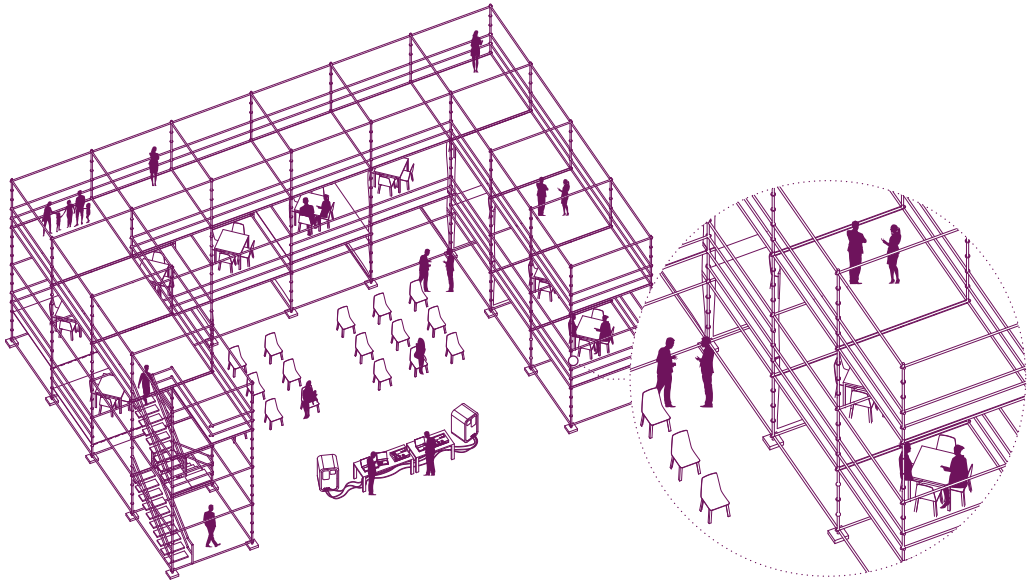
## Taxonomy

**Sphere:** Trade/Service, Culture/Leisure

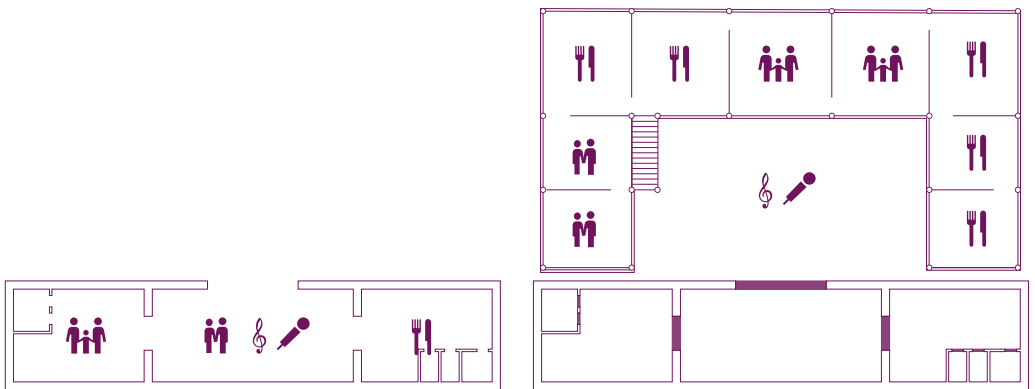
**Timescale:** Tactical, Short Term

**Type:** Building Intervention

**User Group:** All user groups



The temporary “building” La Concordia is constructed from scaffolding



Before COVID-19:  
Activities took place indoors

After the introduction of restrictions:  
Activities continued outside







Project and location: Sharing an Open Main Street, California, USA

Contributor: City of Santa Monica

Established: July 2020 / Removed: November 2021

# Rediscovery of outdoor space

## Challenge

The hospitality industry has been hit hard by the restrictions imposed in many countries to curb COVID-19. In Santa Monica, California, restaurants reopened after lockdown with heavy restrictions on the number of guests that could be served inside.<sup>1</sup> As a result, many restaurateurs found themselves in a challenging situation dependent on serving more customers than was possible on their premises.<sup>2</sup>

## Solution

Assistance came in the form of the initiative "Sharing an Open Main Street" where local authorities closed the main street to vehicles to make room for outdoor seating for restaurants. For four weekends over the summer of 2021, the

street was taken back by the public, not just for outdoor dining but for other activities too. In a city where outdoor dining is not the norm, the initiative launched a movement to create better and safer outdoor meeting places. At the time of writing, it is being discussed whether the concept could be applied at a larger scale.

Although California is known for its amiable weather, outdoor dining has not been common practice for many restaurants. The project is an example of how an industry crisis can lead to innovative solutions and, perhaps, to the rediscovery of the potential of the outdoor space as a social and commercial arena in car-dominated urban areas.

## Taxonomy

**Sphere:** Trade/Service, Culture/Leisure

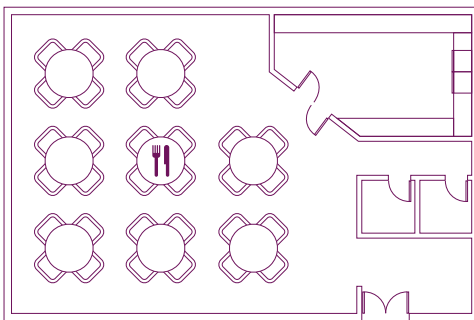
**Timescale:** Tactical, Short Term

**Type:** Graphic Application, Interior Design

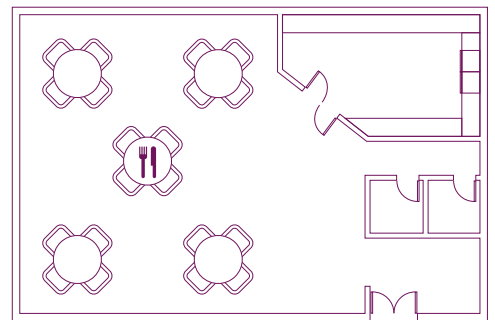
**User Group:** Employees/Service Providers,  
Customers/Users



Road area is used for outdoor dining during the initiative Sharing an Open Main Street



Before COVID-19: Outdoor dining was not common practice



After the introduction of restrictions: Service is partly moved outside







Project and location: Café Victor, Copenhagen, Denmark

Contributor: Sovino Brands

Established: 2020

# Arrival moves outside

## Challenge

On March 18, 2020, the assembly ban in Denmark was tightened, and gatherings of more than ten people were forbidden. This signalled the start of a large number of restrictions and initiatives for restaurants, cafés, hairdressers, and other businesses.<sup>1</sup> In the gradual reopening that followed, the hospitality industry was forced to find new business models and to continuously revise their approach when new restrictions or guidelines came into force. Some restaurants closed down indefinitely, while others restructured operations and began to offer takeaway, for example. When restaurants were finally allowed to welcome back diners, requirements included social distance, minimum space per diner, and presentation of a negative COVID-19 test or, later, COVID-19 certificate.<sup>2</sup>

## Solution

Café Victor in Copenhagen is one of the first cafés to open in Denmark, and the French-inspired bar and restaurant is legendary in Copenhagen's city and nightlife. The popular café has many guests on any single day, and the busy and lively atmosphere is part of the café experience. But with the new restrictions

introduced in the spring of 2020, the café's owners had to rethink the design to live up to requirements. This meant, among other things, that the café closed to standing guests and that the distance between tables was increased. When a negative COVID-19 test (and, later, a COVID-19 vaccination certificate) was required, the owners set up a manned arrival counter outside the café, where guests could wait in line until they were assigned a table inside. Over time, restrictions have been lifted, but the measures have had a positive effect – both on the guest experience and the café's turnover. For this reason, the Sovino Group, which owns Café Victor, has decided to maintain all measures as permanent solutions. Resources have therefore also been spent on improving and beautifying the initiatives so that today they appear as a well-integrated part of the "Café Victor experience".

The example shows how solutions created in an emergency can bring unexpected added value. In this case, the physical measures have contributed to developing the café experience, thus paving the way for a new way of thinking about the design of restaurants.

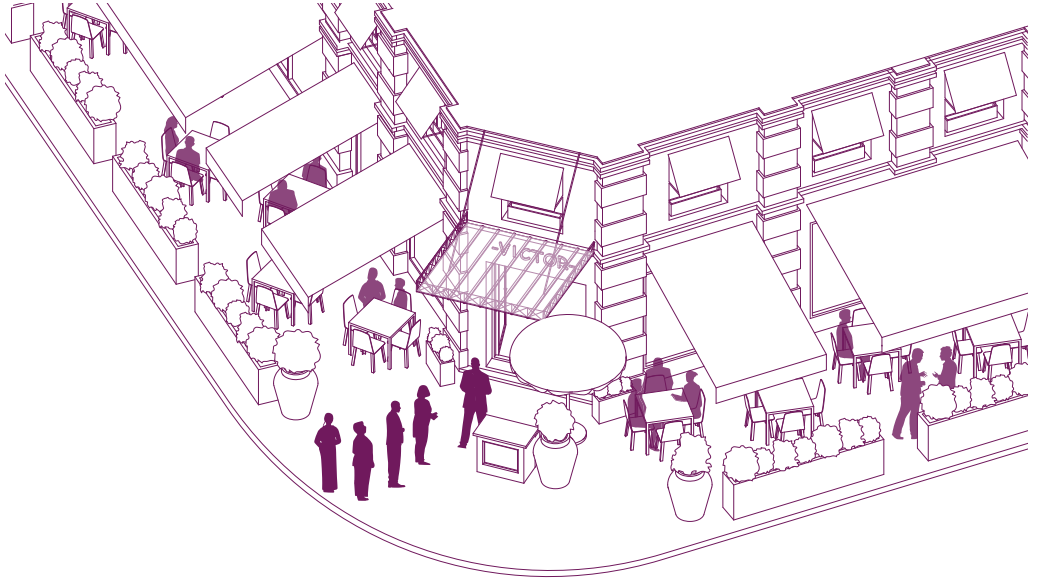
## Taxonomy

**Sphere:** Trade/Service, Culture/Leisure

**Timescale:** Long Term

**Type:** Building Intervention

**User Group:** Employees/Service Providers,  
Customers/Users



Guests wait to be assigned a table outside  
Café Victor



Before COVID-19: Guests were free to  
enter Café Victor



After the introduction of restrictions: Guests  
are met at the arrival desk on the street





RESTAURANT

ONE VOOR



Project and location: Kasvattamo Greenhouse, Helsinki, Finland

Contributor: ROOH Studio

Established: June 2020 / Removed: September 2020

# Local food production

## Challenge

The COVID-19 crisis has sent global food prices soaring.<sup>1</sup> While the situation for Danish food companies and consumers has not reached a critical state<sup>2</sup>, the reality in some countries is critical with the price of several essential products now much higher than before COVID-19 hit. Reasons are plentiful, but COVID-19 has particularly impacted supply chains, contributing to the decline of food security.<sup>3/4</sup> In Denmark and the Nordic countries, the issue of food and diet is closely linked to climate change and urbanisation. And while the urban farming phenomenon emerged in response to food insecurity in vulnerable areas in US cities, it has become widespread many places in the world in recent years. With COVID-19, the issue of locally produced food has taken on an additional dimension.<sup>5</sup>

## Solution

In Finland, the urban farming phenomenon has also taken hold, and the capital city, Helsinki, has several private and public initiatives that

support local food production. Kasvattamo was a temporary installation at Helsingin kaupungin-museo – Helsinki City Museum – which focused on food production in the city's unused spaces. The purpose of the installation was to spread awareness of urban farming and raise the question of how we utilise the city's available space – in this case a backyard behind one of the city's museums. The urban garden was designed by a group of young architects who wanted to explore these issues while creating a safe space to discuss them. Therefore, Kasvattamo was also intended as an experiment in creating social spaces outdoors where people can meet for an activity without compromising social distance requirements and exposing themselves to the risk of infection.

The example shows how COVID-19 has brought a new dimension to the urban farming phenomenon – and how urban gardens can function as 'safe' social spaces while also providing areas for food production even in dense urban areas.

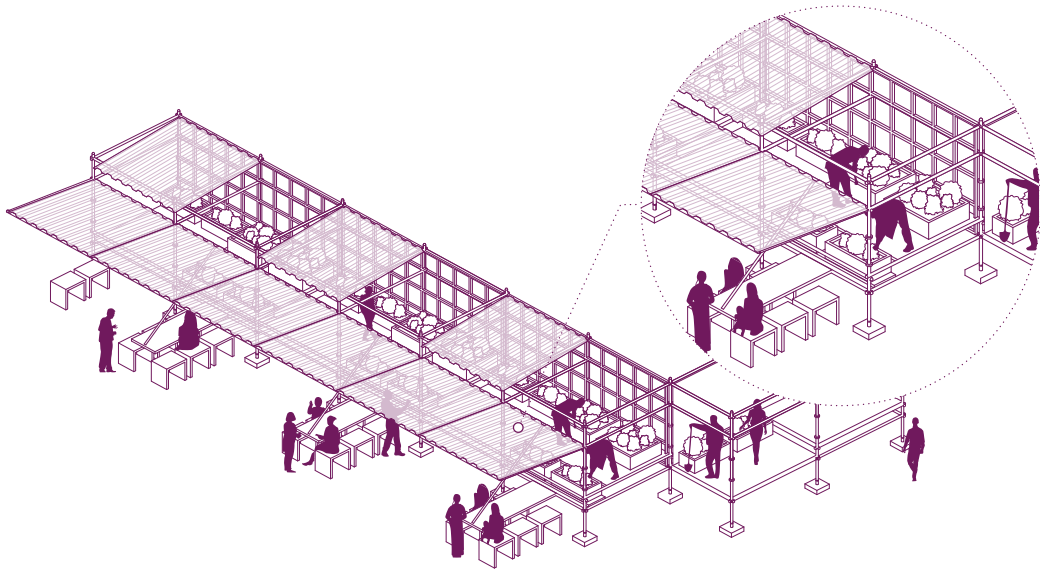
## Taxonomy

**Sphere:** Trade/Service, Culture/Leisure

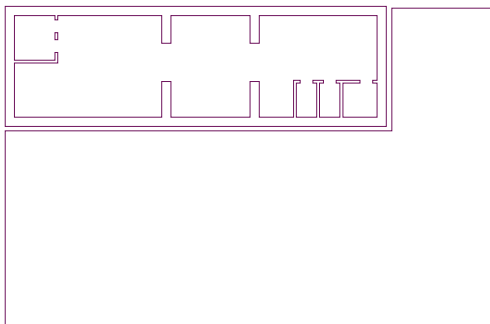
**Timescale:** Short Term

**Type:** Building Intervention, Interior Design

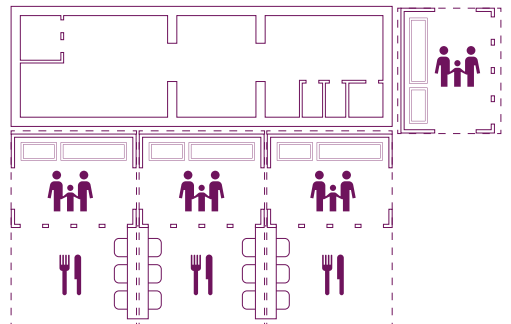
**User Group:** All user groups



Kasvattamo is a temporary installation built from scaffolding and light, inexpensive materials



Unused spaces in the city with potential for utilisation



Local food production and socialising, capitalising on unused city space





Project and location: Alhambra Cross, Bogota, Colombia

Contributor: Colab-19

Established: April 2020

# A pop-up church

## Challenge

In the capital of Colombia, Bogotá, the authorities banned all public gatherings during the COVID-19 lockdown. This also applied to cultural and religious associations such as churches. Bogotá has more than 1,500 churches and a predominantly Christian population. The church is a space where many of the city's inhabitants seek comfort and support in difficult times.<sup>1/2</sup>

## Solution

A pop-up church was built from steel members used in concrete construction. The white-painted steel construction, which consists of adjustable scaffolding parts, supports a cruciform roof of

sinus plates. To shield the church space from the surrounding parking lot, 'facades' of mosquito nets have been installed, which create a visual barrier to enhance privacy while also allowing air flow. In addition, due to their translucency, the nets glow in sunlight, creating a special atmosphere within the space. The pop-up church is built from materials that would otherwise have been discarded.

The project shows how one of society's central institutions can continue its activities in an alternative and surprising setting – and that temporary buildings, built from discarded materials, can be both functional and have a high aesthetic value.

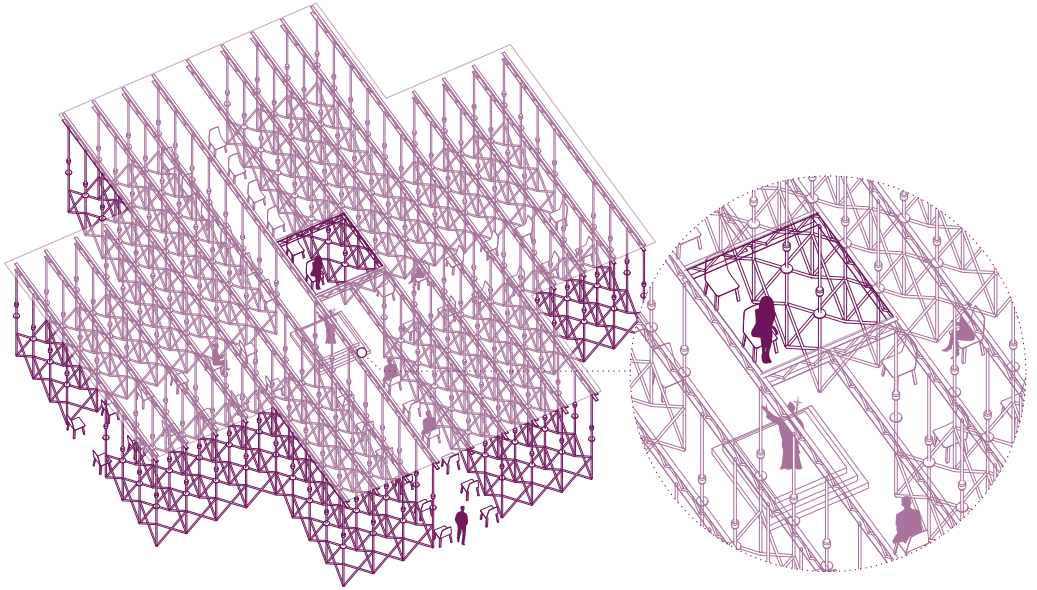
## Taxonomy

**Sphere:** Culture/Leisure, Civil associations

**Timescale:** Short Term

**Type:** Building Intervention

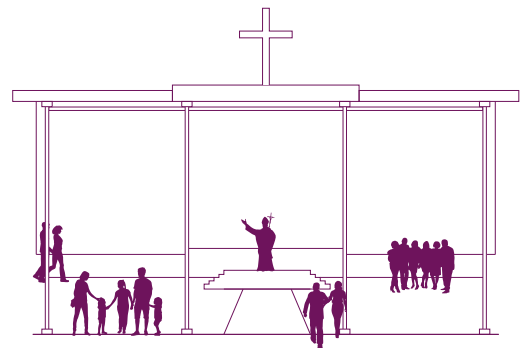
**User Group:** All user groups



The pop-up church Alhambra Cross is a temporary, open building



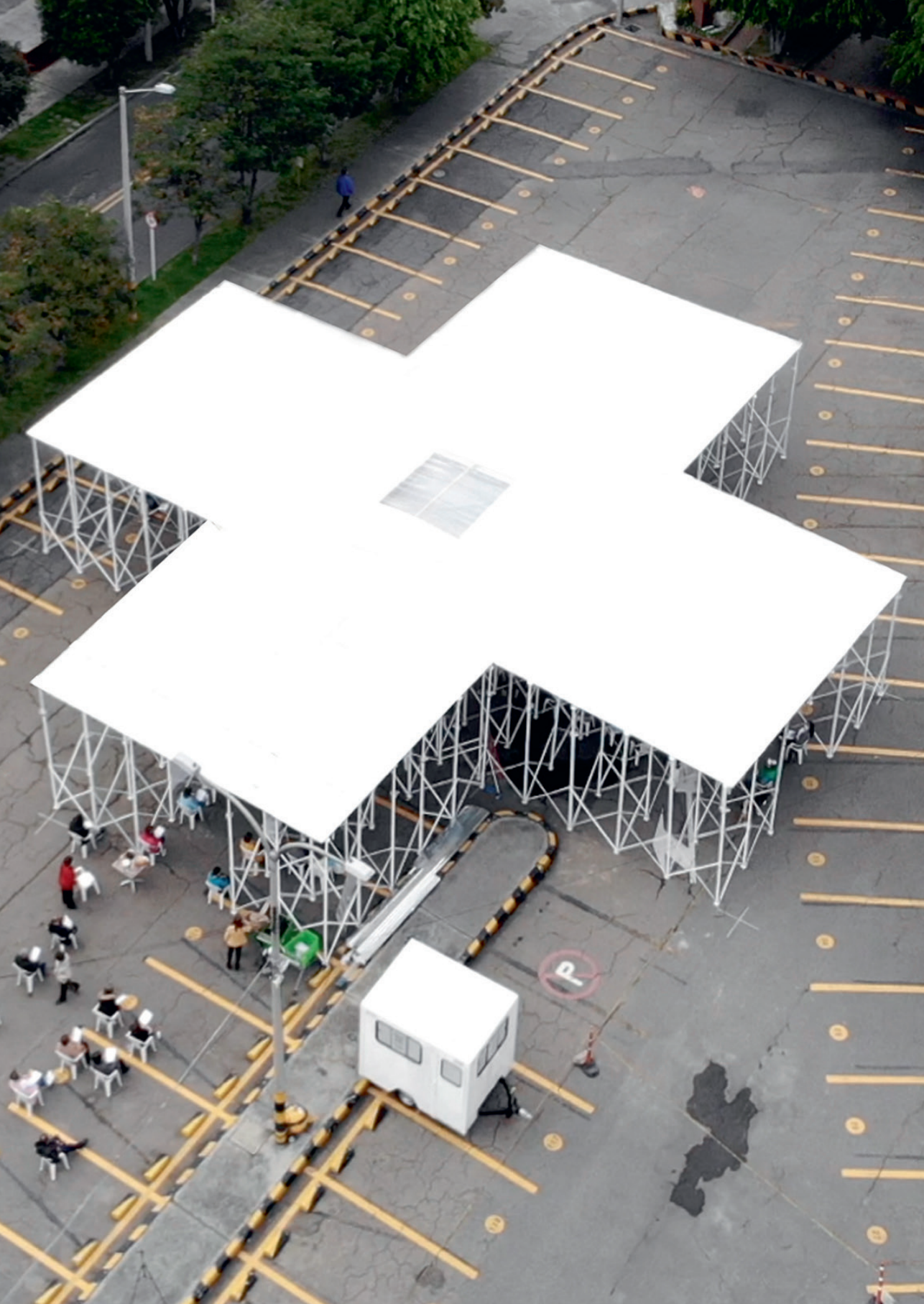
Before COVID-19: Church activities took place inside



After the introduction of restrictions: Activities continue in the temporary, open building







Project & Location: El Terreno, Mexico City, Mexico

Contributor: Vertebral

Established: 2021

# Community garden

## Challenge

COVID-19 has affected society as a whole, but for many the pandemic has also meant an upheaval in their personal lives. With the restrictions – and the isolation – the pandemic impacted interpersonal relations deeply. Globally and locally, the pandemic has also exposed the inequalities that exist in the world.<sup>1/2</sup> While some groups in society had conditions that enabled a transition to remote work and new habits, others were challenged by financial insecurity and unfavourable housing conditions.<sup>3</sup> In Denmark, for example, the slowdown in social life has increased loneliness – and vulnerable young people are especially affected.<sup>4</sup> COVID-19 has also changed our habits of physical activity, and here, too, there is a difference between social groups. While people with higher education have become more active during COVID-19, people that depend on social security benefits, for example, have become less active.<sup>5</sup>

## Solution

During the COVID-19 pandemic, a focus arose on the maintenance of social life. The need for safe meeting places for people to socialise gave rise to numerous initiatives and novel solutions. The pandemic has demonstrated that many activities

that we associate with being indoors can successfully be moved outside – from cinema screenings to children's birthdays, community singing, and teaching. On a lush plot in Mexico City, the architects from VERTEBRAL worked with young people from the local community to create a "community garden" called El Terreno. The garden supports social gatherings and food production and offers education on health and food cultivation. El Terreno has areas for cultivation as well botanical sections with indigenous plants and many areas where locals can enjoy the scent and sight of the lush garden. The garden also has a multifunctional pavilion. During the day, the pavilion serves as a meeting place for children whose day care centres are closed due to COVID-19. The pavilion is built from recycled materials and intended as a self-sufficient, sustainable project.

Although El Terreno was created in response to acute challenges, the project shows how architecture can address a broader need in society: the need to connect with others in meaningful activities in a safe environment. This need existed before COVID-19 and has only grown more urgent during the pandemic.

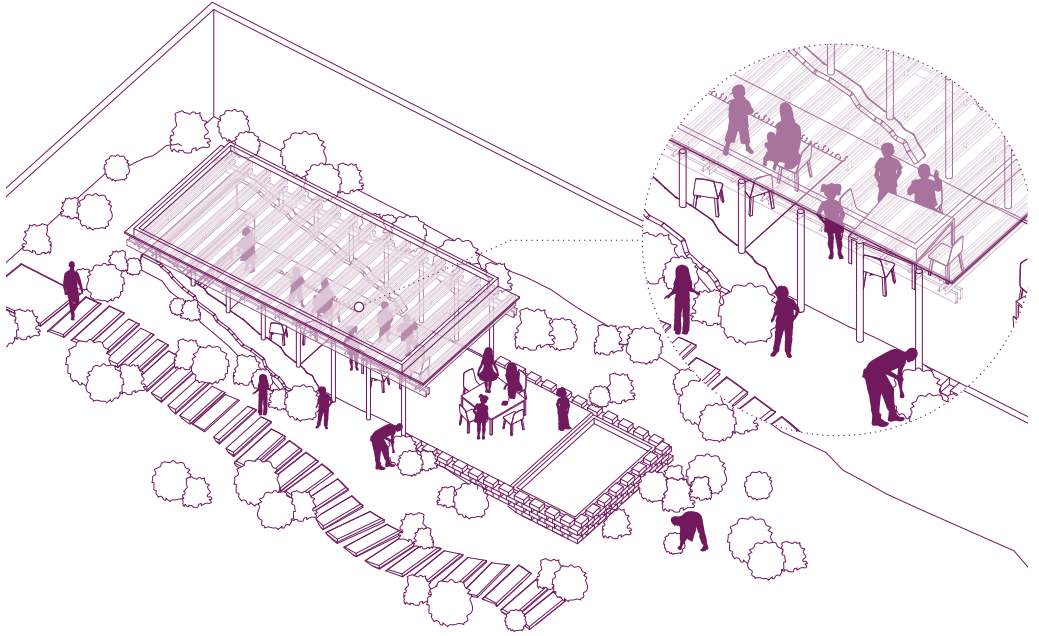
## Taxonomy

**Sphere:** Education/Institutions, Culture/ Leisure

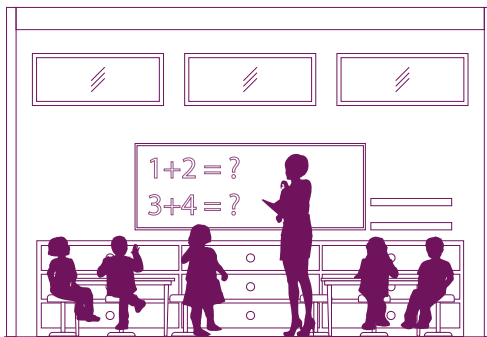
**Timescale:** Long Term

**Type:** Building Intervention

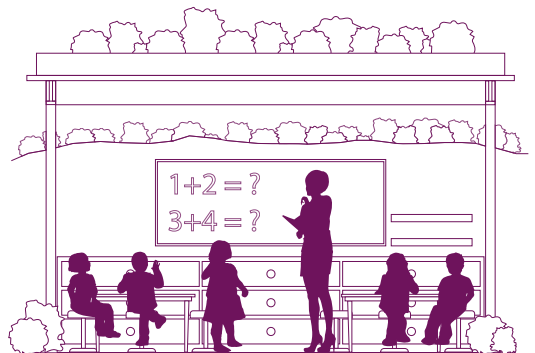
**User Group:** Children, Youth, Families



Community garden El Terreno has both cultivation areas and teaching spaces



Activities such as teaching typically take place inside



El Terreno moves learning outdoors





Project and location: Gammel Torv, Aalborg, Denmark

Contributor: Region Nordjylland - Patientforløb og Økonomi - Sundhedsplanlægning

Established: 2020

# Integrating COVID-19 testing in urban life

## Challenge

With the gradual reopening of Denmark after the first wave of the pandemic, providing a negative COVID-19 test became part of everyday life for many Danes. And while larger institutions, such as universities, could establish their own test centres, the vast majority of companies and businesses depended on their customers and employees having access to test sites within a manageable distance.<sup>1</sup> In particular, the transport time from one's residence to the nearest test centre has been highlighted as an important factor.<sup>2</sup> As part of the test plan in the North Denmark Region [Region Nordjylland], testing capacity in the region was expanded in winter 2021 with a large number of new test centres for rapid and PCR tests. In the city of Aalborg, it was a high priority for both the North Denmark Region and Aalborg Municipality to establish a test centre in the densely populated central Aalborg.

## Solution

The first rapid test centre was located in Folkekirkens Hus, which is a culture house that

serves as a venue for concerts, lectures, and events. The house is centrally located on a busy square in central Aalborg. After a short time, the temporary test centre was replaced by a pavilion on the square, and in this way COVID-19 efforts moved completely into public space. The pavilion is supplied by the company Adapteo, which has also supplied pavilions to TestCenter Danmark Vest in Skejby – a national laboratory for the analyses of COVID-19 tests.<sup>3</sup> With its visible location and openness, the test centre in the pavilion makes getting tested easy, convenient, and part of the everyday urban life experience.

The example shows how society is dependent on physical proximity – and easy access – to test centres during a pandemic. But the example also demonstrates that test centres can move out into urban spaces and become part of the streetscape with the use of modular pavilions that can be adapted to the context.

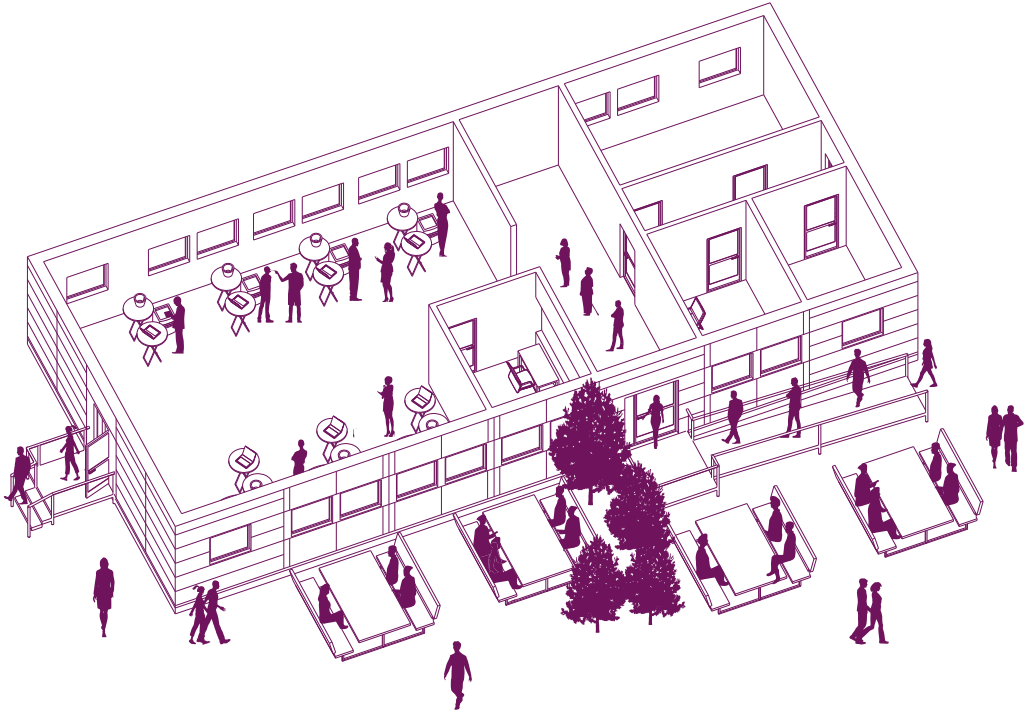
## Taxonomy

**Sphere:** Treatment

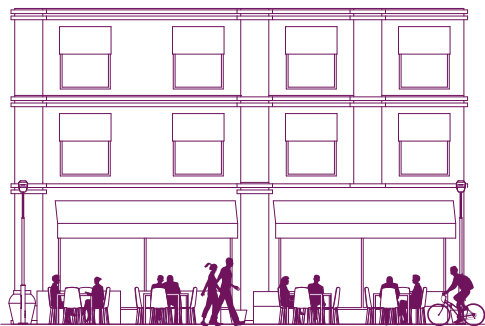
**Timescale:** Short Term

**Type:** Building Intervention

**User Group:** All user groups



The COVID-19 test centre at Gammel Torv in Aalborg



Gammel Torv is a central urban space with restaurants and amenities



The test centre has moved into the urban space and become part of the streetscape





HOLD  
2 meters  
AFSTAND



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Adapteo.  
+43 70 90 90 40 adapteo.at

Project and location: Temporary Pavilion for Healthcare Workers, Mexico

Contributor: Revolution

Established: 2020

# Temporary housing for healthcare professionals

## Challenge

A house can be your home, but other places count as homes too. Nursing homes, shelters, and housing for frontline workers are just a few examples of what must be considered a home in the context of a pandemic. For those who have been on the frontlines of the pandemic, the issue of infection has been about more than just protecting themselves. The risk of bringing infection home to loved ones or spreading it to colleagues has been of great concern. When Statens Serum Institut, the Danish sector research institute for infectious diseases, took stock in April 2020, healthcare professionals accounted for more than a fifth of coronavirus infections.<sup>1</sup>

In Mexico, COVID-19 has put the healthcare system under immense pressure.<sup>2</sup> Frontline workers at the country's hospitals are prone to infection, and many choose to isolate themselves from, and avoid contact with, their families during periods when they are working with COVID-19 patients. In many places, healthcare professionals have spent nights in temporary conditions – such as in their cars – with poor conditions to rest, recharge, and prepare for the next working day.

## Solution

The Mexican architecture and technology office Revolution has designed a residential pavilion for healthcare workers that can be quickly set up when and where the need arises. The pavilion is built of wood and recycled materials and can be easily cleaned and transported when needs change. The small housing unit has the most basic necessities [bed, toilet, shower, a closet for storing clothes, etc.] and provides the occupant with a healthy, safe, and private space to rest and recharge. The temporary dwellings can be erected wherever they can be connected to sewer drains, e.g. in parking lots or even on flat rooftops. The first pavilions were donated in 2020 to a Red Cross hospital in Mexico City.

The example shows how innovative architecture can support socially critical functions such as health preparedness – not only in the buildings used to treat the infected and sick, or with solutions that prevent the spread of infection in the built environment, but as part of the very infrastructure for healthcare workers.

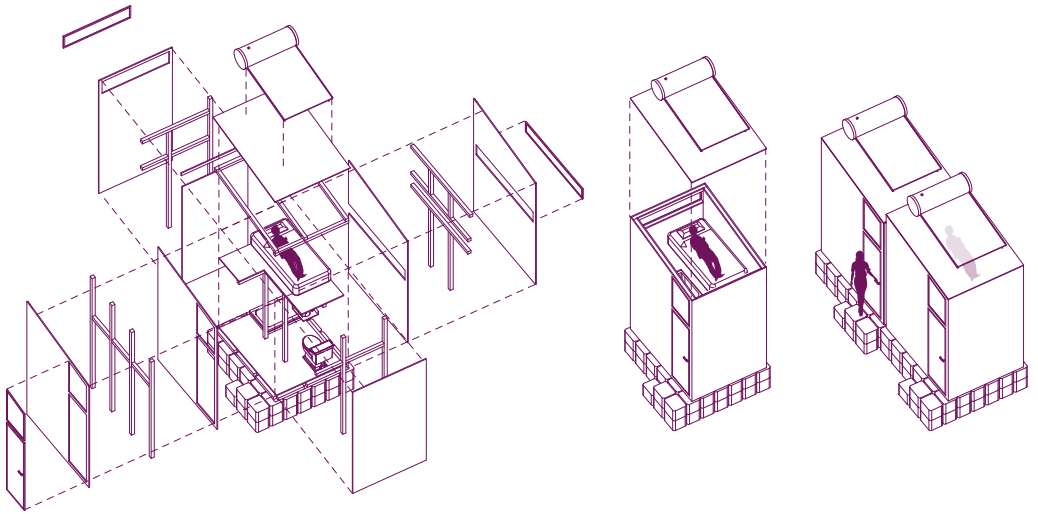
## Taxonomy

**Sphere:** Housing, Treatment

**Timescale:** Short Term

**Type:** Building Intervention

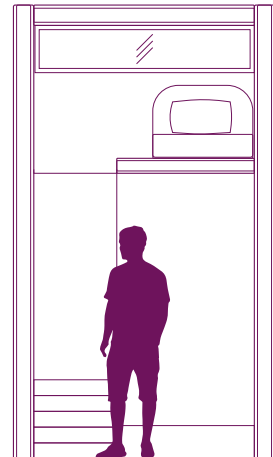
**User Group:** Families, Employees/Service Providers



The temporary residential pavilion is built from light, inexpensive materials and can be set up in different urban spaces such as a parking lot



Healthcare professionals risk infecting their families if they spend the night at home



Residential pavilions create security for staff





# Spatial organisation

One-way circulation

Visitor control upon arrival

A safe crossing with Molslinjen

Test on the trotting track

School turned inside out

Room service reinvented

Winter gardens close to the patients

Wards as independent entities

Visual contact to isolation rooms

Temporary change of function

Adaptive reuse





Project and location: Akademisk Arkitektforening, Copenhagen, Denmark

Contributor: Akademisk Arkitektforening

Established: March 2020 / Removed: June 2020

# One-way circulation

## Challenge

The Danish Association of Architects' (Akademisk Arkitektforening) building in Copenhagen houses approximately 30 employees. The building also has customer-facing functions, such as a shop, as well as rooms and courtyards used for member and public events, and common facilities, such as meeting rooms and a coffee bar. Besides these rooms, however, the building consists primarily of closed offices. When the guidelines for social distancing requirements for workplaces came into force, an analysis of the room sizes and layout of the building showed that it was necessary to change its circulation in order to be in accordance with requirements.

## Solution

The building is a historical, semi-detached house with three floors and a basement and was originally built as two symmetrical parsonages. The spatial organisation became part of the solution, as the symmetrical structure with a staircase at each end and continuous corridor areas

made it possible to establish one-way circulation in the house. In March 2020, signs were put up to support the one-way traffic in the stairways and corridors to prevent the physical proximity that "oncoming traffic" on the stairs would cause. In this way, the Danish Association of Architects could live up to the social distancing requirements while maintaining the building's normal functions. The intervention was intended as a non-permanent measure.

The example shows how you can make interventions that are fast and agile by utilising the existing architecture of a building – in this case, the floor plan. The example illustrates the importance of considering robustness and flexibility in architectural and spatial design.

## Taxonomy

**Sphere:** The Workplace, Civil associations

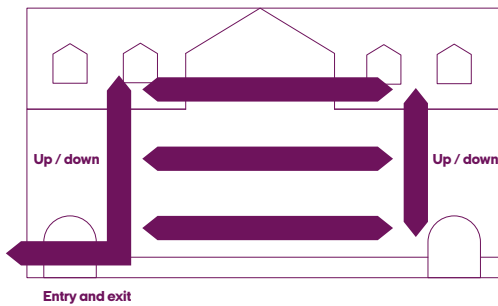
**Timescale:** Short Term

**Type:** Graphic Application

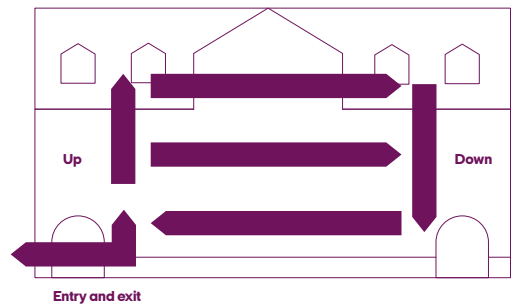
**User Group:** Employees/Service Providers, Customers/Users



The Danish Association of Architects' building layout makes it possible to establish one-way traffic in corridors and stairways



Before COVID-19: traffic in all directions



After the introduction of restrictions: one-way traffic





Project and location: Grøndal Multicenter, Copenhagen, Denmark  
Contributor: Københavns Kommune, Kultur- og Fritidsforvaltningen  
Established: March 2020 / Removed: June 2021

# Visitor control upon arrival

## Challenge

COVID-19 has had major consequences for the Danish sports and leisure sector. In the spring of 2020, a survey showed that 38% of those who were active in sports before the pandemic restrictions had stopped playing sports and exercising during closures. Sporting activities that depended on facilities were hit hardest.<sup>1</sup>

Grøndal MultiCenter is Denmark's largest sports, activity, and cultural centre with an area of 33,000 m<sup>2</sup>. It houses, among other things, 80 associations and businesses, and it has up to 3,000 daily users. The building is operated by only two employees located at the main entrance, from where visitors are assisted, and building operations are carried out. The sports and cultural centre is built around an arcade with two promenades separated by meeting rooms and other functions. At each end of the arcade, there are entrances and exits, and elsewhere in the building there are several secondary entrances and exits. The centre was subject to the restrictions imposed in connection with the gradual reopening in the spring of 2020 and to the subsequent requirements for guests to present a COVID-19 certificate.

## Solution

In order to live up to the guidelines for presenting a COVID-19 certificate, Grøndal MultiCenter closed all secondary entrances and exits, directing all visitors through the main entrance. At the main entrance, an interim control system was set up using panel fencing – a solution typically used at festivals and larger outdoor events. This made it possible for the two employees to guide the centre's many users and check visitors' certificates. The intervention was intended as non-permanent and has since been removed, as newer requirements for COVID-19 certificates no longer necessitate it.

The example shows how an intelligent use of available furniture or equipment can create extremely effective solutions. It demonstrates that a central arrival zone can be used to perform visitor control, allowing sporting and cultural facilities to stay open in spite of strict restrictions.

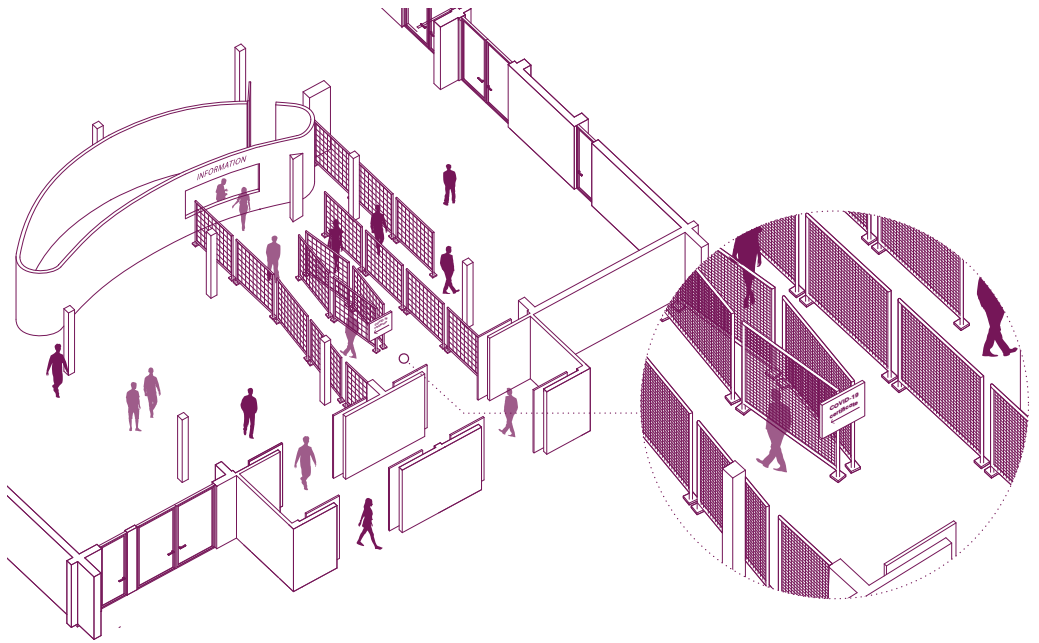
## Taxonomy

**Sphere:** Culture/Leisure, Civil associations

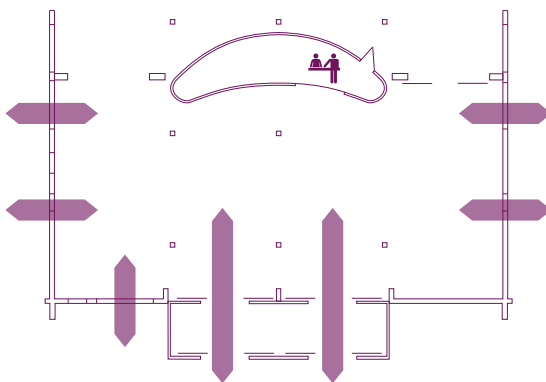
**Timescale:** Short Term

**Type:** Interior Design

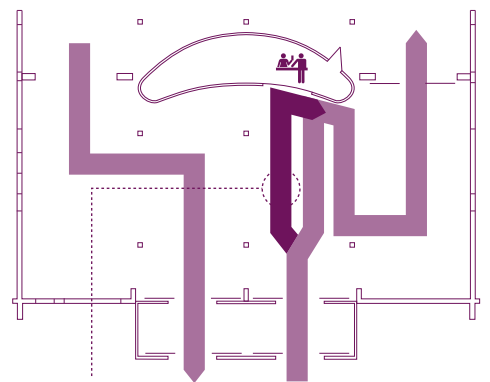
**User Group:** Employees/Service Providers, Customers/Users



Visitor control in Grøndal MultiCenter is carried out by simple means



Before COVID-19: many entry and exit points



Visitors who are required to present COVID-19 certificate

After the introduction of restrictions: only the main entrance is open, and visitor control has been established



GRØNDAL MULTICENTRUM



RYGNING FRÅBEDE  
DER HENVISES TIL



100



# ENTER - SPORT & FRITID



VED INDGÅEN  
RYGE AREA





Project and location: Various ferries, Denmark  
Contributor: Molslinjen  
Established: March 2020 / Removed: August, 2021

# A safe crossing with Molslinjen

## Challenge

Population mobility has been challenged in many ways during the COVID-19 pandemic, with the very act of leaving one's home being linked to greater risk of infection. Closures and restrictions have prevented mobility between parts of the country, and public transport has been subject to social distance requirements.<sup>1</sup> The Danish government has repeatedly urged Danes not to use public transport during rush hour, and train journeys require pre-booked seat tickets.<sup>2</sup> Several experts have pointed to the car as the safest means of transport<sup>3</sup>, and in the summer of 2020, a record number of people chose to travel on holiday by car.<sup>4</sup> At the same time, several Danish shipping companies have been challenged by restrictions and declining passenger numbers.<sup>5/6</sup>

## Solution

Molslinjen operates a ferry route between Jutland and Zealand, which has been subject to the restrictions. As a result, Molslinjen has launched a number of initiatives to offer a safe crossing for their guests. The company's ferries have been SafeGuard certified, which means that the ferries meet a number of strict requirements that reduce

the risk of infection on board.<sup>7</sup> Among other things, all ferries have had UV filters installed in their ventilation systems. These kill airborne viruses and bacteria with ultraviolet light. With many passengers and a short crossing time, it has also been possible to allow passengers to stay in their vehicles on the car deck during the crossing, which is not permitted under normal circumstances.<sup>8</sup> This measure has allowed passengers to use the ferry route without leaving the safety of their cars. To enable the measure, extra distance has been required between vehicles to provide a potential escape route and space for staff to monitor and guide passengers in the event of an evacuation.

The example shows how technical solutions such as ventilation systems not only play a role in creating a safe indoor environment in buildings but also elsewhere, such as on public transportation. The example also demonstrates that adjusting existing requirements – in this case the Danish Maritime Authority [Søfartsstyrelsen] – can enable transport providers to create conditions that keep their passengers safe.

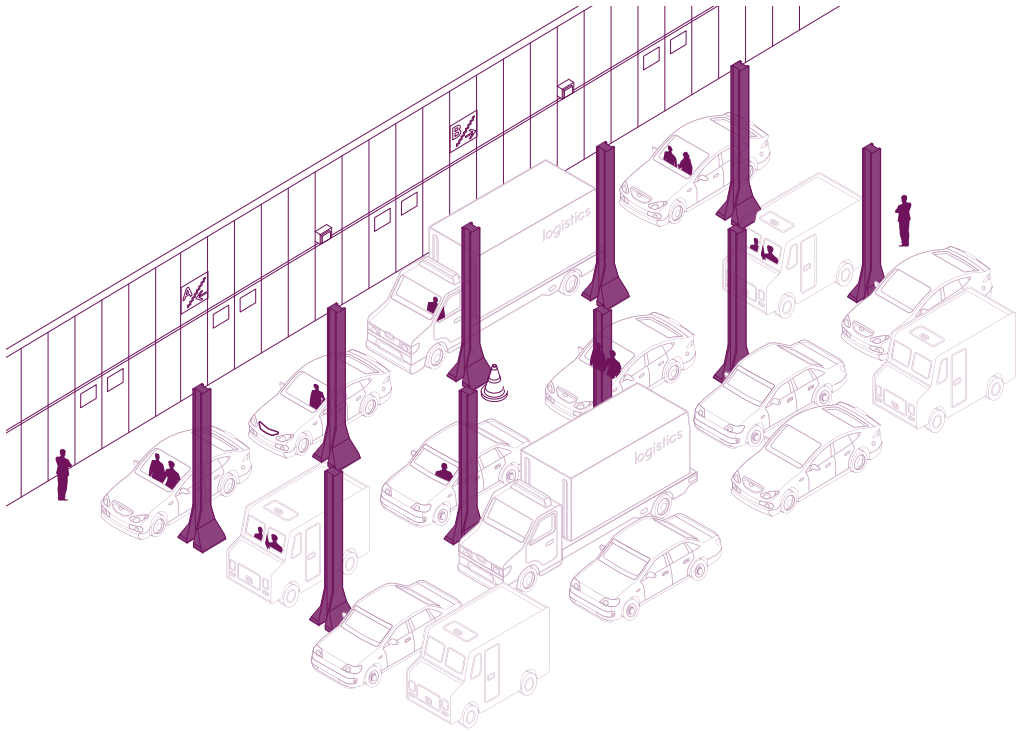
## Taxonomy

**Sphere:** Transportation

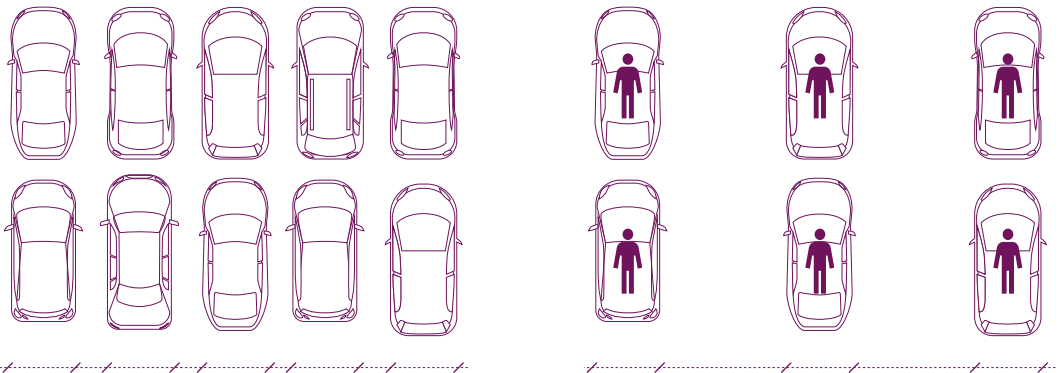
**Timescale:** Tactical, Short Term

**Type:** Interior Design, Smart Solution

**User Group:** Eustomers/Users



On Molslinjen's ferries, a number of spaces are reserved for cars with passengers



Before COVID-19: passenger cars are positioned closely to maximise capacity

After the introduction of restrictions: cars with passengers keep a greater distance to ensure safe escape routes

Project and location: Racing Arena Aalborg, Aalborg, Denmark  
Contributor: Region Nordjylland - Patientforløb og Økonomi – Sundhedsplanlægning  
Established: 2020

# Test on the Trotting Track

## Challenge

During the gradual reopening of Danish society in the first half of 2021, many people in the North of Denmark experienced long queues at testing centres – especially during rush hours in the morning and at closing time.<sup>1</sup> Access to testing sites and capacity to meet testing demand have been crucial aspects during the reopening. According to the government's test strategy for COVID-19, the total test capacity in Denmark was to reach 700,000 daily tests in May 2021.<sup>2</sup> This required a significant expansion of testing capacity, and in the North Denmark Region [Region Nordjylland], emergency services launched several initiatives, including the establishment of several new testing centres and extended opening hours.<sup>3</sup>

## Solution

In March 2021, the North Denmark Region, together with Danish emergency services company Falck as the supplier, set up a testing centre for rapid testing at Racing Arena Aalborg – also known as 'the Trotting Track'. Although the new testing centre was set up specifically to meet the pressures during rush hour, it turned out that the special setting made the test centre one of the regions' preferred test destinations. Even though the daily activities at the race track were stopped due to the pandemic, there were still horses in the stables and a scenic view from the premises, which were normally used as a spectator café for horse racing.

The example shows how the physical space and surroundings for COVID-19 testing plays a role, not only in the question of the quantitative test capacity but also in the experience – both for those who are tested and for the staff.

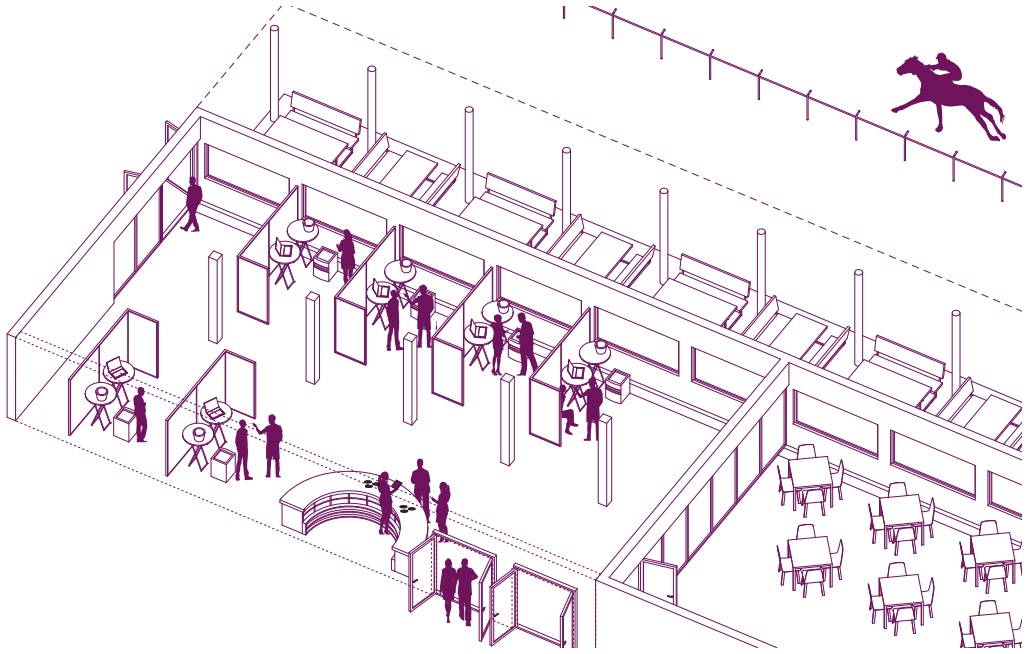
## Taxonomy

**Sphere:** Culture/Leisure, Treatment

**Timescale:** Short Term

**Type:** Interior Design

**User Group:** All user groups



A test centre is set up in the banquet room at Racing Arena Aalborg



The typical test centre without a view



Test centre with a view of the city's trotting track and Aalborg Tower

Project and location: Silkeborg Gymnasium, Silkeborg, Denmark

Contributor: Silkeborg Gymnasium

Established: 2020

# School turned inside out

## Challenge

Denmark's closure on 11 March 2020 was the beginning of a new reality for the country's educational institutions, where digital learning, gradual reopening, and local closures became part of everyday life.<sup>1</sup> With the new restrictions, general guidelines had to be translated into local conditions at the many, very differently designed schools. It was a process that challenged staff and students while also testing the physical environment.

## Solution

Silkeborg Gymnasium, a high school in the city of Silkeborg, has a floor plan typical of the Danish school building of the '70s with a clear division between circulation, classrooms, and common areas. The high school is structured around a central common area, which houses a canteen, classrooms, toilets, etc. A number of building wings extend from this common area. The wings are divided into subject areas, and on each side of a central distribution corridor are the classrooms, all of which have access to the outdoors.

For the high school to be reopened in March 2021, a number of restrictions and physical

measures needed to be implemented by the school's management and staff. The design of the building, with its large facade openings and numerous secondary entrances, made it possible to meet the restrictions within the school's layout. This was done by utilising the building's existing floor plan and reorganising its circulation to solve the logistical and spatial challenges. The high school's primary entrances and exits were partially closed, and the secondary entrances between the wings were used as new, direct entrances to each individual classroom. Lunch was ordered via an app, and local water posts were installed so that students did not have to fetch water from sinks by the toilets – which often formed a bottleneck. In addition, webcams and screens were installed in classrooms so that students at home could follow the teaching.

The example shows how the design and layout of a building can make it flexible and robust. Its physical framework allowed the circulation to be turned "inside out" so the high school could meet the restrictions without having to invest in major building work.

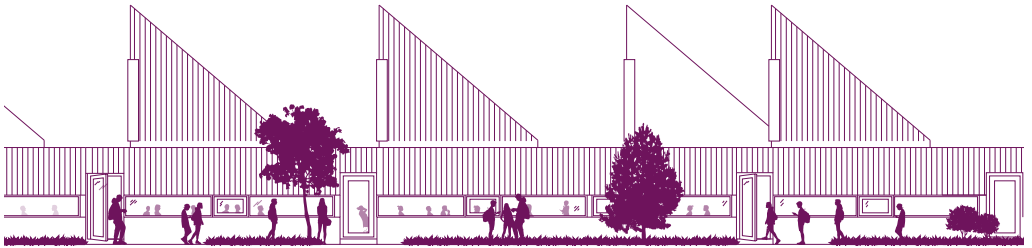
## Taxonomy

**Sphere:** Education/Institutions

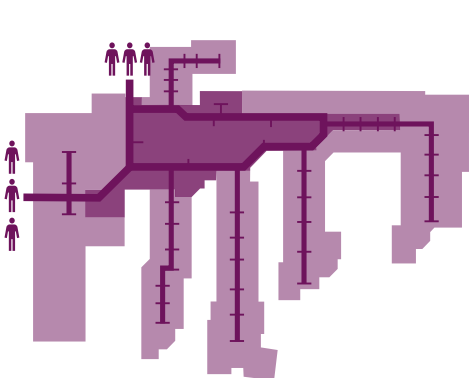
**Timescale:** Short Term

**Type:** Interior Design

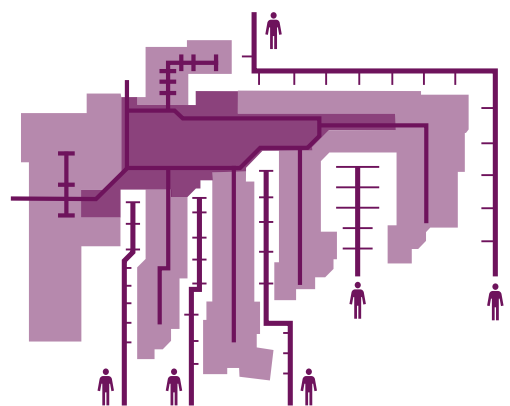
**User Group:** Youth, Customers/Users



Each building wing at Silkeborg Gymnasium has direct access to the school's courtyards



Before COVID-19: main entrances are used for entry and exit



After the introduction of restrictions: entry and exit directly to/from classrooms







Project and location: Various hotels, Denmark  
Contributor: The Familien Bühlmann Group  
Established: 2020

# Room service reinvented

## Challenge

When the second wave of infection hit Denmark at the end of 2020, a number of restrictions were reintroduced for the hospitality industry.<sup>1</sup> Some hotels chose to close down completely, while others were able to adapt to the current guidelines. After a year of closures, remote working, and social distance demands, many Danes were looking for options for a safe stay away from home. As there was great uncertainty about travel abroad both in 2020 and 2021, many Danes chose to spend their holidays within the country's borders. "Staycation" became part of the vocabulary, and holiday home landlords experienced record demand.<sup>2/3</sup> The restrictions meant that there was a big gap between the demand and the capacity that hotels and restaurants could offer. This required some creativity.

## Solution

The 'Familien Bühlmann' hotel group also felt the increased demand and decided to develop a new hotel experience concept: a romantic

gourmet stay with in-room dining. The hotel group's restaurants were not able to serve seated guests due to social distance requirements, but the hotel room itself proved to be the solution to the logistical challenges. In their rooms, guests could enjoy each other's company in peace and quiet and get the hotel experience without breaking restrictions. An important part of the experience at Bühlmann's hotels is their excellent meals. The role of the meal was maintained, but now it was served in the rooms as a gourmet dinner with restaurant-style service.

The example shows how creative initiatives in the hospitality industry made it possible for some hotels to meet customer demand. Many restaurants already offer the concept of private dining where dinner is sent to and served in people's own home. But in the Bühlmann example, the concept was applied to a new space, creating a new and attractive kind of hotel experience.

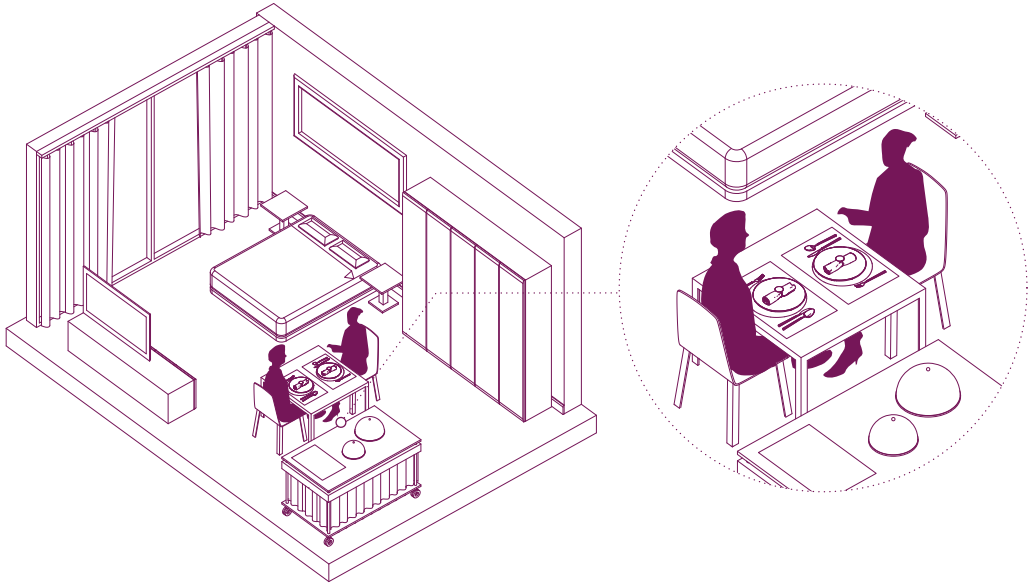
## Taxonomy

**Sphere:** Travel/Hospitality, Culture/Leisure

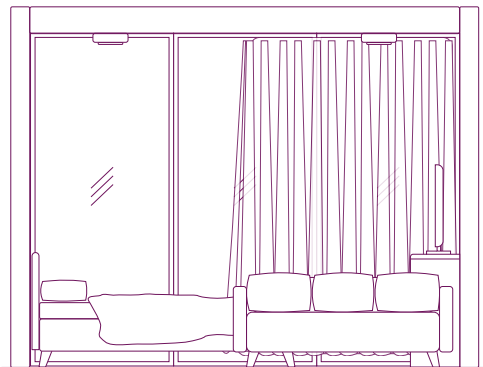
**Timescale:** Tactical, Short Term

**Type:** Interior Design

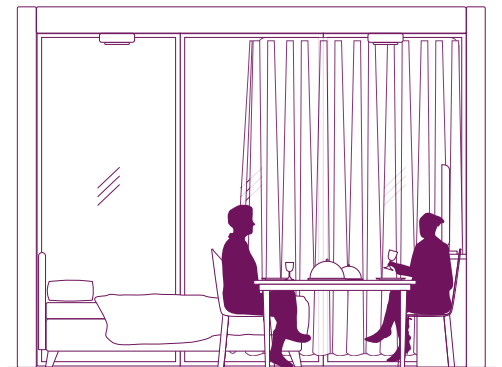
**User Group:** Customers/Users



Gourmet dinner is served in the room at the Bühlmann Hotel Group's hotels



Before COVID-19: hotel room furnished for overnight stay



After the introduction of restrictions: hotel room furnished to accommodate dining

Project and location: Mary Elizabeth's Hospital - Rigshospitalet for Children, Teens and Expecting Families, Copenhagen, Denmark  
Contributor: 3XN, Arkitema Architects K / S, NIRAS, Architect Kristine Jensens Tegnestue, Rosan Bosch  
Established: Under construction

# Winter gardens close to the patients

## Challenge

Access to fresh air and views and the opportunity to be physically active are important parameters in people's health and well-being; and especially so in the process of patients' recovery.<sup>1</sup> Many hospitals give patients access to gardens and other spaces for social and physical exercise. But often, these functions are centrally located and serve many sections and different types of patients. In a pandemic crisis, patient circulation may be restricted, leaving some groups without access to common areas or the opportunity to be physically active.

## Solution

Mary Elizabeth's Hospital is the Danish National Hospital's new hospital building for children, young people, pregnant women, and their families. The interior of the building is designed

around zones with varying degrees of community. Central to the building are the common areas on each floor, where all the patients, relatives, and employees can meet each other on a daily basis. But each bed section also has its own common area – a kind of backyard – which serves a smaller unit and is therefore more private than the central common areas. These winter gardens are the setting for various activities, such as entertainment and exercise, that are both social and support healing.

The example shows how the building's interior design with decentralised facilities creates better opportunities for well-being and health in everyday life. It also shows how robustness and built-in flexibility make the building well equipped to function – even during an epidemic where entire sections are isolated from the common areas.

## Taxonomy

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**Sphere:** Treatment

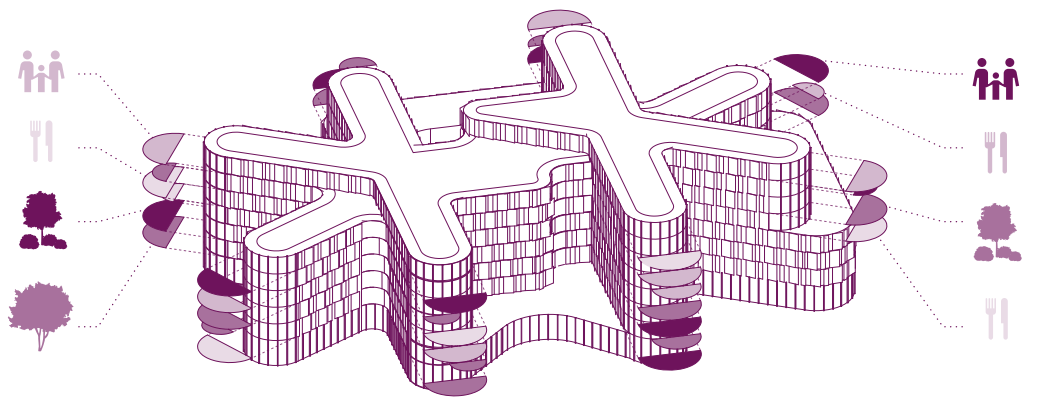
**Timescale:** Long Term

**Type:** Building Intervention

**User Group:** Children, Families, Employees/  
Service Providers, Customers/Users



The winter gardens at Mary Elizabeth's Hospital offer patients various activities



The winter gardens span two floors, but access from one of the floors can be closed if there is a need to isolate the sections separately





Project and location: Mary Elizabeth's Hospital - Rigshospitalet for Children, Teens and Expecting Families, Denmark  
Contributor: 3XN, Arkitema Architects K / S, NIRAS, Architect Kristine Jensens Tegnestue, Rosan Bosch  
Established: Under construction

# Wards as independent entities

## Challenge

When COVID-19 patients are hospitalised, requirements dictate that they be admitted to isolation facilities given the risk of spreading the infection. They can either be admitted to a single ward, in isolation, or with other COVID-19 patients. Isolation can impact patients' psychological well-being and lead to loneliness, depression, and anxiety.<sup>1</sup> According to several healthcare professionals, the rapid onset of the crisis in the spring of 2020 created chaotic conditions and insecurity for both patients and staff in Danish hospitals.<sup>2</sup> In many places around the world, isolation units needed to be established ad hoc, and hospital capacity and logistics were greatly challenged, as workflows, safety procedures, and circulation had to adapt rapidly.<sup>3/4/5</sup>

## Solution

Mary Elizabeth's Hospital is the Danish State Hospital's new hospital building for children, young people, pregnant women, and their families. The building is designed as two hands, with the central functions located in the palms of the hands and the wards located in the fingers. At the end of each finger is a winter garden where patients can spend time and take part in various recreational activities. This design allows all wards to be quickly and easily converted into isolation sections. A double door located where each "finger" meets the "palm" can close off the section from the central areas of the floor and the other areas. Thus, in an epidemic crisis situation, wards on each floor can be converted into isolation sections, while both the primary and secondary functions of the floor are maintained.

The example shows how the design of the building can support safety, security, and well-being under both normal circumstances and in emergency situations, such as during an epidemic, where the building's spaces must temporarily change function.

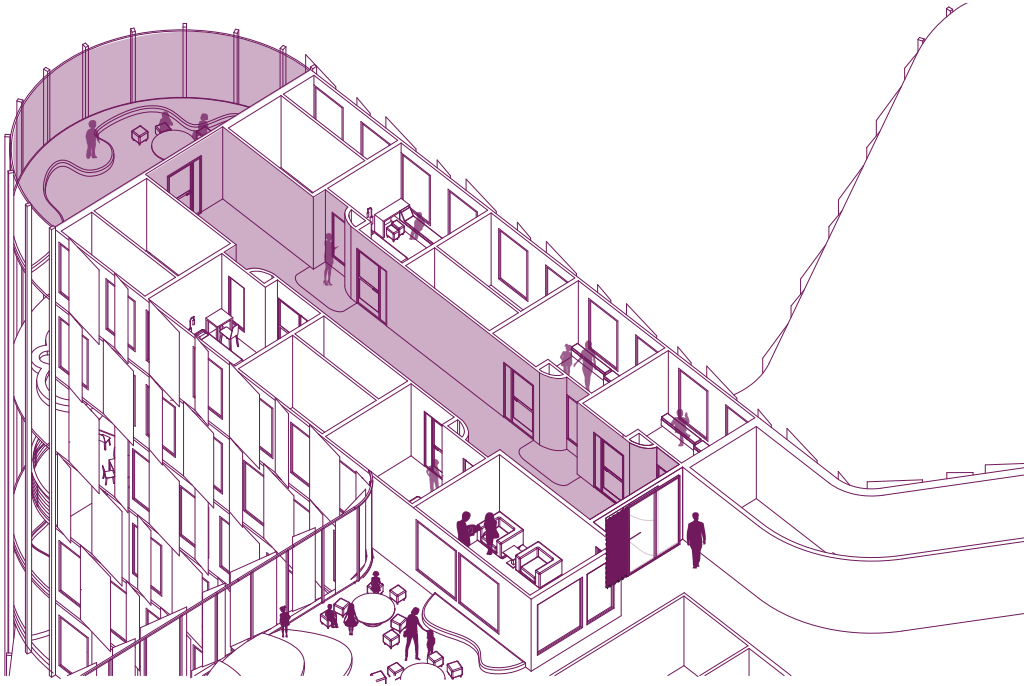
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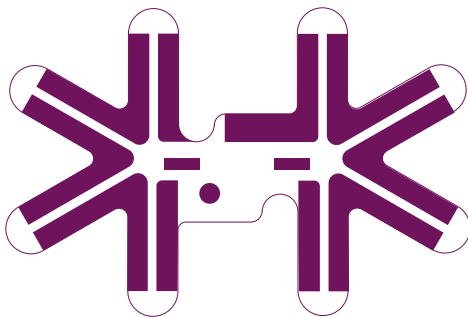
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**Type:** Building Intervention

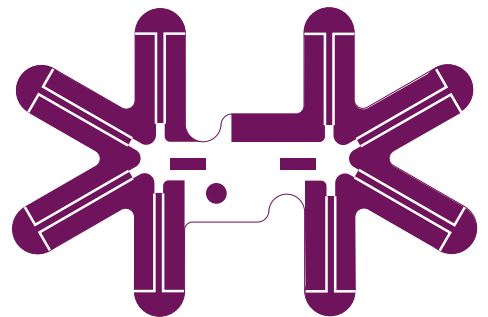
**User Group:** Children, Families, Employees/  
Service Providers, Customers/Users



The wards at Mary Elizabeth's Hospital



On a day-to-day basis, the wards are connected



The wards can be converted into isolated sections by limiting access to the central areas



Project and location: Mary Elizabeth's Hospital - Rigshospitalet for Children, Teens and Expecting Families, Denmark  
Contributor: 3XN, Arkitema Architects K / S, NIRAS, Architect Kristine Jensens Tegnestue, Rosan Bosch  
Established: Under construction

# Visual contact to isolation rooms

## Challenge

Isolation of people infected with COVID-19 has played a central role in the containment of infection in Denmark – both in hospitals and in people's own homes. A study by the Competence Centre for Patient Experiences [Kompetencecenter for Patientoplevelser] emphasises that patients in isolation experience loneliness and uncertainty about the disease, which can have serious psychological consequences. According to the study, communication with relatives is essential. Given that relatives are a valuable resource in the process of recovery, deprivation of their physical presence can be detrimental to the patient.<sup>1</sup> This is not only true for COVID-19 patients but for patients in isolation in general. Hospitalised children and their relatives are particularly vulnerable to the separation caused by isolation.

## Solution

Mary Elizabeth's Hospital is the Danish State Hospital's new hospital building for children, young people, pregnant women, and their families. The new building's wards are designed to be quickly and easily converted into isolation rooms. This means, among other things, that there is a window between the rooms and the hallway with a seating niche, where relatives can stay close to the inpatient without breaking their isolation. For privacy, the inpatient can block the view with a curtain.

The example shows how a design solution can be technically simple but still increase security for people in a vulnerable situation and support a better patient experience.

## Taxonomy

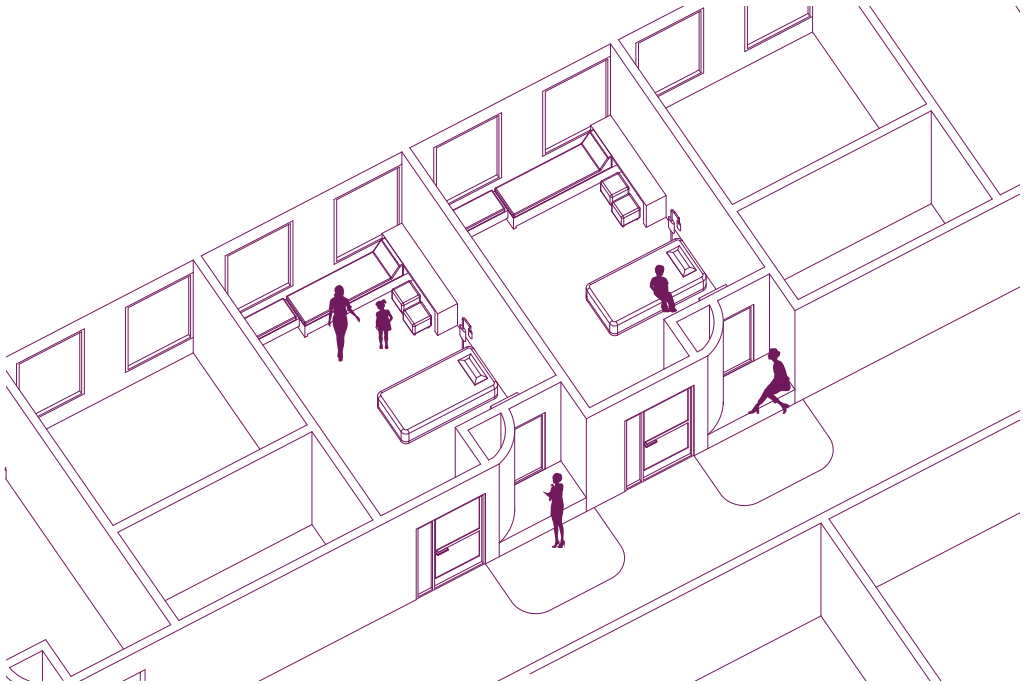
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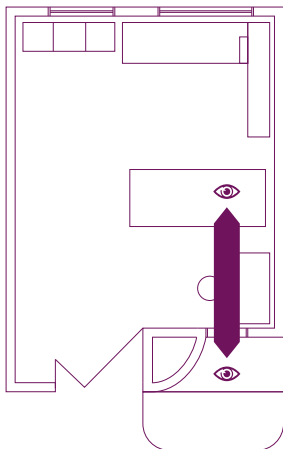
**Timescale:** Long Term

**Type:** Building Intervention

**User Group:** Children, Families, Employees/  
Service Providers, Customers/Users



The wards at Mary Elizabeth's Hospital give patients, family, and staff the opportunity for visual contact between the room and the hallway



The isolation room and sitting niche are separated by a large window

# Temporary change of function

## Challenge

On 27 December 2020, the first Danes were vaccinated against COVID-19, and during the first half of 2021, the vaccine was rolled out as an offer to the entire population. In November 2021, more than 75 percent of the Danish population had been vaccinated.<sup>1</sup> In order to implement the vaccination strategy, it was necessary to set up vaccination centres in existing buildings. Across the country, authorities had to identify suitable locations to set up the temporary centres. The buildings had to live up to the Danish Health and Medicines Authority's requirements for infection prevention, which meant, among other things, that they had to be able to house both vaccination and observation areas<sup>2</sup> and to handle large crowds while meeting social distancing requirements. Therefore, the access conditions and physical design of the buildings were key criteria during the selection process.

## Solution

As early as December 2020, the Central Denmark Region [Region Midtjylland] announced that seven vaccination centres would open when the vaccine was ready.<sup>3</sup> The seven vaccination centres were to be located in the same cities in the region that already housed test centres. However, as the test centres were operating at full capacity, the vaccination centres would have to be housed in new premises. In the city of Silkeborg, a former arena proved to be a suitable location for a vaccination centre, because the long, narrow grandstand building made it possible to handle a large number of people while meeting safety and social distancing requirements.

The example demonstrates how a building's design can support a different purpose than originally intended. Additionally, it shows how a crisis situation can open up new ways of looking at buildings – in this case transforming a social and cultural gathering place to a place for health preparedness.

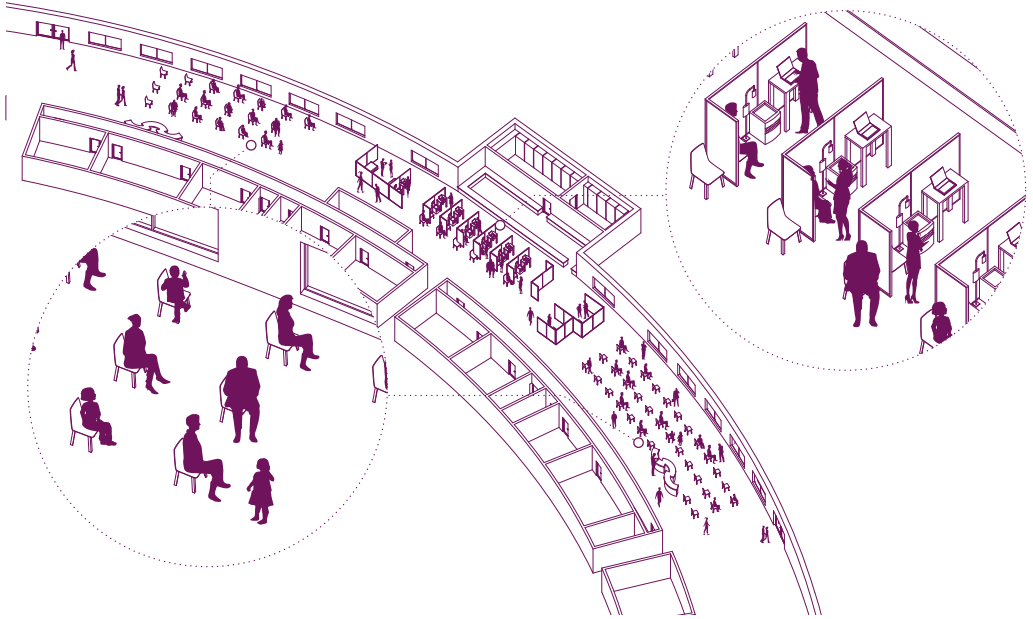
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**Sphere:** Treatment

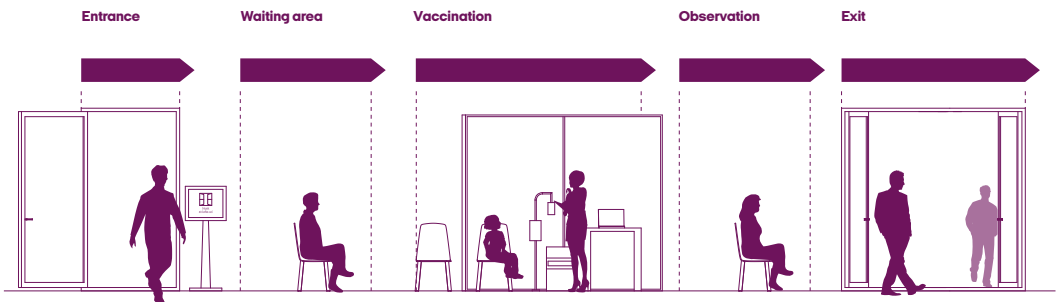
**Timescale:** Short Term

**Type:** Interior Design

**User Group:** All user groups



The grandstand building at the arena is transformed into a vaccination centre



The elongated building is well suited to house the various stages of the vaccination process





Project and location: TestCenter Denmark's headquarters in the North Jutland Region, Aalborg, Denmark  
Contributor: Region Nordjylland - Patientforløb og Økonomi – Sundhedsplanlægning  
Established: 2020

# Adaptive reuse

## Challenge

In the autumn of 2020, PCR test centres all over Denmark moved out of white tents and into more permanent settings. During the first half of the pandemic, white tents became a symbol of the COVID-19 effort in Denmark, but with winter in sight and expectations of a second wave, many authorities chose to move test centres into more robust premises with heating. In autumn 2020, TestCenter Danmark – the national organiser of COVID-19 tests – was able to perform 65,000 tests daily<sup>1</sup>, and with the prospect of having to expand testing capacity, it was necessary to ensure a good environment for the growing group of staff and for the people getting tested.<sup>2</sup> Extensive efforts were made throughout the country to find suitable locations. In Copenhagen, "pavilion towns" sprang up<sup>3</sup>, and elsewhere in the country, sports facilities, barracks, etc. were built or adapted for new use.<sup>4/5/6</sup> In the North Denmark Region [Region Nordjylland], the PCR test centres also moved to winter-proof premises in the autumn of 2020.

## Solution

In the city of Aalborg, the largest test centre was moved from tents in the Nørresundby area to a permanent setting in a former industrial building.<sup>7</sup> The North Denmark Region [Region Nord-

jylland] rented five adjacent rooms in the industrial building. In order to live up to infection and hygiene guidelines, which, among other things, meant that foot traffic in the test areas had to be one-directional, it was important to find a building whose construction and design made it possible to adapt to guidelines without making extensive changes. The guidelines also stipulate that the physical environment must support appropriate behaviour among both staff and people being tested – including by means of clear signage and social distancing markings – and that furniture and surfaces must be able to withstand cleaning and disinfection. In addition to large storage rooms, the building also housed an office section, a loading bay, and several entrances. For these reasons, the building was selected as the base of operations for the region's COVID-19 effort and was used for storage, planning, and management of emergency preparedness as well as a test centre, which was subsequently transformed into a vaccine centre in the spring of 2021.

The example shows how, by using the qualities of existing buildings and performing only minor physical interventions, the emergency services managed to create a clinical environment and good conditions for staff and citizens.

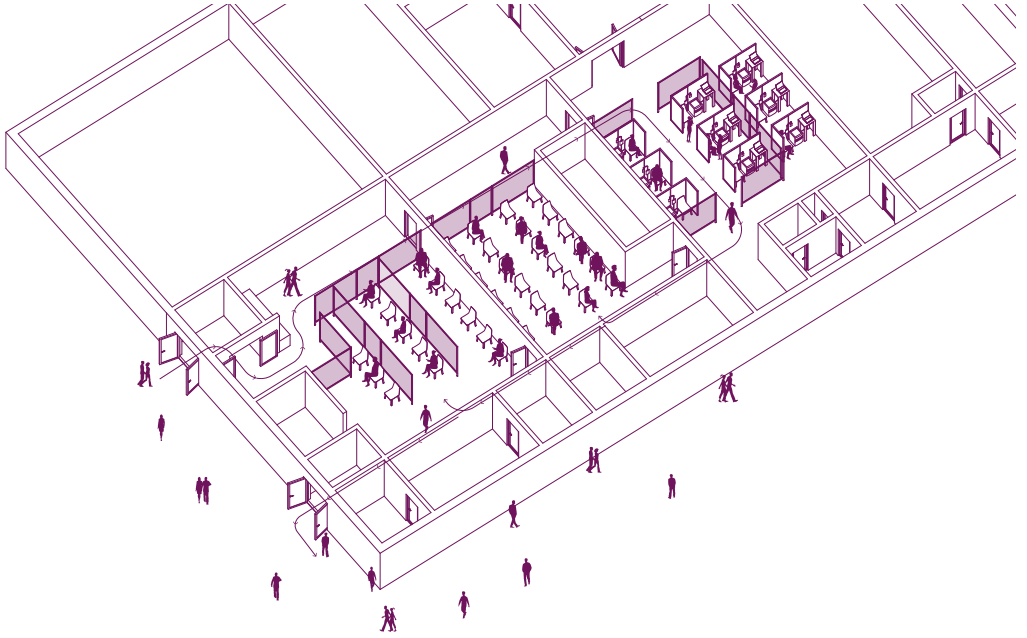
## Taxonomy

**Sphere:** The Workplace, Treatment

**Timescale:** Short Term

**Type:** Building Intervention, Interior Design

**User Group:** Employees/Service Providers, Customers/Users



The former industrial buildings in Aalborg now house a vaccination centre, the main warehouse for all vaccine and PCR test centres in the region, and the head office for the centres' administrative staff



At the beginning of the pandemic, test centres were set up in tents



Test centres later moved to proper indoor facilities to ensure adequate conditions



# Industrialised building

Open-source design quarantine facilities

COVID-19 as a driver of industrialisation

Modular systems quarantine facilities

A hospital in record time

Natural ventilation for all



Project & Location: Emergency Quarantine Facilities (EQF), Manila, Philippines

Contributor: WTA

Established: August 2020

# Open-source design quarantine facilities

## Challenge

Worldwide, COVID-19 has put pressure on hospitals and healthcare systems. In the autumn of 2020, several countries had to open emergency hospitals to meet the urgent need for treatment. In December 2020, Region Zealand (Region Sjælland) in Denmark prepared to establish emergency hospitals to accommodate the expected increase in admissions.<sup>1</sup> In Denmark, the key tool in securing hospital capacity has been flexible planning and reprioritisation in order to handle the increasing pressure within the existing buildings.<sup>2</sup> In many countries, however, the overwhelming number of patients made it necessary to set up emergency hospitals and quarantine facilities in other locations, such as conference centres and sports halls.

## Solution

In the capital of the Philippines, Manila, the local architectural firm 'WTA' has, on its own initiative, designed a temporary Emergency Quarantine Facility (EQF) for use at one of the city's hospitals. The pavilion is designed to address a specific problem, namely the lack of capacity in the country's hospitals to accommodate patients with mild symptoms awaiting their COVID-19 test results.

Hospitals are typically forced to send these patients home, which poses a risk, as potentially infected individuals can pass on the virus without knowing it. The project is an open-source design, meaning that the architects have made the technical drawings and design freely accessible to everyone. It was an important consideration that the EQF could be built from locally available materials anywhere in the country. Therefore, the architects used light and inexpensive materials, including standard products such as wooden pallets and bubble wrap. The first EQF was erected in a parking lot at the Manila Naval Hospital, and at the time of writing another 60 EQFs have been erected around the country.

The example shows how well-thought-out design solutions can create value for both patients, staff, and authorities. Because of their cheap and easily accessible materials and simple construction techniques, the WTA's pavilions became an important piece in the Philippines' national COVID-19 strategy – but as an open-source concept, its potential is both greater and farther reaching.

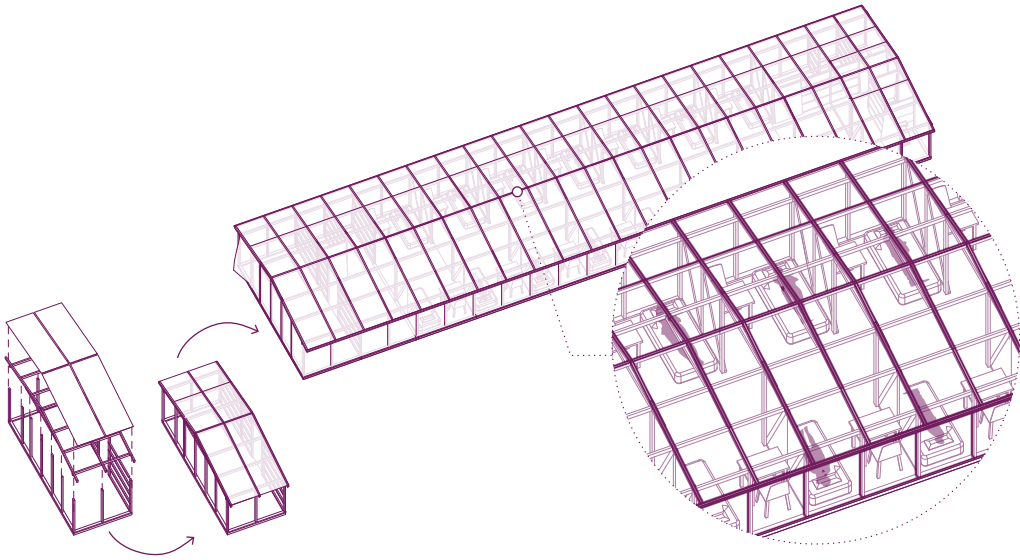
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**Sphere:** Treatment

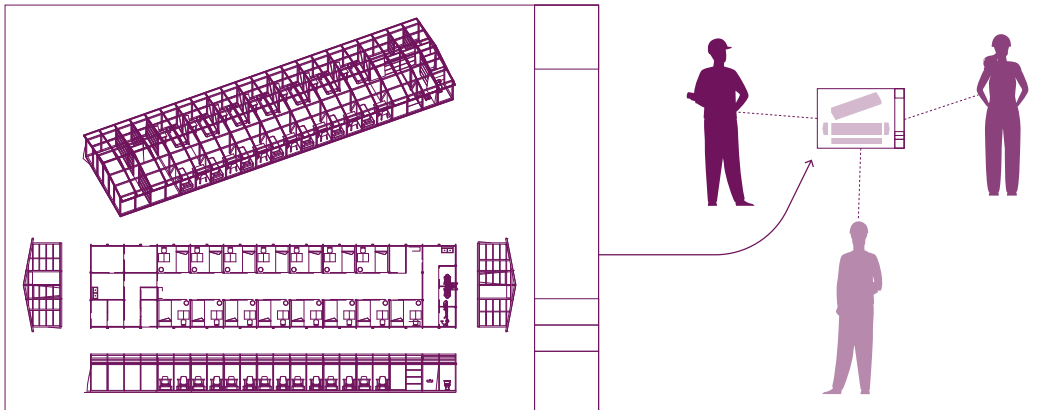
**Timescale:** Short Term

**Type:** Building Intervention

**User Group:** Employees/Service Providers, Customers/Users



The pavilion is designed to be built from easily accessible, inexpensive materials and with separate rooms for patients



The design and the technical drawings of the building are freely available for anyone to use





# COVID-19 as a driver of industrialisation

## Challenge

On 12 March, 2020, the first COVID-19 case was registered in Kenya.<sup>1</sup> The Oak Tree Centre for Kidney and Chronic Diseases is located in Eldoret, where the number of infections and hospitalisations increased rapidly during the spring of 2020. The hospital lacked sections where patients could be isolated as well as facilities that would make it possible to comply with distance requirements and create safe working conditions for staff. The need to expand capacity was urgent, and at the same time, adapting to the new situation had to happen without disrupting the hospital's daily operations – at a time when a large number of people sought medical attention for the treatment of both COVID-19 and other diseases.

## Solution

The Oak Tree Centre for Kidney and Chronic Diseases decided to construct a new, detached building on the hospital grounds with four

separate isolation rooms. The building is designed with a focus on safety and ventilation and also has a number of technologies that are not typical of hospital construction in Kenya, such as photovoltaic systems. The construction technique made it possible to build the four isolation rooms in a very short time and with minimal disruption to the hospital's other activities. The prefabricated building uses new materials and techniques that require specialised skills but which also reduce the construction period and increase flexibility.

The industrialised production method represents an innovation in the Kenyan building industry, where the traditional construction process is low-tech and on-site and relies on unskilled labour. The project is an example of how responses to an emergency situation can open up new avenues for innovation and development. The health authorities are now considering applying the same methods to other projects in the region.

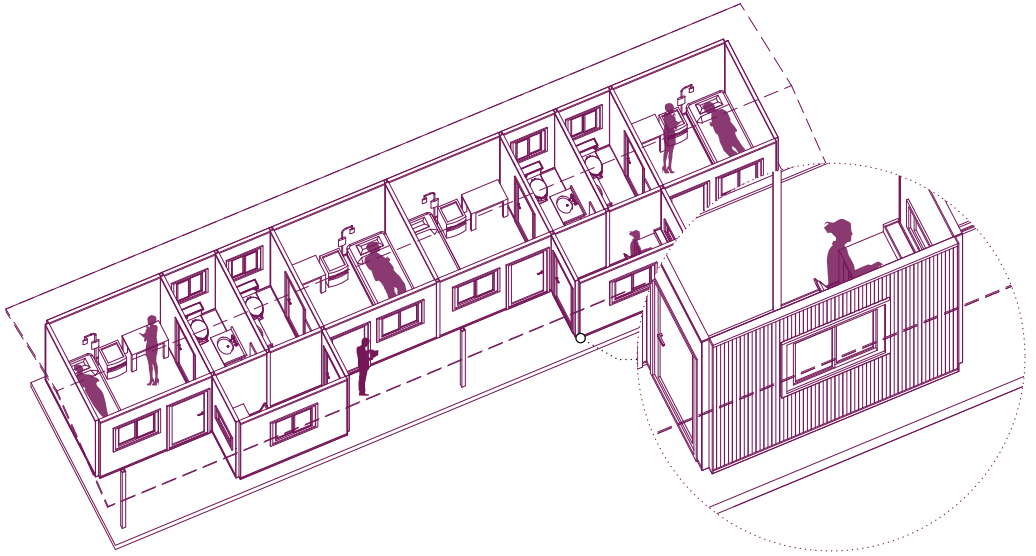
## Taxonomy

**Sphere:** Treatment

**Timescale:** Long Term

**Type:** Building Intervention

**User Group:** Employees/Service Providers, Customers/Users



The Oak Tree Centre's new building is constructed using prefabricated elements



The traditional and low-tech construction process relies on labour and is time intensive

The new construction process requires specialised labour but is time efficient



Project and location: Modular Integrated Construction, Lei Yue Mun Park, Hong Kong  
Contributor: Architectural Services Department HKSAR  
Established: April 2020

# Modular systems quarantine facilities

## Challenge

As COVID-19 spread in Hong Kong, authorities faced an unprecedented challenge. The urgent need to isolate residents who were infected or suspected of being infected had to be solved on a large scale and in a short time. This posed both a technological and logistical challenge for the architects, engineers, and contractors who were responsible for the construction of buildings for this purpose.

## Solution

The answer was found in the MiC [Modular Integrated Construction] concept, which moves a significant part of the construction process off-site – in this case to a controlled factory environment. In Hong Kong, investment in MiC for public housing has been on the rise for

several years, and therefore there was already a modular concept and an associated supply chain in place, which could be activated when the pandemic hit. In three months, four quarantine facilities were built with a total capacity of 571 units. The prefabricated modular construction shortened the construction period and produced better quality solutions and less waste of materials. It also created fewer inconveniences for neighbours and a better working environment on the construction site.

The project shows how innovative industrialised construction products can bring quality to construction – not just in terms of speed and economy but also other parameters such as safety and resource consumption.

## Taxonomy

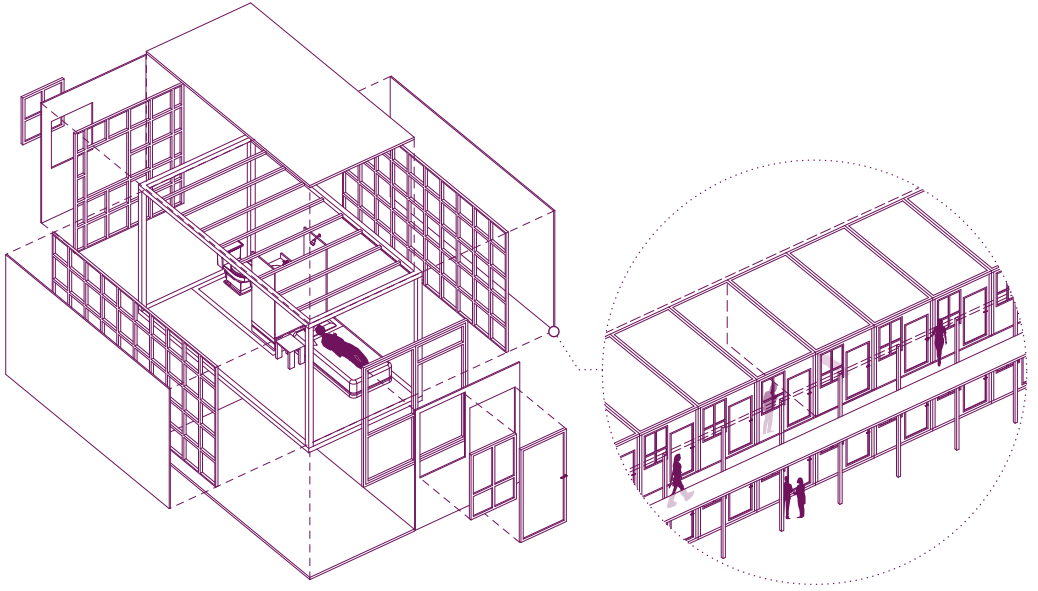
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**Sphere:** Treatment

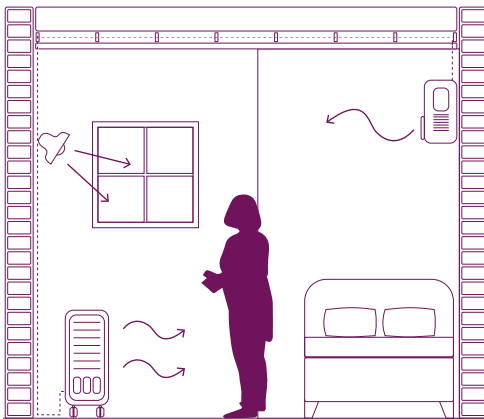
**Timescale:** Long Term

**Type:** Building Intervention

**User Group:** Employees/Service Providers,  
Customers/Users



Modular Integrated Construction makes it possible to build quickly, with precision, and to a high standard



In traditional construction, installations are made on site, and quality can vary



The MiC modules are delivered with installations and services, with consistent quality

Project and location: North Lantau Infection Control Center, Lantau, Hong Kong  
Contributor: Architectural Services Department HKSAR  
Established: February 2021

# A hospital in record time

## Challenge

COVID-19 has challenged healthcare systems worldwide. In many countries, authorities have been forced to set up emergency hospitals to expand capacity. Conference centres, exhibition buildings, and other facilities have been used to meet the overwhelming need for bed space.<sup>1,2,3</sup> During the third wave of the pandemic, Hong Kong saw a sharp increase in the number of people infected.<sup>4</sup> By the end of July 2020, the highest number at the time of daily new cases of COVID-19 was registered.<sup>5</sup> There was an urgent need to expand the capacity of the health system to offer more bed space but also specialised units where very ill patients could be treated without exposing health personnel to the risk of infection.

## Solution

North Lantau Hospital Hong Kong Infection Control Centre [NLTH HKICC] is an 800-bed-hospital with specialised facilities, including negative-pressure operating rooms and insulated wards. The 44,000 sqm building was built in just four months and in accordance with building regulations for permanent hospitals. This was possible because the construction was carried

out as an MiC project. MiC stands for “Modular Integrated Construction”, and this construction method has been prioritised in Hong Kong in recent years, where the authorities have used it for public housing, among other things. The system consists of prefabricated, self-supporting modules – typically room-sized – that are assembled off-site. In this way, a large part of the work is moved away from the construction site and into factories, where workflows can be streamlined and material use optimised. The result is faster and cheaper construction, fewer inconveniences, and, according to the responsible authorities, higher quality compared to traditional methods. The project is the largest of its kind and is considered proof of concept for MiC within this type of construction.

The example shows that system innovation has an important potential when time is crucial. The self-supporting modules can also be moved and reused in new buildings. In the context of a big city like Hong Kong where land prices shorten the lifespan of buildings, this can increase the sustainability of construction projects, which typically have a limited time horizon on a given plot.

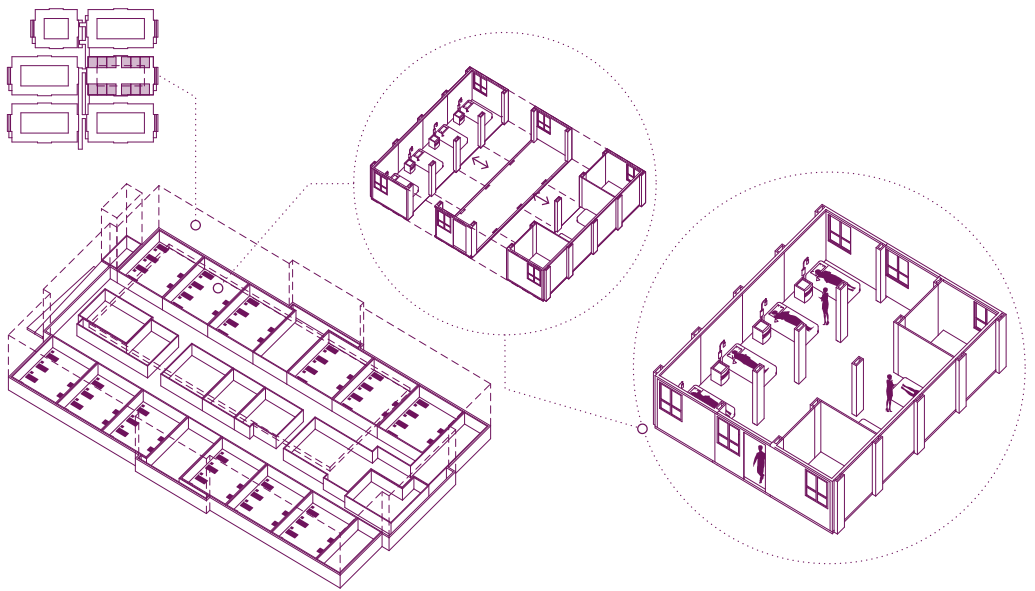
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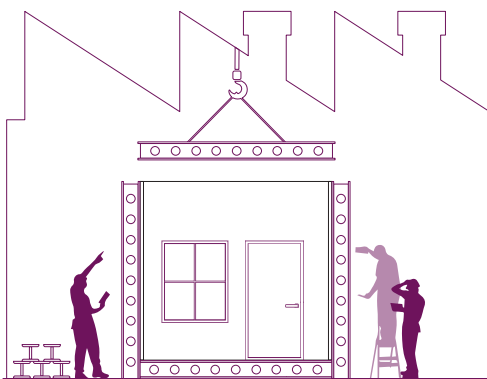
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**Type:** Building Intervention

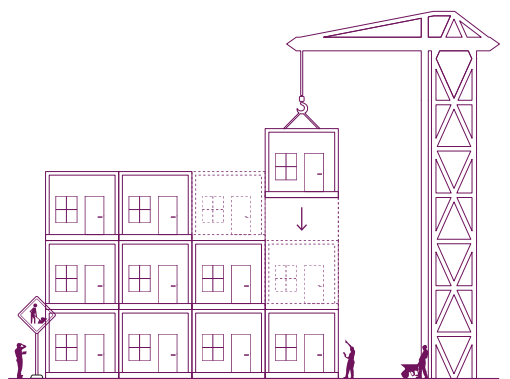
**User Group:** Employees/Service Providers,  
Customers/Users



The North Lantau Infection Control Centre is built from prefabricated modules



The MiC modules are built in a controlled environment, off-site



The finished modules are delivered and then rapidly assembled on-site

# Natural ventilation for all

## Challenge

Natural ventilation is an effective way to ensure air exchange and thereby reduce indoor pollution.<sup>1</sup> But many buildings today are built with unopenable windows, and users often have to rely on mechanical ventilation to ensure good indoor air quality.

## Solution

COVID-19 has brought focus on air exchange and circulation. Today, massive research is being carried out to improve ventilation systems so that future demands for efficiency and energy consumption can be met. The Ublo ventilation system is a circular window installed directly into a window without a frame or other measures, making it ideal for rooms where the existing

windows cannot be opened, as is the case in many high-rise buildings or shops. The window can be opened and closed by individual users as needed, giving users agency. Although 'Ublo' has an opening of only 15 centimetres, it can create effective ventilation, according to the designers, and thus contribute to good indoor air quality.

A solution such as Ublo shows that small changes can make a big difference and that several parallel technologies may need to be considered if we want to ensure good indoor air quality. At the same time, it shows that we can give end users of buildings a sense of control over the spaces they inhabit, allowing them to make choices which affect their comfort and health.

## Taxonomy

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**Sphere:** All spheres

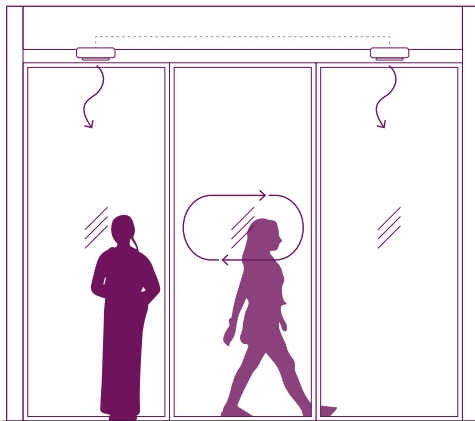
**Timescale:** Tactical, Long Term

**Type:** Building Intervention

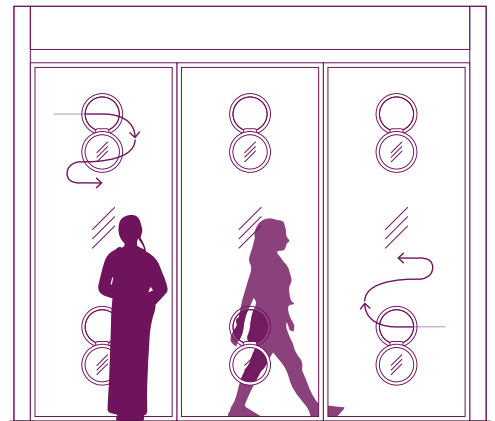
**User Group:** All user groups



The Ublo window can be installed in all types of buildings



Typical mechanical ventilation: Users do not have the opportunity to open the windows



The Ublo window allows the user to open a window, allowing fresh air to circulate









Áhlingstíðir  
Grendal MultiCenter

|         |             |
|---------|-------------|
| Þráttur | 06 422 4222 |
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Ryghol  
i La Fit



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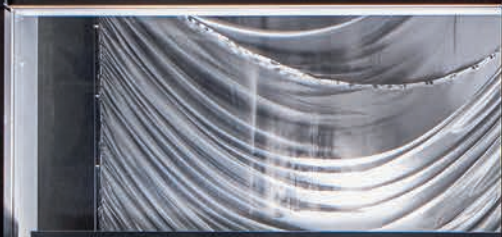
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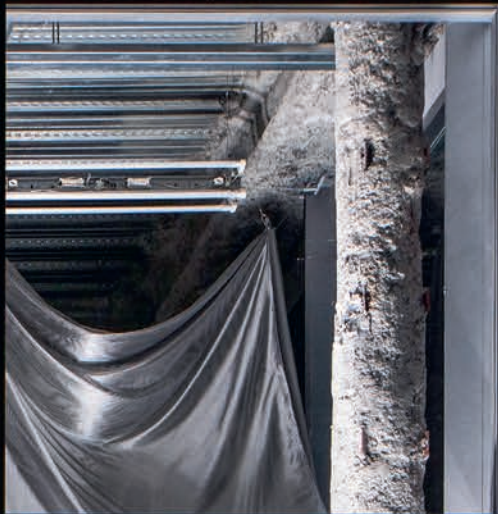
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**THE PLAYHOUSE**

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# Reconfiguring interiors

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# Moving activities outdoors

|  | Travel/Hospitality | Education/Institutions | Trade/Service | Culture/Leisure | Housing | The Workplace | Transportation | Civil Associations | Treatment |
|--|--------------------|------------------------|---------------|-----------------|---------|---------------|----------------|--------------------|-----------|
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# Spatial organisation

|   | Travel/Hospitality | Education/Institutions | Trade/Service | Culture/Leisure | Housing | The Workplace | Transportation | Civil Associations | Treatment |
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# Industrialised building

|   | Travel/Hospitality | Education/Institutions | Trade/Service | Culture/Leisure | Housing | The Workplace | Transportation | Civil Associations | Treatment |  |
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|--|---|--|-----------|------------|-----------|-----------------------|-----------------|----------------|---------------------|----------|------------|--------|----------|---------|-----------------------------|-----------------|--|--|--|
|  |   |  | Tactical  | Short Term | Long Term | Building Intervention | Interior Design | Smart Solution | Graphic Application | Children | Youth      | Adults | Families | Elderly | Employees/Service Providers | Customers/Users |  |  |  |
|  |   |  |           | ●          |           |                       |                 |                |                     |          |            |        |          |         | ●                           | ●               |  |  |  |
|  |   |  |           |            | ●         |                       |                 |                |                     |          |            |        |          |         | ●                           | ●               |  |  |  |
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|  | ● |  | ●         |            |           | ●                     |                 |                |                     | ●        | ●          | ●      | ●        | ●       | ●                           | ●               |  |  |  |



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## Architecture of the Pandemic

A compendium of COVID-19 responses in the built environment

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