

a cura di / edited by
Cristiana Cellucci, Rosaria Revellini,
Valeria Tatano, Dario Trabucco

STRADE PER LA GENTE

Le persone negli spazi aperti:
progetti, pratiche e ricerche
per il benessere psicofisico

STREETS FOR PEOPLE

Individuals in outdoor environ-
ments: projects, practices and
research for the psychophysical
well-being

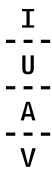
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CLUSTER AA | **07**

STRADE PER LA GENTE / STREETS FOR PEOPLE

Le persone negli spazi aperti: progetti, pratiche e ricerche per il benessere psicofisico /

Individuals in outdoor environments: projects, practices and research for the psychophysical well-being

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Il presente volume raccoglie i contributi presentati a seguito della call for paper e selezionati tramite processo di double blind review da parte del Comitato Scientifico. L'omonimo Convegno Internazionale si è svolto presso l'Università luav di Venezia, Palazzo Badoer, in data 7 novembre 2025 ed è stato organizzato dai membri del Cluster Accessibilità Ambientale dello luav, con il patrocinio di SITdA, INU e Fondazione luav.

This volume collects the contributions presented after the call for papers and selected through a double blind review process by the Scientific Committee. The International Conference, of the same name, took place at the Università luav di Venezia, Palazzo Badoer, on 7th November 2025 and was organised by the members of the luav Environmental Accessibility Cluster, with the patronage of SITdA, INU and the luav Foundation.

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novembre 2025

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Il volume affronta il tema degli spazi pubblici come luoghi in cui poter vivere una esperienza spaziale autonoma e non segregante, attraverso riflessioni e proposte raccolte in forma di contributi per il Convegno Internazionale dal titolo *Strade per la gente*, organizzato a Venezia il 7 novembre 2025.

Il Convegno nasce dalla volontà del cluster Accessibilità Ambientale della Società Italiana della Tecnologia dell'Architettura SITdA di dare continuità agli incontri di confronto organizzati negli ultimi anni sui temi del benessere psicofisico e dell'autonomia di vita delle persone, per migliorare sempre di più il mondo dell'architettura ai fini dell'inclusività.

The volume addresses the theme of public spaces as places where people can experience spatial autonomy and non-segregating environments. It brings together reflections and proposals presented as papers to the International Conference *Streets for People*, held in Venice on November 7, 2025.

The Conference originates from the desire of the Accessibilità Ambientale (Environmental Accessibility) cluster of the Società Italiana di Tecnologia dell'Architettura (SITdA) to continue the series of meetings held in recent years on the themes of psychophysical wellbeing and people's life autonomy, with the aim of increasingly improving inclusivity in architecture.

Rethinking Public Spaces: a Hydroponic Solution for Food Security and Social Cohesion

Ripensare gli spazi pubblici: una soluzione idroponica per la sicurezza alimentare e la coesione sociale

Il mondo contemporaneo è attraversato da crisi globali interconnesse di natura economica, sociale e ambientale. Le città stanno assumendo un ruolo sempre più centrale, diventando organismi complessi in cui diverse dimensioni si intrecciano e generano nuove sfide per il futuro. La crescita demografica e il modello di sviluppo urbano hanno accentuato criticità come la carenza di spazi verdi e la ridotta possibilità di socializzazione, incidendo direttamente sul benessere psicofisico della popolazione. Questi fattori influenzano profondamente la qualità della vita negli ambienti urbani, sia in termini di coesione sociale che di vivibilità degli spazi pubblici. Il sistema agroalimentare è uno dei settori più colpiti dagli effetti di questi problemi, diventando sempre meno efficace nel garantire un accesso equo e sostenibile al cibo e causando la diffusione dei cosiddetti “deserti alimentari”, aree urbane in cui l’approvvigionamento di alimenti freschi e nutrienti è estremamente limitato. In questo scenario, la rigenerazione degli spazi urbani assume un ruolo cruciale nel promuovere soluzioni innovative e inclusive. Il progetto MYCO si propone come una risposta concreta a queste problematiche, sfruttando la tecnologia per affrontare l’insicurezza alimentare e, al contempo, contrastare la carenza di spazi verdi e le limitate occasioni di socializzazione.

MYCO è concepito come un prodotto-servizio che prevede l’installazione di dispositivi idroponici automatizzati – i MYCO-pod – in spazi pubblici, che consentono alle comunità di coltivare alimenti freschi a chilometro zero in modo sostenibile e condiviso. Questi dispositivi sono progettati in modo integrato con elementi di arredo urbano finalizzati a ridefinire e valorizzare lo spazio pubblico, trasformandolo in un luogo di aggregazione e partecipazione attiva. In questo modo, il sistema consente un servizio modulare, flessibile e adattabile a diversi contesti sociali e urbani, e la generazione di micro-paesaggi urbani in cui esseri umani, natura e tecnologia si integrano portando un miglioramento delle interazioni sociali e consentendo alle persone di riappropriarsi degli spazi pubblici. I MYCO-pod sono autosufficienti dal punto di vista energetico, in grado di regolare la produzione alimentare in base alle esigenze e di consentire la coltivazione durante tutto l’anno attraverso un sistema automatizzato. Il servizio correlato può essere fornito dall’amministrazione locale o da altri soggetti strutturati, ma viene gestito direttamente dai cittadini per mezzo di un’apposita associazione che lo rende accessibile alla popolazione coprendo i costi di gestione e manutenzione.

MYCO è un modello scalabile e replicabile, capace di adattarsi a diversi contesti urbani, contribuendo alla transizione verso città più sostenibili e inclusive. Integrando approcci di smart city e innovazione sociale, il progetto dimostra come l’agricoltura urbana tecnologica possa diventare un motore di rigenerazione dello spazio pubblico, promuovendo il benessere collettivo e rafforzando i legami comunitari.

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Introduction

The contemporary world is facing interconnected economic, social and environmental crises. In this scenario, cities are assuming a key player role in the global geopolitical scene becoming laboratories of innovation, centres of governance and models of resilience, capable of leading the transition towards more sustainable, inclusive and digitally evolved societies. No longer just urban spaces, cities can now work together to respond to shared challenges (Khanna and Khanna, 2013), but they need to change in order to become more resilient and accessible. This evolution requires a new development model. Traditionally, urban design focused on the physical and functional development of spaces, however, the current context needs a reconsideration of this approach. Cities must be viewed as rapidly and continuously evolving organisms in which technological, social and environmental dimensions are intertwined (Claudel and Ratti, 2017).

The challenges that cities face, particularly with regard to accessibility, are also linked to global population growth, especially in urban areas, with more and more people moving from the rural zones. This densification exacerbates accessibility and quality of life issues, such as a shortage of green spaces and reduced opportunities to forge strong, lasting social connections (Manzini, 2021).

The way cities have been designed in the last century has led to a rigid division of urban areas into zones intended for specific functions. This has created social and economic inequalities and made cities less accessible and liveable. Rethinking urban contexts can transform cities into more sustainable, inclusive and resilient environments through a multidisciplinary regeneration approach. These transformations require innovative solutions that systemically and transversely address economic, socio-cultural and environmental issues in order to improve the current development model of cities (SPACE10, 2021).

About accessibility

If we focus on accessibility in contemporary cities, we find that main issues not only affect urban mobility, but also other dimensions such as food availability and socializing. Indeed, unsustainable agricultural practices, the impact of climate change and the trend of designing cities that neglect social interactions are causing urban environments to become increasingly inhospitable and unusable.

As we all know, access to food and social relations are closely intertwined. Today, the agribusiness sector must tackle critical challenges, including reducing food waste and biodiversity loss, that have a serious impact on agricultural production (FAO, 2023). Ensuring equitable access to food and food security in urban settings is essential, as food availability is often taken for granted. However, this perception of abundance is illusory: the complex logistics and production systems that allow food to reach urban consumers daily are rarely reflected upon, and access is not always effectively guaranteed for all population segments (Cruz-Piedrahita *et al.*, 2024).

This scenario foreshadows major changes in the relationship between food and cities, affecting infrastructures, distribution and culture. This is why many cities show a lack of “foodability”, or the ability to access fresh, healthy and nutritious food. The concept of foodability is based on three factors: spatio-temporal (availability of food), economic (affordability for the population), and cultural-social (knowledge, habits and practices). Urban areas where people cannot get enough healthy food are called “food deserts”. These areas tend to be in low-income suburbs and make it hard for people to get enough food, which affects their health and quality of life.

Objectives

The main objective of the MYCO project is to develop an integrated, product-service system-based approach to multiple critical issues, addressing multiple issues in a systemic way. Indeed,

		DISABILITIES			
		Sensory disability <i>Affects the senses (blindness, vision impairment, deafness, or hearing loss)</i>	Impaired mobility <i>Refers to limitations in body movement (difficulty moving, paralysis, or balance problems)</i>	Intellectual disability <i>Refers to impaired cognitive functions (difficulty in learning, reasoning, problem-solving, e.g. Down syndrome)</i>	Mental disability <i>Mental health disorders (depression or other conditions affecting psychological well-being and behaviour)</i>
IMPACT	Addressed challenges	Too far away fresh food distribution points and social gathering places, making it difficult to find the way around the urban environment, which is congested with many stimuli and information	Too far away fresh food distribution points and social gathering places, resulting in the need to overcome many architectural barriers	Need for food security and well-being coupled with new opportunities for cognitive and relational improvement in relationships with both objects and people.	Need for food security and well-being coupled with new opportunities to improve relationships with nature and people, reduce stress, and regain motivation.
	Potential impact and benefits	People with sensory disabilities can find distribution points and social gathering places closer and more easily accessible. MYCO pods are equipped with interactive aids that ease the cultivation and the collection of fresh vegetables.	People with impaired mobility can find distribution points and social gathering places closer and more easily accessible so they are not forced to overcome too many architectural barriers, also thanks to the public urban spaces regeneration.	MYCO can leverage horticultural therapy (farm therapy), which uses agricultural and nature-based activities for therapeutic purposes, both to engage users in structured activities that stimulate cognitive development and as a social interaction opportunity.	MYCO can leverage horticultural therapy (farm therapy), which uses agricultural and nature-based activities for therapeutic purposes to promote physical and mental well-being helping people to reduce stress, develop a sense of purpose, and foster a connection with nature, while enjoying the tangible results of plant-based activities.

Fig.01 Analysis of potential impacts and benefits for people with disabilities.

in addition to reintroducing food production within an urban context to mitigate food risk, MYCO aims at redeveloping public spaces to improve accessibility and foster social interaction.

With regard to the issue of food desertification specifically, MYCO is not only a system of vending machines for food products but it brings food production back into the urban context. It uses above-ground farming techniques to grow zero-mile vegetables, integrating digital technologies to automate production processes and increase efficiency.

From the perspective of social sustainability, on the other hand, MYCO turns public spaces into multifunctional and identity-building places, capable of fostering interaction among different groups of people. The project helps redevelop and reconfigure urban spaces by installing street furniture with built-in cultivation systems, which makes the city more resilient and accessible. In addition, by increasing green spaces, it mitigates the effects of climate change and promotes a healthier, more sustainable urban environment.

Finally, from a purely design perspective, MYCO is conceived as a modular system to enable the creation of “micro-urban landscapes” as well as an online service designed to foster community creation and take advantage of the benefits of asynchronous and decentralized collaboration, key features of all social networking platforms.

As explained in detail in the methodology description, regarding both food risk mitigation and social sustainability goals, the MYCO project is based on a sort of reversal of the approach to accessibility, that is, making products and services closer to the user rather than necessarily ease their mobility.

Methodology

Cities have always been places where people settled to better interact and collaborate efficiently and effectively. The need to build houses and other permanent structures has made people more connected to their territories, making the spatial dimension more important and causing proximity and distance between locations, artefacts and people to become crucial in urban contexts. The concept of the 15-minute city (Moreno, 2024) is the latest response to the need to optimize city services by minimizing travel-related costs and inconveniences.

The notion of accessibility is inherently linked to the space-time dimension, encompassing aspects concerning the efficiency with which an individual accesses a specific resource. These aspects frequently pertain to mobility, as they refer to the extent to which they affect the cost to a user of accessing a resource. It is important to consider the space-time dimension in order to provide a more comprehensive clarification of the correlation between the MYCO project, as presented in this study, and the accessibility and mobility issues of individuals experiencing disadvantage or specific requirements. In this contribution, the concept of accessibility is examined through an analysis of potential addressing strategies. To summarize, regardless of the nature of the disadvantage or the external factors that may impede a person's access to a good or service, three distinct approaches can be adopted:

- completely or partially eliminating the obstacles that increase the time or cost required to access a resource; e.g. facilitating the movement of people toward the good or service;
- reducing the distance between the resource and the user; e.g. bringing the good or service closer to the individual, thereby also reducing the likelihood that it may be hindered by external factors;
- both 1 and 2.

These approaches can result in many different design solutions, yet all remain viable. MYCO embraces the second strategy, as it improves the matching of food supply and demand by spreading the service and bringing access points closer to users. Furthermore, within the outlined scenario, vulnerability is understood in a broad sense, encompassing socioeconomic factors. Although the solution is not specifically designed for people with physical disabilities, it is important to emphasize that they are fully included in the group of people vulnerable to food risk, therefore, the project will have an expected relevant impact also on this user group.

The definition of the MYCO project brief derives from an analysis of 14 different case studies, from which three distinct types of results emerged:

Urban-scale products (e.g. microarchitectures for urban agriculture)

- Growmore (Sine Lindholm Architecture Studio)
- The GrowRoom e The Algae Dome (IKEA Space10 division)
- Digitali urban orchard (Institute for Advanced Architecture of Catalonia)
- Harvesting station (Antonio Scarponi)
- Globe Hedron Rooftop Farm (Conceptual Devices)

Artifact-scale products (e.g. mobile systems for urban agriculture)

- Jellyfish Barge (Antonio Girardi, Cristina Favretto, Stefano Mancuso, PNAT Firenze)
- PIDO's Bike (People's Industrial Design Office)
- Glasir (Framlab)
- Green pixel (Hou Chenyu, Wang Yuqing, Qin Yifeng e Wu Jingting - Beijing City University)

Services (e.g. smart approaches to urban agriculture)

- Micro Farms (Damien Chiviale)
- GrowUp (GrowUp Farms)
- Greenbelly (AVL Studio)
- Eko Farmer (Exsilio)

The analysis has clearly highlighted the need to develop MYCO as a product-service solution. Additionally, an important part of the project was the characterization of the socio-spatial context for contexts at risk of food insecurity, that is the definition of the combined set of physical-morphological features of the city and the socio-cultural attributes of the population.

The second-to-last phase was the design of the MYCO service. This involved stakeholder mapping and profiling, interaction analysis, defining the features of the agricultural product, and identifying the production and system management phases. The final phase was the design of the MYCO-pod and its street furniture accessories.

MYCO

The MYCO project is a product-service system based on modular units equipped with above-ground farming technologies, the MYCO-pods. The MYCO-pods are at the heart of the system from both a productive and an urban redevelopment and social function point of view. Specifically, they embed an automated hydroponic cultivation system optimized for high-efficiency, zero-mile horticultural production. In addition, they can also be installed with a series of complementary urban furniture accessories aimed at enhancing the nearby context and fostering social interaction within the community.

The system involves the integrated use of multiple MYCO-pods connected to a web platform that manages both crop parameters and interaction among community members, enabling peer communication, remote crop monitoring, and data analysis for service improvement over time.

MYCO is conceived and designed as a public service. One possible initial business model involves management by the local municipality, which is responsible for planning the installation areas also through participatory processes with citizens. Users can access the service either as producers, consumers or both, through the establishment of specific associations, which are responsible for the operational management of the devices. All stakeholders agree on ways and costs of joining the service, also due to possible local social policies; for example, in areas of high socioeconomic hardship, the municipality may co-finance or fully fund the service by allowing free access to fresh food to certain segments of the population. Funding calls and private sponsorships may also be considered in this scenario, as well as the promotion of membership, information campaigns, and other social initiatives.

The manufacturer can retain ownership of the devices and responsibility for periodic maintenance if it rents or sells them to the municipality or associations. Through the platform, the municipality or association can monitor the overall production and status of the system and report any necessary technical interventions to the manufacturer.

According to the analysis and the system map, there are essentially four types of actor:

- Manufacturing company. Responsibilities include the design, production, installation, technical maintenance and management of the web platform.
- Municipality. They may offer the service, identify public spaces for installation, promote the use of the system through public policies and support the training of user associations.
- User association. They may also offer the service; mainly they manage the MYCO-pods operationally, coordinate activities among members, ensure the system functions properly, and define the collection method.
- User (citizen member). They are directly involved in cultivation, contribute to the daily management of the devices, actively participate in promoted initiatives and acquire products as defined by their association and any local policies.

MYCO draws inspiration from biomimicry, the discipline that imitates nature to solve human problems. The design is mushroom-shaped, a symbol of resilience, adaptability and

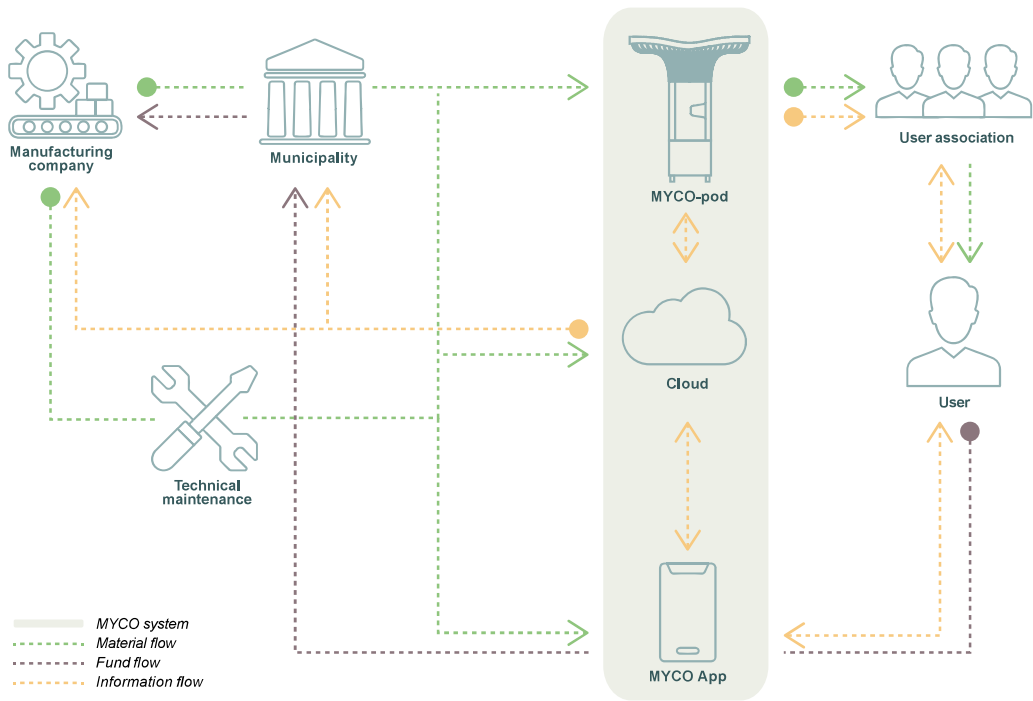


Fig.02 MYCO service system map.

regeneration, a choice more symbolic than aesthetic, aimed at facilitating an emotional connection between users and nature through the interaction with technological elements merged into urban spaces. The aim is to create micro-landscapes that integrate technology and nature symbiotically, generating new socially regenerative public spaces.

The MYCO-pod is the technological core of the zero-mile production service. It is made up of a steel support frame, an interior divided into compartments by special panels, and a wooden exterior with a cork insulation layer to enhance thermal performance. The growing chamber can be seen from outside through transparent doors, which allow natural light to reach the plants. The upper section of the device houses two photovoltaic panels that are connected to a power regulation unit and a battery pack placed at the base that ensures the system's energy autonomy. An automatic rainwater collection system feeds two separated tanks: one for backup and one for irrigation. Planters around solar panels enhance urban greenery and contribute to absorbing CO₂. The system is equipped with a ventilation unit with heat recovery to maintain the indoor temperature and with LED lamps for cultivation in case of insufficient natural lighting.

The production heart of the pod is an automated hydroponic growing chamber. Through the use of a stackable module, called minibraga, it allows the growth of up to 48 plants per device. The irrigation system incorporates a pump and an oxygenator to ensure the water is properly oxygenated, while a set of environmental sensors constantly monitors temperature, humidity, CO₂ concentration, light intensity, water levels and nutrient amounts. All collected data is processed and managed centrally through the web platform to optimize the production process.

The pod features user screen-based interfaces showing real-time crop status as well as physical interfaces, such as smart handles and openings for easy interaction. Through a dedicated mobile application, citizens can browse available devices, view their status, and interact with them. Ac-



Fig.03 MYCO-pod: technical layout and urban environment integration.

cess to the pod is managed by a digital identification system that allows authorized users to enter seeds and nutrients as well as send observation data on managed crops, so the system can autonomously adjust irrigation, fertilization, lighting and climate parameters based on the combination of data sent from sensors and users.

Street furniture complements are made with a recycled concrete base and a wooden seating surface. They are placed around each MYCO-pod to contribute to the formal regeneration of the public space, encouraging people to gather and stay, and fostering its social function. The overall solution involves creating a new urban landscape with increased vegetation, making the new public spaces more popular, accessible and, at the same time, productive.

Discussion and conclusions

MYCO combines social innovation, urban regeneration and environmental sustainability to provide a systemic response to critical urban issues like food insecurity, green space and social isolation. Its flexibility means the MYCO model can be used in different scenarios and adapted to different contexts, making it a cultural and social device that can trigger transformational processes within an urban community.

ICT technologies in urban agriculture enable us to overcome limitations, especially in densely populated areas or those with limited natural resources. MYCO-pods produce fresh, sustainable food but also reactivate public spaces creating micro-landscapes where nature, technology and community coexist in harmony.

The project's impact, not limited to the food or environmental realms, extends to the social dimension. Local associations manage access to the service, devices and conditions of use in agreement with the municipality, encouraging collaborative networks, strengthening territorial belonging and active citizenship.

MYCO combines a smart vision for cities and a participatory approach. Unlike many tech initiatives, MYCO operates from a bottom-up model in which technology serves people and communities with a model aimed at promoting social relations and collective intelligence in urban spaces. Conceived as an alternative to functionalist logic, it is also applicable in private, association and school settings. Indeed, cooperatives and informal groups can request installation to promote good sustainability practices, while in educational contexts, MYCO pods

can serve as valuable learning tools, for example, integrating them with school canteens as a relevant step towards a local, sustainable and ethical food supply chain.

In short, MYCO is intended to act as a strategy for deep change, acting at the same time on ecology, economy and relationships, being a new idea for urban accessibility, based on resilience, self-sufficiency and social cohesion.

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