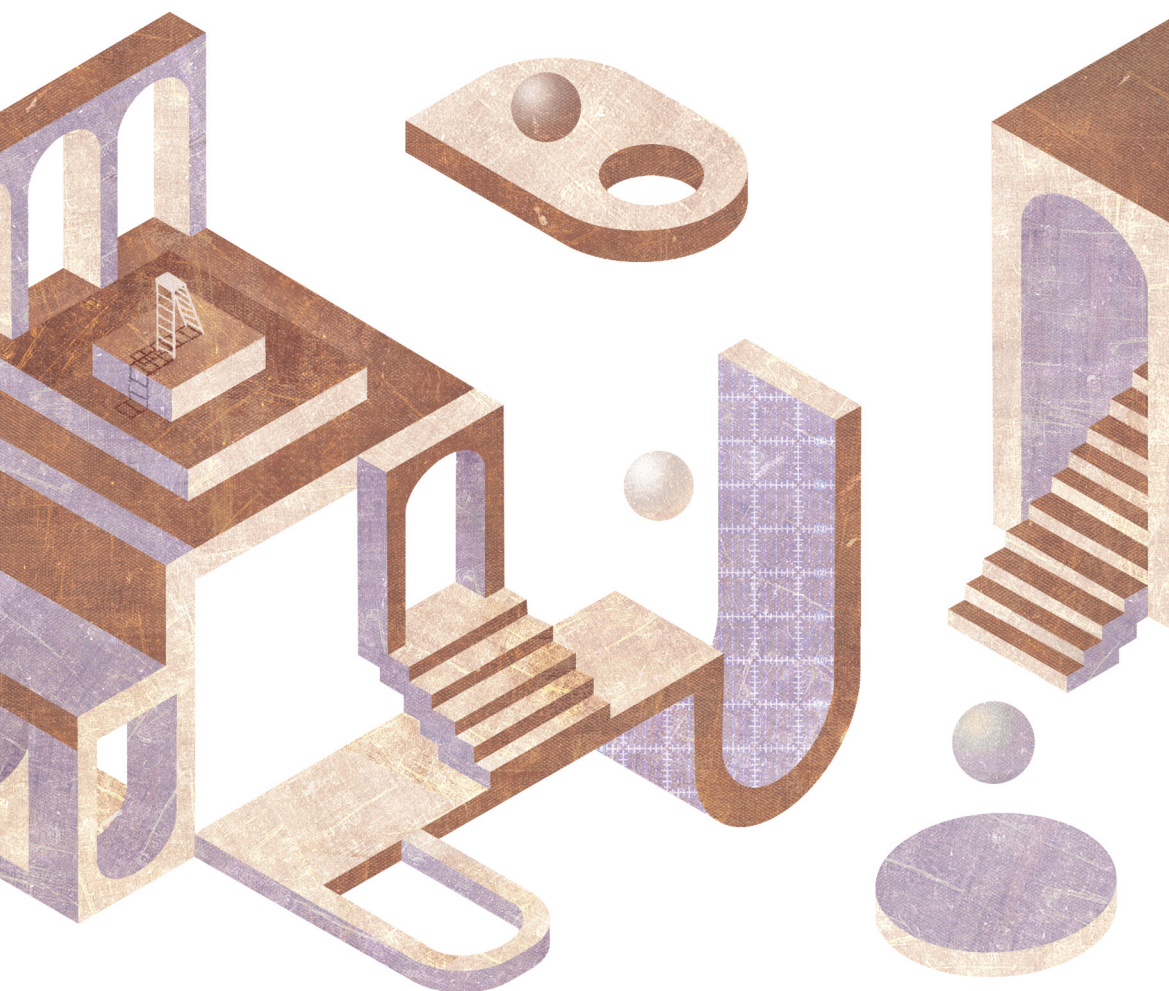


MULTIPLE-SCALARITIES

Environmental systems as a combination of interior design,
services, communication and technologies



edited by Giulia Gerosa, Andrea Manciaracina



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Environmental systems as a combination of interior design,
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edited by Giulia Gerosa, Andrea Manciaracina

D.I. **FrancoAngeli** 
DESIGN INTERNATIONAL

Cover image by Sara Sciannamè

ISBN e-book Open Access: 9788835153528

Date of first publication: June 2023

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Introduction

Giulia Gerosa, Design Department – Politecnico di Milano

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Interior design is less and less reduced to the mere physical component of space. It is instead increasingly projected towards an ‘environmental system’ made up of space, services, communication, and technology, capable of illustrating a multi-scalarity and trans-disciplinarity typical of a project devoted to innovation. This change of focus, from the prevalence of the interior physical component to the dominance of a polyvalent system, has generated a series of changes, including those affecting the project’s area, which shows a progressive rise of the informational-cognitive component where the control of the net of human interactions involved becomes extremely important.

The theme of scalarity runs through the studies on the relationship between man and space, from representation to design, and helps interpret environmental systems differently by relating practices and techniques from different disciplinary fields. Through multi-scalar and multi-disciplinary approaches, it is possible to understand that the design of an environmental system (be it a room or a university campus) must establish a relationship with the context in which it is inserted and that at the same time, the relationships between user, environment, technology, and services are a lens through which to interpret space and its shapes.

The concepts of scale and measurement are indispensable for correlating, from a systemic perspective, the particular with the general, the detail with the whole (De Giovanni & Sposito, 2020), for interpreting and representing, for discretising and recomposing elements and parts with each other in a hierarchical or interconnected relationship, for investigating the physical and the social, for outlining criticality and potentiality (Russo, 2015).

Multiscalar applications are connected to an adaptive concept of design make places and make deeper connections between spatial form, usage, and meaning, framed within a process of hybridization (Leveratto, 2019). Through a multi-scale approach, it is possible to interpret an ecology of the project in which, through the multiplication of the different scales of intervention, it is possible to generate relationships between space and user, not only placing them within complex systems but recognising them in mediated design “patterns” from technology.

Technology and its use made of it are essential elements of a complex environmental system. Through technology, it is possible to help the user to use the space; it is possible to expand the space beyond its physical boundaries, it is possible to interconnect different services, and it is possible to create networks of spaces. The design scale affects the design outcomes, and “thanks to the progress of technology in the field of design at all levels, it is probably the component of the project on which the designer works the most, simultaneously coordinating real and virtual relations” (De Giovanni & Sposito, 2020).

The volume collects various design experiences within heterogeneous research groups of the Design Department of Politecnico di Milano and talks about experiments in designing spaces and services on a different dimensional scale that have impacted various types of users. Through the recounting of these experiments, the book highlights the close interconnections between the design of spaces, the creation of services, the application of communication systems, and the exploitation of technologies, allowing us to reveal the tensions and interactions that are unleashed depending on the prevalence of one or another design discipline and the scale (from XS to XL) at which they take place.

The different chapters focus on a design process aimed at users both as individuals and as communities. We can find evidence of disciplinary and design specificities and recurrences of particular approaches, methods and tools regardless of the specific themes, contexts and scale of intervention. These specificities are explicitly linked to the thematic, contexts and scale.

What emerges here is a rich and varied picture of examples of possible modes of intervention by the discipline of spatial design in dialogue with other design disciplines, including services and communication, as well as a comprehensive set of disciplinary approaches and

tools, each time punctually selected, adapted, hybridised, combined and, finally, adapted to the individual cases narrated in this publication.

The first chapter (XS), dealing with the smallest dimension of the multi-scalar project, namely that of the space delimited by a portion of an exhibition environment, describes a single installation with extreme care; on the other hand, it introduces a vast richness of reflection and perspective, influencing not only functional but also environmental and social dimensions. The Norman Foster Foundation and the Guggenheim Museum Bilbao invited students from 15 design and architecture schools on four continents to envisage the future of mobility on the occasion of the exhibition “Motion. Autos, Art, Architecture”. Responding to this call, Politecnico di Milano has designed “Autofficina Futuro”, an interactive exhibit that responds to people’s presence and gestures with multimedia content.

The second chapter (S) switches its emphasis to public interiors by describing the “Salone del Futuro” design created for the Milano-Monza-Brianza-Lodi’s Chamber of Commerce. The initial premise of the project is that the digital world is radically altering how services are given (constantly becoming more efficient, accessible, and swifter). Chamber of Commerce and Politecnico di Milano collaborated using systemic and spatial co-design methods that blended diverse roles, characteristics, sizes, and contexts to propose how public interiors may be modified in response to new tendencies in the digitisation of public services. The subsequent pandemic intensified shifts in the demand for and types of physical presence, allowing for new and enlarged uses of spaces and meanings of public services and jobs.

The third chapter (M) addresses the topic of the spatial redevelopment of abandoned structures in cooperation with the municipality of Lentate sul Seveso and with the involvement of the local administration, the principal stakeholder, and private sector players. The old military park requalification project detailed in this chapter exemplifies a concept of sustainable urban transformation based on building renovation and civic engagement. The concept offers the construction of student houses combined with multipurpose spaces for local populations to preserve the territory’s resources and history and foster educational and economic growth. It adheres to the ideas of the National Recovery and Resilience Plan, beginning with the relocation of innovative processes from large cities to smaller communities.

The fourth chapter (L) examines how spatial and technological innovation change learning environments to foster active pedagogical approaches. The future of design education will trigger new reflections due to the changing needs of users and the introduction of updated learning approaches. Moreover, the efficacy of universities revolves around the equilibrium of three fundamental elements: pedagogy, space, and technology. This chapter addresses the concept and development of four unique classroom pilot projects. Four spatial solutions to experiment with and engage all users in a participatory implementation of the University's (Engineering, Architecture, and Design) new requirements. Innovative classrooms are dispersed over the campus through a fluid multi-scalarity that connects interstitial spaces to shared spaces, thus promoting social and active learning strategies through technology.

The fifth chapter (XL) examines the synergy of several entities (physical, functional, and human relationships) that have emerged in the decision to relocate the science faculties of the Università Degli Studi di Milano to a new location – the 2015 Expo Area. Spaces can become symbolic sites of belonging for the community that inhabits them, where hopes, fresh aspirations, and future possibilities might fester and grow. Nevertheless, when confronted with a substantial change, they might symbolise their members' and potential communities' concerns and resistance. The study project conducted at the Politecnico di Milano attempted to balance the correct size of a forthcoming community based on quantitative analysis and the appropriate atmosphere due to inclusive co-design methods. The outcome was to function on a meta-design level. As a technique, the approach created a “conversation space” for future campus residents, where participants were free to disengage from current limitations and begin imagining possible alternative outcomes.

The sixth chapter (XS > XL) discusses the subject of multiscalarity in cultural heritage valorisation projects. The design field and practice have a well-established history of valuing cultural heritage, referred to as Design for Cultural Heritage. Some years later, it is given that Design-typical concepts, processes, and tools (e.g., co-design, participation, scenarios) may be successfully implemented in the cultural sector. Interaction design is no less involved in this process, and the human-centred perspective to incorporating digital technology in the cultural arena is now regarded as standard practice. Five initiatives are reviewed

critically, beginning with an interactive exhibit and progressing to a citywide interactive experience. This chapter aims to highlight the constant and variable features of the design-driven method at various intervention scales.

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2. S: Salone del Futuro: Open, Connected, and Extended: A new sense and purpose for the Chamber of Commerce of Milan

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Abstract

The “Salone del Futuro” ambitions arose from the Chamber of Commerce’s (Camera di Commercio di Milano, Monza Brianza, and Lodi) recognition that the online, digital world is increasingly changing how services are provided, constantly becoming more effective, accessible, and faster. These are features that the Chamber’s clientele are looking for, that public administrators and staff can benefit from, and that offer an opportunity to re-envision spaces, services, and systems. Hence, the Registry Office (Salone Anagrafico) in Milan’s Palazzo Turati, a symbolic space and functional base for the commercial and entrepreneurial fabric of the territory, sought to create a more open, contemporary environment that supports and facilitates contact and dialogue between the institution and its citizens. The Chamber of Commerce and Politecnico di Milano worked together with systemic and spatial co-design processes that merged multiple functions, features, scales, and contexts in proposing how public interiors can be transformed following new trends in the digitization of public services. Shifts in the need for, and typologies of, physical presence, amplified by the eventual pandemic, allowed for new and expanded uses of spaces and transformed definitions of public services and work. Since much of the digital services could address routine and simpler operations, opportunities opened for a higher order of work and engagement between the public and staff, and an extended connection to more of the public with new services, systems, and spatial typologies.

Beyond working directly with the administration and staff at the Salone, the faculty and students from PoliMi's School of Design were able to directly engage the clientele, the general public, and various professionals related to media and communication design. Specific didactic engagements included design studios with undergraduate students in Interior and Product Design, plus graduate students in the Product Service System Design (PSSD) Master's Degree program.

Interiorization of Public Domains

The concept of “interiors” as the embodiment of a new type of “public sphere” materialized in Europe between the 18th and 19th centuries as a result of the development of new commercial and industrial institutions in spaces provided by buildings, such as public administrations and local governments (Hertzberger, 1991). These spaces were used for education, tourism, production, and consumption. The development of such interiors as settings for public performances provided the city with a succession of locations at which a variety of collaborative projects could be carried out (Pimlott, 2007). As technology and the physical arrangements of management improved, public and communal activities began to be situated inside structures in increasing amounts. This “interiorization of public life” (Cicek *et al.*, 2018) illustrates how some parts of the city are in a continuous relationship with certain interiors, or, as Koolhaas (2002) refers to them, “infrastructures of seamlessness”, in which the boundaries between places are no longer clearly defined.

Salone del Futuro: A new purpose for the Chamber of Commerce of Milan, Monza Brianza, and Lodi

Since 2019, the Design Department at Politecnico di Milano and the Chamber of Commerce of Milan, Monza Brianza, and Lodi have been collaborating on research and design for the *Salone del Futuro*. Participating members from both institutions share an innovative systemic approach to rethinking the services offered to businesses, trades, and tourism constituents, as well as to the study and implemen-

tation of processes that would re-conceive and re-functionalize existing products, services, systems, and spaces to make improvements at the Chamber of Commerce.

Through this study, it was possible to investigate the concept of digital transition from a variety of angles, including possible “revolutionary” ideas as a facet of the transformation of spaces and services: as a catalyst for experience and social engagement; as a means of communication and a “blurring” of the boundaries between public institutions and the community, and to provide remote training to companies and individuals via advanced technologies.

The need for the Chamber of Commerce to redesign its Registry Office (*Salone Anagrafico*), a historic space used to promote and administer the commercial and entrepreneurial fabric of the territory, gave rise to the *Salone del Futuro* project. The goal of the project was to create a contemporary place with the purpose of enabling support and facilitating contact and dialogue between the institution and its citizens. The Chamber of Commerce is gradually migrating its physically-based services into online formats, thereby reducing the requirement for the current physical space to be used in mostly very basic and repetitive administrative operations.

The Chamber of Commerce promotes a progressive digitization of its offered services with the goal of facilitating and improving its relationship with its users and the broader community. This also facilitates important advancements and efficiencies, such as reductions in costs, optimization and simplification of processes, and improvements in the quality of the Chamber’s offered services.

As a result of the directions provided by the Chamber of Commerce, the design of the initiative for the *Salone del Futuro* needed to adhere to three primary guidelines:

- **Flexibility** and **Adaptability** including workstations and presentation spaces that need to be able to reconfigure themselves easily and quickly so that more services and activities can be provided at the same time, or updated according to new/future uses.
- **Continuity** the Chamber of Commerce needs to continue to be the point of reference when it comes to providing services that are devoted to the expansion of businesses, and to become recognized as a leader in innovative methods and content while engaging current and future technological advancements servicing its constit-

uents and the community through relevant products, systems, services, and spaces.

- **Innovation** the space needs to acquire a broader and more contemporary sensitivity, with new services and forms of technology that also engage new constituents beyond the current business community. The recent digital transition of some services, and the addition of new services, revealed the need for new and sophisticated digital media offerings, including highly mediated objects, surfaces, and spaces that can accommodate these new changes and opportunities.



Fig. 1 – Pictures of the registry office before the restoration

The PoliMi team¹, adopting the role of facilitator and sometimes mediator, brought together individuals with little-to-no design expertise to co-design spaces and services, beginning with these three design elements described above. Space-specific co-design tools, such as visual materials containing spatial schematics, an inventory of potential furnishings, and 3D models, were developed.

1. The research team: Luisa Collina, Peter Di Sabatino, Laura Galluzzo, Claudia Mastrantoni, Vanessa Monna, Ambra Borin from Design Department of Politecnico di Milano; With the collaboration of Umberto Tolino for the communication and Francesco Murano for the light design.



Fig. 2 – Pictures of the Co-Design session held in the Chamber of Milan, Monza Brianza and Lodi offices, in Palazzo Turati, Milan

The foundational base of the research and design included “Open, Seamless, Extended, and Connected” as the principle keywords and concepts for the specific project internally, and importantly, to the immediate and broader (external) context and communities. These key ideas and key words were present and served as drivers for all partici-

pants involved with envisioning the Salone del Futuro throughout its process. The research started in 2019, but experienced numerous interruptions in development and implementation due to the Covid emergency, especially in 2020. However, the new spaces of *Salone del Futuro* opened in October 2021.

In November 2021, during the conference “The Hybrid Age – Dialogues for Enterprises on the Eve of a New Era”, held in the newly inaugurated *Salone Futuro*, Carlo Sangalli, the President of the Chamber of Commerce of Milan, Monza Brianza, and Lodi, declared that the time had come to make a qualitative leap in three major areas: digital, environmental, and administrative. In his speech, he stated that digital transitions play a crucial role in reviving the nation’s economy, which has a positive effect on the competitiveness of Italian businesses. He felt that the new *Salone* (hall) of the Chamber of Commerce encompassed these three transitions.

Adoption of innovative technologies broadens the scope of available digital services and is consistent with the European “green deal” objectives of sustainability and zero climate impact. One of the salone’s main attractions is the new “hybrid human and digital counter system”, which, thanks to advanced organizational processes, enables services that are even more effective, quick, transparent, and accessible to all.

During the same conference described above, Elena Vasco, General Secretary of the Chamber of Commerce of Milan, Monza Brianza, and Lodi added that “among the objectives of the Salone del Futuro is the aim to attract new users; and not only those who come to do an administrative practice, but also those who, for example as in this case, come to listen to a conference session, or to learn more about how to launch a business, or for the first time approach a range of digital activities”.

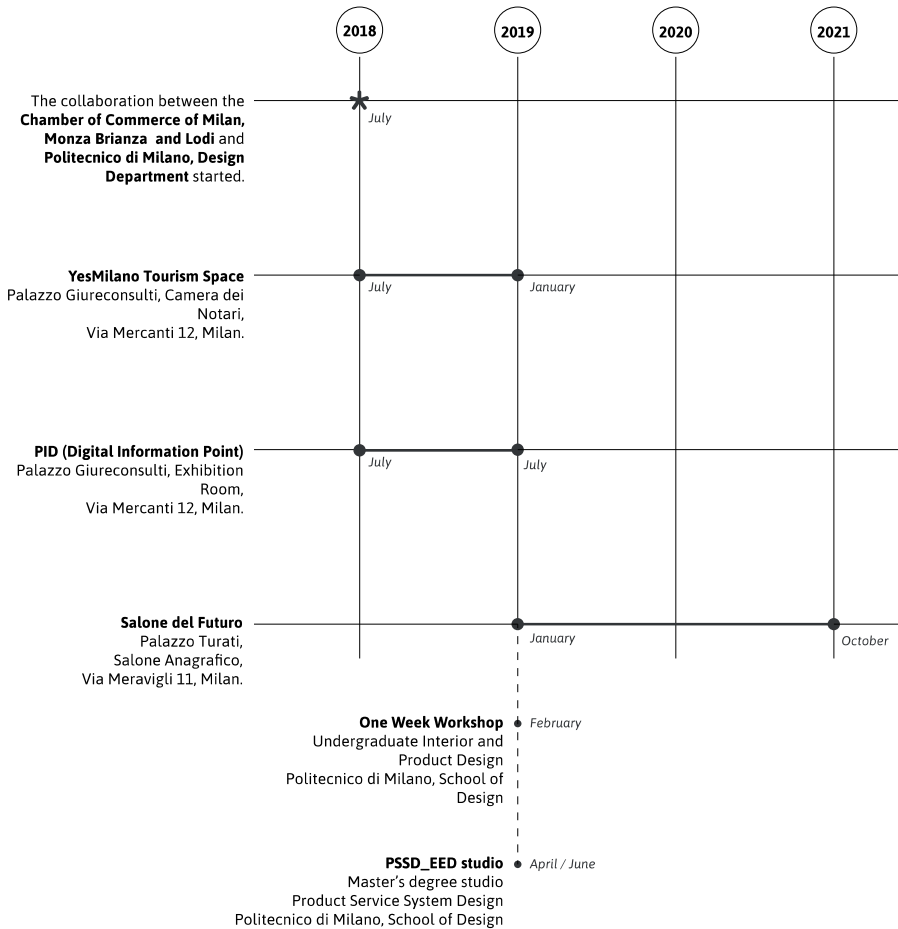


Fig. 3 – Timeline of the scientific collaboration between the Chamber of Commerce of Milan, Monza Brianza and Lodi, and Politecnico di Milano, Design Department. Three main research projects: YesMilano Tourism Space and PID at Palazzo Giureconsulti, and Salone del Futuro at Palazzo Turati. Two didactical engagements for the Salone del Futuro project: one-week intensive workshop and two-months studio, at Politecnico di Milano, School of Design

The Didactic Engagement: Salone del Futuro – Connecting Commerce

Several phases of investigation and effort led to the successful implementation of the project, including the following phases:

The 1st phase included preliminary investigations, the analysis of the Chamber of Commerce administrators' and customers' spaces, services, functions, and their requirements.

The 2nd phase included the gathering of all available resources and the planning of project research activities.

The 3rd phase included field research consisting in the very first instance of interviews with current users, and ethnographic observations.

The 4th phase included Co-Design activities that comprised the “heart” of the investigation. These activities intended to develop primary design solutions for services and user experience based on the concepts of stakeholders.

In the phase of concept generation, undergraduate students in Interior Design and Product Design, of the School of Design of Politecnico di Milano were involved². The phase focused on the analysis of the space's present condition and the development of initial working concepts, assumptions, and strategies from the perspectives of Interior Design and Product Design, with particular attention to the design of furniture and opportunities for interaction³.

In a more advanced and detailed stage, fifty international graduate students in the Product Service System Design (PSSD) Master's Degree design studio at Politecnico di Milano's School of Design were asked to work from a more developed and structured co-designed brief. They focused on the systematisation and preliminary design development of the first results, while identifying and finally selecting the most promising project guidelines while developing the design proposals in a more comprehensive manner.

2. Intensive one-week workshop at Politecnico di Milano, School of Design, led by Prof. Peter Di Sabatino, and Claudia Mastrantoni as Teaching Assistant, entitled “Salone del Futuro: Connecting Commerce”.

3. Selected excerpts from this intensive design workshop can be found in Di Sabatino, P.A. (2020) (more). *SoftAssertions: A Progressive Paradigm for Urban Cultural Heritage, Interior Urbanism, and Contemporary Typologies*. In *Cultural, Theoretical, and Innovative Approaches to Contemporary Interior Design* (pp. 315-354). IGI Global.

The students were tasked with expanding their knowledge of the previous state of the Salone Anagrafico in terms of services offered, as well as formulating initial working hypotheses from the perspective of service and spatial design, with a systemic orientation and a global perspective. Specifically, the type of content and requirements of the registry office, a compilation of national and international case studies, and the initial hypotheses of design concepts for services and user experience were analyzed and developed.

The April-June 2019 studio examined how environment and experience design can merge with Product Service System Design (PSSD) to create an understanding of how place, space, and experience can be potent and memorable elements of a comprehensive product service system design strategy. In other words, how does PSSD affect or influence spatial design, and how does space, location, and spatial environments and experiences affect or influence PSSD?

In addition to typical and perhaps novel PSSD processes and outcomes, the studio investigated the relationship between PSSD and spatial design, which could be expressed as PSSD_EED (Environment and Experience Design). The studio included physical and digital modeling, inclusive of drawing and diagramming, merging with sketches and immersive renderings to articulate the intended environments and experiences, and further demonstrating the relationship and dialogue between PSSD and spatial design, and how the design of environments and experiences can be an influential component of a comprehensive product system service design proposal.

The conceptual framework:

OPEN_transparent, light/lightness, layered, de-material

Within the studio key words, key concepts, and key strategies served as an operational context and as project drivers. These key concepts can be summarized under the broad concept and strategy of “Open or Openness”, and perhaps accompanying tactics engaging transparency, light/lightness, layering, and maybe even de-materialization.

The semi-public, administrative area of the Chamber of Commerce's registry office has been an interior space of about 1500 sqm hosting and providing various services to more than 4000⁴ visitors per month in Palazzo Turati since 1954. Built around 1875, the palazzo's central location in Milan provides a perfect location for international and Italian businesses to interact within a formal setting. Over a thousand events of all types are held at the building each year, including gatherings, seminars, conferences, workshops, formal banquets, talks with representatives, training sessions, new product debuts, displays, fashion shows, showcases, performances, and film sets.

The aim of the design project was to open these spaces, and hence also a significant piece of architectural and cultural heritage, with newly transformed services, systems, and products to articulate a more contemporary and "open" sense of Milan and its transparency and accessibility to all. Hence, "openness" is an all-embracing attitude and manifestation for both the Chamber of Commerce and the city at large:

- open to hybridization of functions: to be open to new programs, to several activities and functions means to be more attractive to the rest of the community, to new actors, and not just to those related to public administration.
- open as accessible and permeable: compared to a public open space, accessibility to a public interior may at times be restricted for practical reasons: they are surrounded by walls and entrances, which are often closed at night or on weekends, and since the definition of accessibility and permeability include the ability to enter a space without hesitation or effort (Poot *et al.*, 2015), the idea is to create a more seamless environment that enables a broader community to enter more freely into these spaces.
- open spaces and lightness: before the restoration the Salone inner spaces had little value in terms of illumination, acoustics and the distribution of elements in space, including waiting spaces.

4. This data goes back to the Chamber of Commerce's internal analysis of the 2018 registry hall space turnout. Data that were shared with the group of researchers from the Politecnico di Milano, Design Department, and later with the students of the two courses, as preliminary documents.

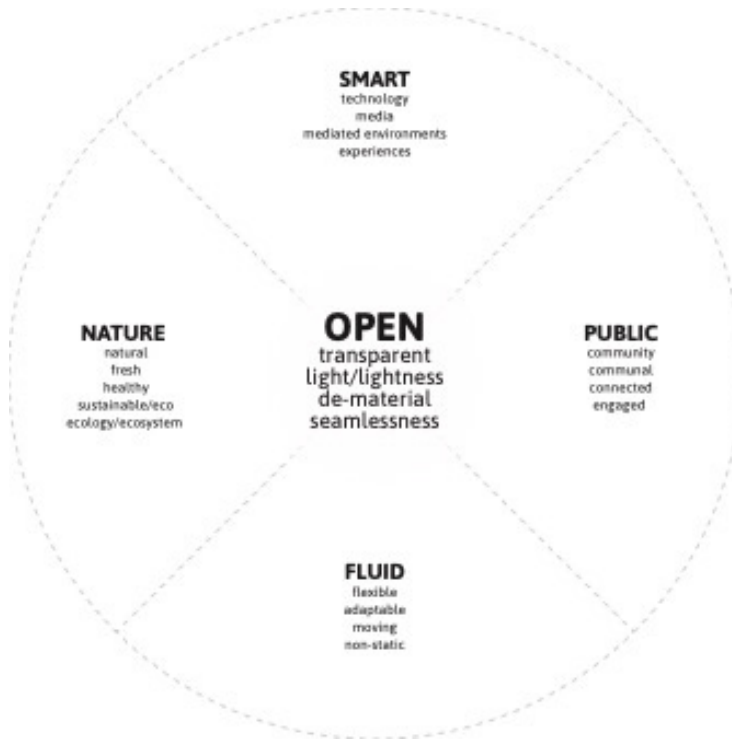


Fig. 4 – Area of study diagram: Product Service System Design_Environment and Experience Studio (PSSD_EED), from April to June 2019, entitled “Salone del Futuro: Connecting Commerce”, led by Prof. Peter di Sabatino, Prof. Stefana Broadbent, Prof. Laura Galluzzo, and Ilaria Bollati, Claudia Mastrantoni and Vanessa Monna as Teaching Assistants

Student’s outputs: four areas of study

The studio was composed of fifty students divided into eleven groups to produce diverse proposals of stand-alone services and systems and/or new or transformed services and systems intimately entwined with products and spaces. In this essay, student work has been selected and grouped according to the conceptual framework of “openness” which contains four main sub-categories: FLUID – flexible, adaptable, moving, non-static; PUBLIC – community, communal, connected, engaged; SMART – technological, mediated environments and experiences; NATURE – natural, fresh, healthy, sustainable, ecological.

- **FLUID – flexible, adaptable, moving, non-static**

Anchoring empowerment processes, political capabilities, and social engagement, the revitalization of underused public buildings through cultural and creative activities and enterprises is becoming a readily available and approachable resource for a variety of subjects and communities. Especially since 2020, the impacts of the epidemic caused by the Coronavirus have strengthened the requirement for the creation of an environment that is more adaptable, which Sennett (2016) refers to as “open urbanism”. In this respect, “hybrid spaces” of urban experimentation and social integration achieved through culture and innovation have the potential to play an important role.

As an example, the Municipality of Milan, from 2012, started to create a digital registry specifically committed to this type of socio-cultural innovation. It is a tool for tracking the existing conditions throughout the city called *Rete Spazi Ibridi*⁵ (Hybrid Spaces Network), with the objective of evaluating them and establishing their societal influence as well as the impacts that urban revitalization may have. It combines social innovation, cultural activities, and new forms of commerce, sociality, and aggregation through the rehabilitation of abandoned structures and metropolitan areas.

As the first example among the interpretations of PSSD_EED studio, the student project entitled *INHUB*, offers a service that creates a dialogue between experienced companies and local hubs to become a territorial touchpoint for business training. The ultimate goal of *INHUB* is to create a cycle where rising businesses, research departments, and all of the actors of business innovation can maintain high quality standards to become business leaders in the future.

5. *Rete Spazi Ibridi della Città di Milano – Comune di Milano* (2022, February 4). <https://economiaelavoro.comune.milano.it/progetti/rete-spazi-ibridi-della-citta-di-milano>.



Figs. 5-6 Images from “INHUB” project, by Lu Ming Keng, Jin Young Jae, Vaccaro Daniela, Sacchetti Nicole, Mayer Paul Richard. Product Service System Design_Environment and Experience Studio (PSSD_EED), 2019, Politecnico di Milano – School of Design



Figs. 7-8 Images from “La Casa del Commercio” project, by Amendolaggine Guido, Sokolikj Milosh, Michelini Bianca, Nunziata Federico, Baj Chiara. Product Service System Design_Environment and Experience Studio (PSSD_EED), 2019, Politecnico di Milano – School of Design

The hub, in this context, is seen as an element able to catalyse the dissemination process, through the variety of its stakeholders. In the spatial configuration of this service, the students envision the hub as a fluid space, made by common ground of informal social

space where people can freely work and dialogue, dotted with more closed elements, placed on different levels, where meetings take place in a more private, although still collective and collaborative, manner.

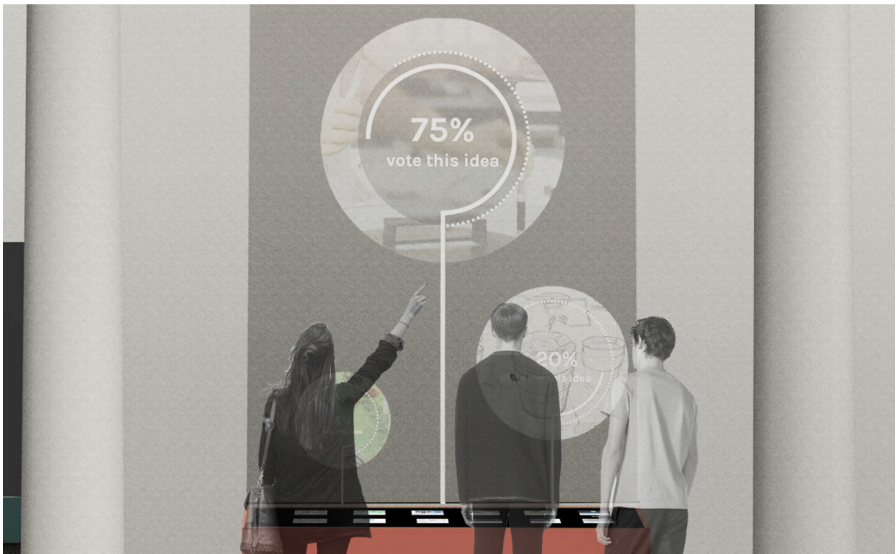
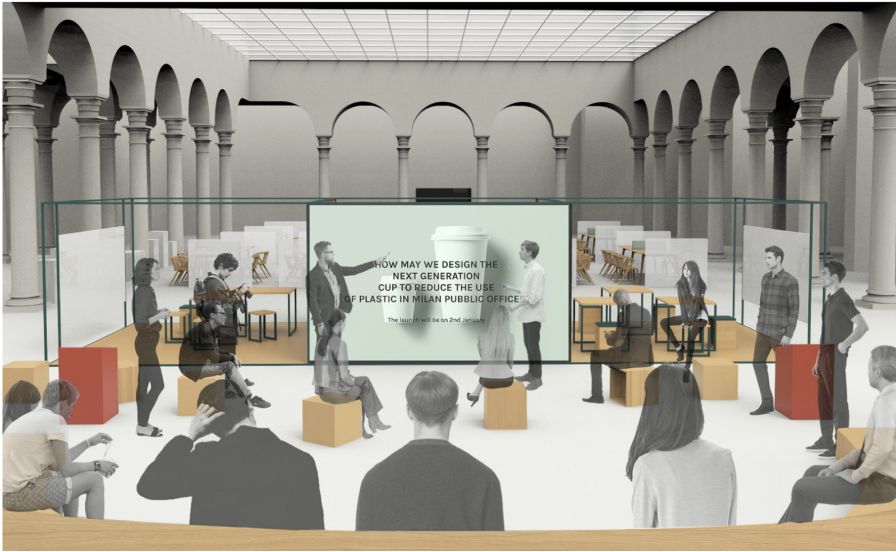
Another example among the interpretations of the students in the context of fluidity and the idea to build hybridity is the theme of the Chamber of Commerce as the *Casa del Commercio* (Home of Commerce). The domestic adjective applied to the administrative context implies the need for a more accessible model, at everyone's reach, and where one can "feel at home".

To transform the Chamber into a "home", the students in this team centered their services around family and care (both for others and for oneself), two of the most important characteristics of a home. The "Casa" employs a family of actors, each with a distinct role. The small business proprietors are placed at the center of a support network consisting of Casa personnel and representatives of the four organizations that grew out of the Chamber of Commerce. The project's objective is to create a nurturing environment for the dwellers who "inhabit" it.

- ***PUBLIC – community, communal, connected, engaged***

"Contemporary Architecture still attributes its own foundation to the acts of building, constructing visible spaces; metaphors limited to a single building and single typologies, and does not take the opportunity to represent a dispersed, inverted, and immaterial urban condition" (Branzi, 2006).

Today's expanding cities have reshaped their relationships with public places, but only a few public spaces today satisfy the criteria for being considered "public" despite new modes of communication and social interaction that have emerged. Indeed, the new digital dimension has created new design opportunities in areas leaving behind a spatial heritage that has to be reallocated. Now, more and more, physical touch-points are intended to attract or support new and developing activities. These places, identified in 1999 by the sociologist Ray Oldenburg as "third places" (where first places are homes, and second places are workplaces) serve as "anchors" for communal life, facilitating and fostering more expansive, creative connections.

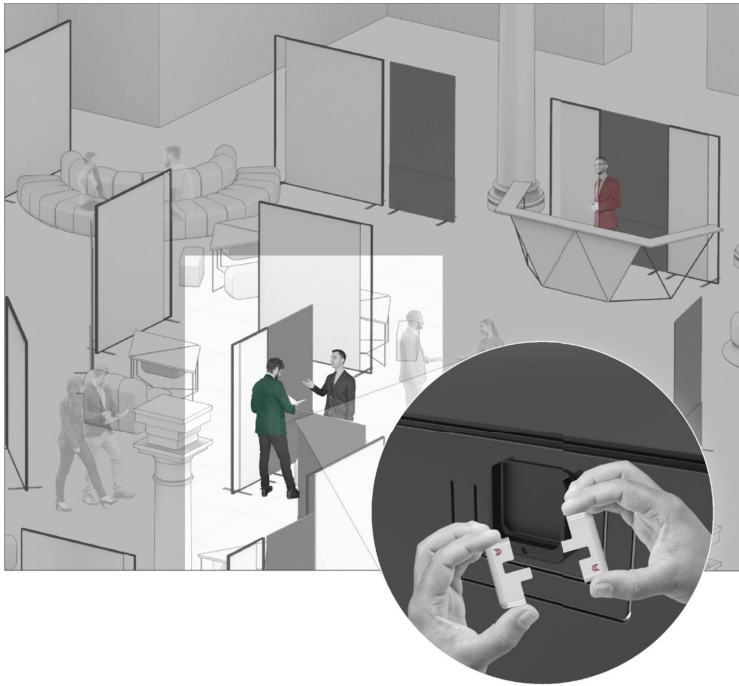


Figs. 9-10 Images from “Phub” project, by Nguyen Hoang Lan, Wan Xiaoqing, Stanga Margherita, Ritella Carlotta, La Grasta Rosanna. Product Service System Design_Environment and Experience Studio (PSSD_EED), 2019, Politecnico di Milano – School of Design

The student's project entitled *Phub* enhances the communal manner through the concept of cross-fertilisation. The idea beyond their project is to bring people together, making peer-to-peer activities, allowing diverse knowledge and skills to influence each other, and triggering employees into different ideas and new ways of thinking. *Phub* also fosters functions related to the enhancement of cultural heritage and the development and promotion of tourism. In their proposal, the growth in the market is connected to the stimulus for many companies to start new experiences, inserting managerial teams of people with different backgrounds, identifying best practices, and transferring them within the organisations. In their spatial configuration they envision the *Arena* as the heart of cross-fertilization and where ideas can be shared and developed in co-learning actions. It is a new semi-circular area where conferences, conventions, and more informal interactions can take place. It is reminiscent of the forms and activities of the *Roman Arena*. In fact, Milan's historic Roman Arena, an area of about 450 sqm, is within the underground spaces, and directly below the new arena, of Palazzo Turati, which, in agreement with the Superintendence for Archaeological Heritage of Lombardy, offers the public the opportunity to be visited with advanced reservations.

- ***SMART – Technological, mediated environments and experiences***

The profound impact of technological advancements and digital transformation on our daily lives is evident in the way we conduct ourselves, our behaviors and practices, and our perception of our environment (Castells, 2000). Due to their ability to streamline daily activities and facilitate tasks, technology has become an integral part of our lives, leading to a dependence on its services that both satisfies and generates our demands (McLuhan, 1964). Upon further elaboration, it can be posited that a shift in the role of technology has been observed, whereby its focus has rapidly transitioned from problem-solving to the fulfillment or elevation of needs (Hassenzahl & Tractinsky, 2006). Adopting a user-centric approach, advancements in technology have facilitated the dissemination and accessibility of information, significantly transforming our literacy practices (Jenkins, 2006).



Figs. 11-12 Images from “CdC Care” project, by Yu Ching-Chun, Penaranda Trillos Ivan Ernesto, Fu Chelsea, Dell’oro Anastasia, Scrignar Elisa. Product Service System Design_Environment and Experience Studio (PSSD_EED), 2019, Politecnico di Milano – School of Design

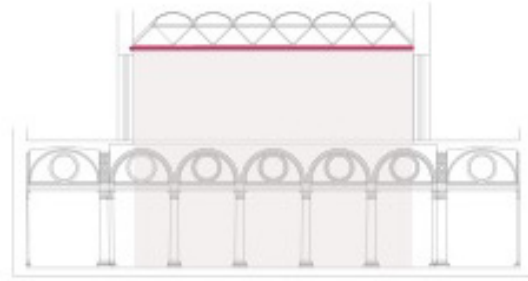
One possible use of smart technology is interpreted by the project named *CdC Care*, intended as a “smart hug”. *CdC Care* wants to let the clients know it’s there for them. This care is represented by one of the closest human interactions, the hug. Hugs are used as an expression of warmth, kindness, and friendliness; and they provide a sense of intimacy. *CdC Care* wants to replicate this feeling for the clients and make them feel important and looked after. *CdC Care* adopts a human-centered approach, with the whole system revolving around the client. The client has access to an online platform, available through app and website. The data collected by the platform is used to provide customized services. The staff dispenses knowledge, while the client provides useful data on services through various feedback loops. External partners also contribute their expertise, promoting themselves and reaching a wider audience at the same time. The space provides a flexible environment for services that interact with a newly designed *CdC Care* keycard device. This product enables online and offline seamless connectivity and facilitates the client’s interaction with the space and other companies beyond the space. The key replaces the other tokens previously used for digital signature and identity, and triggers interactions with the different digital interfaces in the system.

- ***NATURE – Natural, fresh, healthy, sustainable, ecological***

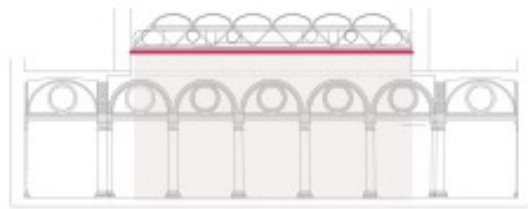
“Nature” typically refers to physical features and processes of nonhuman origin that people may be able to perceive, including, for example, the quality of air, weather, and landscapes. Nature is often situated and simulated in built environments, as with indoor plants and trees. Similarly, community gardens and urban parks comprise natural features, appear ‘natural’, and provide opportunities to engage with and follow natural processes, but they are typically designed, constructed, regulated, and maintained by humans (Hartig *et al.*, 2014). They are ultimately human constructs.

One of the natural elements that was given greater emphasis within the *Salone del Futuro* project was light and its adaptation into space. Due to various adaptive interventions, the registry hall includes an added roof/ceiling assembly that has undergone numerous transformations over decades (the court was originally open to the sky), including major projects elaborated by well-known architects: the first design

1929/1931 - Progetto Mezzanotte



1954 - Progetto Castiglioni



Current

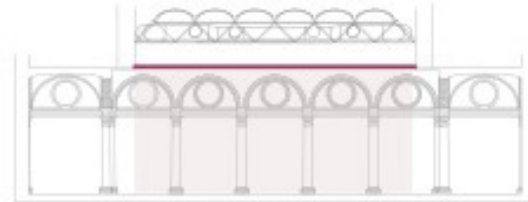


Fig. 13 – Diagram of the ceiling transformations during the years: starting from Progetto Mezzanotte 1929-1931, passing through Progetto Castiglioni 1954, to the current state of the ceiling which include also the renovation made during the Salone del Futuro lighting system project, made by the light designer Francesco Murano. Drawings made by the authors

intervention, *Progetto Mezzanotte*, is from 1929/1931 when the hall was configured as a full-height space with balconies looking toward the center and covered by a metal and glass ceiling/roof assembly that allowed natural light and air to flow into the interior. The *Castiglioni Project* of 1954 transformed the hall to no longer be full-

height; it but *was* lowered by a new glazed ceiling. In later years the glazed ceiling was replaced by an opaque construction, completely eliminating the inclusion of natural light inside the offices and the central hall⁶.

The design of the *Salone del Futuro* in the students' proposal, *Greenhouse of Commerce*, involved restoring the 'idea' of natural lighting through the use of artificial light fixtures (and mediated possibilities in some other proposals), which simulate a natural luminous opaque sky, so as to restore environmental comfort within the new spaces. *Greenhouse of Commerce* is an example of a project that prioritises the importance of nature, not only as a non-human element but also as a concept on how nature can be used as a metaphor into a company lifecycle. This metaphor translates to aspects including how we can take care of companies, clients, and communities, and how we may find new fertile ground, sustain the new buds, and possibly graft new companies and opportunities.

6. Perhaps a note on the exclusion of extensive restoration or new construction of the ceiling/roof assembly in the Salone del Futuro is relevant, and may serve as a possible soft, well-intended, criticism on 'experimentation' (see remarks in the conclusion below). While budget and time constraints may have prohibited the restoration of the earlier versions – or a completely new proposal – the lost opportunity of re-valoring the space and palazzo in this instance is unfortunate for many reasons. There are the obvious historical and heritage aspects, but also ecological, environmental, spatial, and technological aspects as well... and the fusion of old and new. With current materials and technologies available, the space would not have only achieved its former, and formal, beauty and significance, but would have become an additional public icon in Milan, the economic and design engine of Italy, as both the new heart and soul of the Chamber of Commerce and a new 'open' place and venue for the city and its citizens. But of course, there can be future stages and budgets to develop the project, as this too is a process, and a part of a robust culture of change, innovation, and experimentation. Perhaps an incremental strategy of development is best, especially in light of the difficult circumstances of the project due to the Covid pandemic and limitations in budget and time... and perhaps a possible conflict with the focus on digital transformations driving the project. Sequentially, this could become a "Phase Two" project that could focus on greater public involvement within the spaces after verifying the benefits of the first round of transformations.



Fig. 14 – Image from “Greenhouse of Commerce” project, by Liu Qianyu, Crippa Federico, Tang Xiaojuan, Bosetti Silvia, Zhou Yifan. Product Service System Design_Environment and Experience Studio (PSSD_EED), 2019, Politecnico di Milano – School of Design

Recent Evolution of Technologies and Digital Transitions in the Italian Context of Public Administrations

A confluence of factors had dampened Italy’s ability to capitalize on the many opportunities offered by the digital revolution in general, with the Salone del Futuro offering a clear alternative case study. For example, Italy has experienced relatively lower rates of productivity and economic growth in comparison to other European nations. In the year 2020, the Gross Domestic Product (GDP) of Italy dropped by 8.9 percent, which was much more than the 6.2 percent drop that occurred in the European Union. This particular drop was compounded by the COVID-19 pandemic and Italy’s specific relationship to the very early years of the pandemic. The first round of local lockdowns started in February of 2020, and in March of that year, Italy became the first member state of the EU to implement a widespread lockdown. The resultant lag from inadequate productivity and performance has been problematic in many ways, including the absence of sufficient ability to address infrastructural needs and desires overall. Additionally, the nature and structure of the productive fabric of Italy,

which is characterized by a prevalence of small and medium-sized enterprises, has been another contributing factor. These businesses have traditionally been slow to adopt new technologies and to transition towards production with higher value-added content.

However, progress has been made, and at the beginning of the year 2023, additional inputs have emerged. A new program, the European Union's Next Generation EU (NGEU), has been created in response to the pandemic. It is a significant effort in terms of magnitude and intentions. It will provide funding and changes to accelerate and advance, among other things, digital shifts and worker training. Italy understands the opportunities of the NGEU initiative in terms of potential growth, investment, and modernization. And, in fact, Italy is the first country to get assistance from the NGEU's two main tools: the Recovery and Resilience Facility (RRF) and the Recovery Assistance Package for Cohesion and European Territories (RAP). (REACT-EU). The RRF asks member states to come up with a plan for investments and reforms called the National Recovery and Resilience Plan (PNRR). The plan's goals include technology, innovation, economy, culture, and tourism.

More specifically, this plan demonstrates that Italy's efforts towards change and advancement are aligned with the three European strategy axes: digitalization and innovation, ecological change, and social inclusion.

Digitization and the creation of processes, goods, and services are important components of Italy's advancement. In this area, Italy still has significant work ahead, but this also includes much potential in terms of the use of digital technology in industry and public services. Filling this gap and spending more in digital technologies, networks, and processes will help make Italy and Europe more competitive. It will encourage the development of strategies for diversity, and make them more adaptable to changes in the market and society at large.

The Digital Transition is a digital revolution at the least, and Italy has made significant progress recently; however, it still lags in terms of digital adoption and technological innovation. In 2022, Italy was ranked 18th out of the 27 EU Member States (up from ranking 25th in DESI 2017) on the Digital Economy and Society Index. Promisingly, the Italian government aspires to make Italy a leading country of the European Commission's new Communication "2030 Digital Compass"

Goal. It strives to create a fully digital society by 2030. So, the PNRR is full of technology and innovation intentions, actions, and goals, and things are improving.

Conclusions

The *Salone del Futuro* and its project team of researchers, designers, practitioners, and students, demonstrates the multidisciplinary aspect of the design system, while maintaining a robust, comprehensive and holistic approach merging product, system, service, and spatial design features, and also including graphics/communication design, experience design, interior design, and lighting design, in a transdisciplinary manner. The Chamber of Commerce and Politecnico di Milano teams worked together with systemic and spatial co-design processes that merged multiple functions, features, scales, and contexts in proposing how public interiors can be transformed, particularly provoked in this case by new trends in the digitization of public services. These efforts and processes also helped to develop the relationships between Product, Service, System Design (PSSD) and Spatial Design (including interiors, architecture, and urban design), and to bond these two disciplines with other professions. This occurred, for example, in the participatory sessions and project scope created, and therefore fostered a merging disciplines and typologies, while blurring typical disciplinary and professional boundaries.

The “Digital Transition” trend will lead to growth and transformation opportunities for public administrations and public spaces. With increases in online, digital services and systems, fewer people will need to go to government offices in the same manner as before, and therefore there will be increased opportunities to use those spaces in diverse and improved manners for the community. The previous registry office, and its spaces renovated as *Salone del Futuro* are not an exception. In the future we could experience more and more digitalization and transformations in both tangible and intangible domains of PSSD and spatial environments. Indeed, it is likely that we will see an increasingly necessary renaissance of even more potent tangible elements and a heightening of the physical experience. Services and systems transform, and environments remain, even along with their

stories and memories. As we have seen from examples tested in the PSSD_EED studio, space can manifest itself in different forms according to service transformations at times.

The project and process also had various collateral and transversal benefits, including that manifesting positive change may assist in efforts to establish a culture of innovation and experimentation. By direct demonstration of, and commitment to, infrastructural and technological developments that provide positive transformations, there is tangible evidence of embracing and fostering an open, participatory environment and culture of change and innovation. Executing a project based on transformative processes and actions demonstrates real commitment beyond intentions and words. It underlines the possibility of tangible benefits through real actions, especially moving from a banal and bureaucratic environment of impersonal and distant ‘sportelli’ glass-windowed counters that diminished and degraded public engagement, integration, and value. This is magnified further as the benefits also include the ecology and environment; the buildings and its spaces; and the staff, users, and broader community. Additionally, the project contributes to the collection of “best practices” and “case studies” in the typology of Public Administration spaces and buildings. The process itself, hence, helps to construct cultures of change, innovation, and experimentation at the Chamber of Commerce and in the city. There are signs, signals, and actual physical manifestations that the government is increasing accessibility, diversity, inclusion, and transparency in a positive, progressive, and proactive manner for the benefit of all.

The design process, in the Salone del Futuro, and consequently, its didactical outputs, is advantaged by a multi-scalar approach: from small-scaled objects and products such as smart totems and terminals to larger-scaled surfaces such as media monitors and smart mediated walls and screens that not only increase in scale but also in impact and spatial effect, to the scale of larger spaces and spatial conditions. At the same time, the adaptive reuse process related to the architectural and cultural heritage of the *Salone*, brought another new life to Palazzo Turati inner spaces, also bonding a broader community and fostering seamlessness from the public interior into the rest of the urban context, into the city.

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Interior design is less and less reduced to the mere physical component of space and is instead increasingly projected towards an 'environmental system' made up of space, services, communication, and technology, capable of illustrating a multi-scalarity and trans-disciplinarity typical of a project devoted to innovation. This change of focus, from the prevalence of the interior physical component to the dominance of a polyvalent system, has generated a series of changes, including those affecting the project's area, which shows a progressive rise of the informational-cognitive component where the control of the net of human interactions involved becomes extremely important.

The volume collects various design experiences carried out within heterogeneous research groups and talks about experiments in the design of spaces and services on a different dimensional scale and that have impacted different types of users.

Through the recounting of these experiments, the book highlights the close interconnections between the design of spaces, the creation of services, the application of communication systems, and the exploitation of technologies, allowing us to reveal the tensions and interactions that are unleashed depending on the prevalence of one or another design discipline and the scale (from XS to XL) at which they take place.

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