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The Sant'Agostino Complex in Pietrasanta

Adaptive and integrated strategies for sustainable reuse

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Abstract

The adaptive reuse of the Sant'Agostino complex in Pietrasanta represents a virtuous example of how historical and architectural heritage can be regenerated in a contemporary way, placing universal and multisensory accessibility at the center of cultural welfare and social inclusion. Situated within the urban fabric of Pietrasanta, an increasingly recognized hub for international artists and an open-air museum, the project enhances the site's identity while responding to the growing demand for inclusive cultural spaces. Currently hosting the Civic Library, the Museo dei Bozzetti, conference rooms, and municipal offices, the complex is reimagined as a multifunctional cultural center open to the community. The intervention focuses particularly on the cloister, transforming this former monastic space into a fully accessible and immersive environment that preserves its historical value while extending usability to all users, including people with physical, sensory, and cognitive disabilities. The design strategy includes coordinated interventions aimed at overcoming architectural and sensory barriers, while respecting the historical and monumental context. Solutions include tactile pathways, gently sloping ramps, and elevators integrated harmoniously into the existing architecture. These are complemented by multisensory signage systems combining visual, auditory, and tactile elements to ensure intuitive and independent navigation.
The project adopts a multidisciplinary approach involving architects, accessibility experts, art historians, and technologists to guarantee an inclusive design process. Advanced digital technologies further enhance the experience, enabling new forms of interaction with the space and improving both physical and digital accessibility. Overall, the project seeks to make the Sant'Agostino complex fully accessible, transforming it into a cultural landmark at local and regional levels, in line with Tuscany's heritage enhancement policies. The cloister thus becomes a place where historical memory and contemporary innovation coexist, and where architecture promotes equity, cultural enrichment, and community engagement.

Keywords: Reuse, Accessibility, Cultural Heritage

Introduction

The Sant'Agostino architectural complex, located in the historic center of Pietrasanta (Lucca, Italy), constitutes the symbolic and topographical core of the so-called "Little Athens of Versilia." Embedded within the consolidated urban fabric, it represents a significant example of regional religious and conventual architecture, comprising the church, cloister, and monastic spaces, currently repurposed as a cultural and museum hub.

Founded in the 14th century by the Augustinian Hermits, the complex has undergone a long process of architectural and functional stratification, including phases of expansion, suppression, adaptation, and restoration. These transformations define its high historical and material complexity and qualify it as an exemplary case of urban continuity and adaptive reuse of monumental heritage. The facility is protected under Legislative Decree 42/2004 (Italian Code of Cultural Heritage and Landscape) and falls under the authority of the Soprintendenza Archeologia, Belle Arti e Paesaggio for the provinces of Lucca and Massa-Carrara. It currently hosts cultural and museum functions, including the Museo dei Bozzetti, the Civic Library "Giosuè Carducci," and the Cultural Center "Luigi Russo," and accommodates exhibitions and public events within the church, the Sala Annunziata, the cloister, and the Barsanti Garden, the ancient friars' orchard.

The ongoing project aims to enhance universal accessibility and the usability of architectural and museum spaces for all users, regardless of physical or sensory conditions, through compatible, reversible, and clearly distinguishable design solutions integrated with innovative technologies, while preserving the historical and artistic integrity of the complex. The design approach adopts a contemporary yet context-sensitive architectural language and implements assistive technologies and multisensory pathways, with the objective of reinforcing the cultural and social role of Pietrasanta as a "City of Inclusive Art." These interventions are supported by the "Universal Accessibility" program of the Tuscany Region and the National Tourism Fund (FUNT) promoted by the Italian Ministry of Tourism.

The knowledge phase represented a fundamental component of the project methodology, based on an integrated framework combining direct and indirect investigations aimed at interpreting the monument as a material-historical document. Research activities included archival and bibliographic analysis for reconstructing the site's evolutionary history; geometric and material surveying through terrestrial laser scanning and photographic documentation of interior and exterior surfaces; characterization of historical construction systems and analysis of masonry textures and decorative apparatus; and multidisciplinary data integration enabling cross-validation among heterogeneous sources of evidence.

The integration of these knowledge domains enabled a multilayered interpretation of the monument, conceived not as a static representation of authenticity but as an evolving organism shaped by successive constructive and deconstructive processes. Within a conservation-oriented framework, the project aims to preserve the physical, functional, and material integrity of the architectural system, while recognizing transformation as an intrinsic component of its cultural continuity.

Context and Historical Development

The Sant'Agostino complex exhibits a high degree of historical and architectural complexity, resulting from the coexistence of multiple construction phases, the material quality of its masonry, and the succession of civic and religious functions over time. It represents a significant example of religious and conventual architecture in the Versilia region, comprising the church, the cloister, and former conventual spaces, now adapted to cultural and museum uses.

Its historical evolution reveals a marked architectural and functional stratification. Founded in the 14th century as a settlement of the Augustinian Hermits, the complex underwent

continuous processes of expansion, modification, suppression, and adaptive reuse, making it an exemplary case of urban continuity and monumental reuse. Documentary evidence attests to the presence of the Augustinian friars in Pietrasanta from the late 14th century: the construction of the Church of Santa Maria Annunziata (then Sant'Agostino) can be dated between 1320 and 1380, within a broader phase of urban and architectural development influenced by Lucca and Pisa contexts.

The church follows a single-nave plan with a flat apse, typical of mendicant architecture in central Italy. The marble façade, in white Apuan stone, is articulated by three blind trilobed arches in a late Gothic idiom, with an upper section characterized by hanging arches and moulded cornices. The bichromate contrast between marble and brick enhances the façade's visual articulation. The interior is characterized by restrained decoration and preserves funerary slabs associated with local noble families.

The convent, constructed after the church and expanded between the 15th and 16th centuries, is organized around a quadrangular cloister with a marble peristyle. A land register of 1561 documents the presence of courtyards, gardens, and enclosed agricultural areas, while indicating the absence of the current bell tower. A plan from 1635 provides detailed information on the functional layout and attests to the definition of the Renaissance cloister, later modified by the addition of columns, as suggested by 17th-century frescoed lunettes.

Further interventions occurred between the 17th and 18th centuries, including the construction of additional structures and the erection of the present bell tower in 1780. These changes reflect a progressive rationalization of the complex's spatial organization.

Following the Napoleonic suppressions (1810), the complex was converted to educational uses. In the 19th century, significant transformations adapted the former convent to public school functions, including structural consolidation works due to subsoil instability.

In the 20th century, restoration campaigns addressed damage caused by the 1920 earthquake and World War II. Since the late 1970s, the complex has been progressively repurposed for cultural functions, housing a cultural center, a municipal library, and the Museum of Sketches "Pierluigi Gherardi," established in the 1980s and notable for its focus on contemporary sculpture. Recent interventions (2023–2024) have included the restoration of the Sala dell'Annunziata, conservation of the cloister's frescoes and wooden elements, and rehabilitation of the marble façades and perimeter walls.

Critical Issues Related to Physical, Sensory, and Digital Accessibility

Despite the high historical, artistic, and cultural value of the Sant'Agostino monumental complex, the current-state assessment reveals several critical issues concerning physical, sensory, and digital accessibility. From an architectural and usability perspective, both indoor and outdoor spaces are characterized by significant level differences and irregular paving, often in stone or non-uniform historic materials. These conditions hinder access for individuals with reduced mobility or wheelchair users, while the absence of continuous barrier-free routes further limits overall usability.

At present, the only device available to overcome level differences between the exterior and interior spaces is a small ramp located on the west side of the church. However, this access is available only during exhibition openings and does not allow independent connection to other areas of the complex due to the presence of multiple internal level changes. An alternative path is provided via the secondary entrance on Vicolo Lavatoi; nevertheless,

this route also fails to ensure autonomous accessibility for people with disabilities. Inside the complex, a stairlift connects different levels, but this system is insufficient to guarantee safe and independent access to all spaces. Furthermore, there is a lack of handrails, lifting platforms, and ramps complying with current regulations on the removal of architectural barriers. Additional critical issues concern sanitary facilities, which are not accessible in terms of dimensions, manoeuvring space, or specific equipment (e.g., grab bars, raised fixtures, tactile signage). Internal signage is also inadequate, both in terms of graphic legibility and the absence of inclusive systems such as Braille labels, chromatic contrasts, and tactile maps. Moreover, the complex lacks multisensory pathways capable of enhancing the visitor experience for users with visual or hearing impairments. From a digital and communication perspective, there are no accessible technological tools, such as virtual tours, adaptive audio guides, sign language (LIS) videos, or accessible multimedia content, which could significantly expand access, including remote use and engagement by diverse audiences.

Then, although the Sant'Agostino complex presents significant potential for inclusive enhancement, it is currently accessible only to a limited extent due to the combined presence of physical, sensory, and digital barriers. The implementation of an integrated intervention strategy, comprising infrastructural adaptations, the introduction of assistive technologies, and the development of inclusive communication tools, represents a crucial step toward ensuring universal accessibility.

Methodological Approach and Design Criteria

The interventions aimed at ensuring full accessibility of the Sant'Agostino complex are grounded in a coherent and unified design approach, oriented toward the definition of a clearly recognizable architectural language, both in formal and material terms. The objective is to establish a system of elements capable of clearly identifying the contemporary intervention, while guiding and orienting visitors throughout the entire building, from the main entrance to the various nodes and functions.

The material and chromatic palette is based on a carefully calibrated balance among a limited number of primary elements, harmonized to convey a sober yet distinctive image. Galvanized steel, finished in a dark brown tone, constitutes the main material thread, while the lightness of transparent and translucent surfaces, such as glass and polycarbonate panels used for the roofing of ground- and first-floor walkways, introduces a sense of immateriality and luminosity, while simultaneously providing protection from weathering. Architectural concrete and white marble pavements engage in dialogue with the natural, earthy tones of the context, integrating with the greenery of planted areas and pathways, conceived as a living and integral component of the architectural composition.

A complementary chromatic accent is introduced through the use of blue, a symbolic reference to the city of Pietrasanta and the Museo dei Bozzetti, since this color appears in the city's coat of arms. The resulting system of signs and materials is consistent and cohesive, combining functionality, identity, and respect for the historical context, thereby restoring full accessibility to the Sant'Agostino complex while enhancing its architectural legibility.

The methodological approach is thus structured around the following principles:

- Compatibility: use of materials and techniques that respect the historical fabric, avoiding

permanent structural or formal alterations;
- Reversibility: adoption of prefabricated dry-assembly components, easily removable and replaceable;
- Architectural integration and legibility of the "new": harmonization of new elements with original colors and materials, alongside a controlled differentiation of textures and finishes to preserve the recognizability of the contemporary language while respecting the historical and artistic value of the site;
- Safety and wayfinding: definition of protected routes, visual and tactile signage, accessible exits, and emergency devices compliant with current fire safety regulations;
- Environmental sustainability: selection of recycled or recyclable materials, with attention to durability and reduced maintenance cycles.

Accessibility-Driven Regeneration and Adaptive Reuse

The intervention is framed as a functional and adaptive rehabilitation strategy aimed at the reuse of a listed public heritage building, through the integration of architectural connectivity systems (vertical and horizontal circulation devices) and advanced digital technologies supporting physical, sensory, and cognitive accessibility. The overarching objective is to ensure universal accessibility to the entire complex, in compliance with Italian accessibility regulations (D.M. 236/1989), while preserving the material, historical, and landscape integrity of the cloister and its historic garden, formerly the friars' orchard.

Access system and morphological reconfiguration of level differences

The project implements an integrated accessibility system structured across multiple performance layers, addressing a total level difference ranging between 2.30 and 2.50 meters. The primary access is redesigned through the reconfiguration of the entrance from Via Sant'Agostino, establishing a new interface between the urban realm and the monumental complex. The access path is organized according to a predominantly linear geometry, composed of straight segments connected by intermediate landings. This layout minimizes the impact on the historic garden and ensures compliance with accessibility slope requirements. The pathway is laterally defined by vertical retaining walls, conceived both as soil containment structures and as elements reducing visual and landscape impact.

This spatial configuration enables a morphological "stitching" between urban ground level and cloister elevation, transforming the topographic discontinuity into a continuous accessible circulation system.

Vertical circulation system: external platform lift

To overcome structural and spatial constraints of the historic interior, the existing stair-mounted stairlift is replaced with an external platform lift located on the south-eastern side of the complex, adjacent to the courtyard facing Vicolo Lavatoi. The installation area currently occupied by ancillary sanitary facilities is cleared through demolition, following a strategy of spatial decongestion and reduction of interference with the heritage fabric. The vertical device is conceived as a reversible, self-supporting structure, constructed in galvanized and painted steel with laminated glass infill panels and an integrated lightweight roof system. The transparent lift cabin ensures visual continuity between interior and exterior spaces, minimizing visual intrusion while remaining legible as a contemporary architectural addition. The landing at first-floor level is integrated with the existing circulation system through the adaptation of the landing platform, including safety railings

and anti-slip flooring suitable for users with reduced mobility. Continuity of circulation is reinforced by the introduction of short covered portico segments at both ground and first-floor levels, providing environmental protection, spatial legibility, and clear separation from adjacent institutional functions.

Distributed accessibility, digital technologies and augmented accessibility

The accessibility system is complemented by modular removable ramps designed for minor level differences, fabricated in galvanized steel with anti-slip surfaces and transition elements. All interventions are designed as fully reversible, ensuring non-invasive interaction with existing historic pavements. Wayfinding and safety are supported by ergonomic handrails,

Fig. 1. 3D photo of the new lift inside the cloister (image by the Authors, 2025)

tactile signage systems, and warning strips, establishing a coherent sensory navigation framework embedded within the architectural space.

The project introduces a high level of integration between physical space and digital infrastructure, configuring an augmented environment for cultural heritage access. Interactive multimedia totems are deployed, featuring multilingual interfaces, voice control systems, Italian Sign Language (LIS) support, and Braille-enabled input systems, enabling inclusive access to museum and educational content.

At the same time, a dedicated accessible mobile application is developed, offering virtual tours, personalized audio guides, subtitles, and QR-code–based content activation distributed along the circulation routes. This system enables adaptive and multimodal engagement with the cultural asset, extending the visitor experience beyond the physical site. The intervention also includes multisensory pathways based on integrated sensory accessibility strategies, where surface design, tactile textures, and informational systems

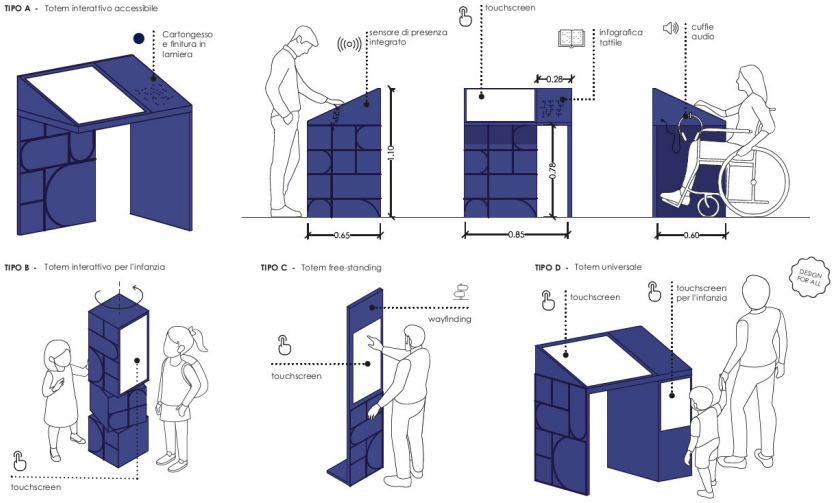

Fig. 2. Design for mobile linear ramps for exhibitions (image by the Authors, 2025)

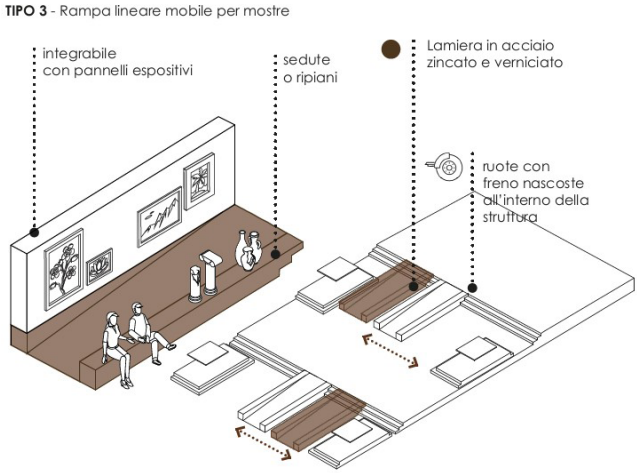

Fig. 3. Design of interactive and multimedia devices (image by the Authors, 2025)

(Braille, easy-to-read formats, and multilingual content) contribute to a cognitively inclusive spatial environment. Additionally, tactile 3D models of the artworks from the Museo dei Bozzetti and tactile orientation maps are introduced to support visually impaired users and enhance spatial comprehension.

Conclusion and Future Perspectives

The project establishes an integrated architecture-technology framework for the adaptive reuse of a protected heritage complex, in which accessibility is not conceived as a regulatory add-on but as a generative design principle. All proposed interventions comply with the principles of physical and material compatibility (no permanent alteration of the original fabric), technical reversibility (fully demountable and removable components), and the legibility of contemporary additions, in accordance with the MIC Guidelines for architectural heritage (2015). The combined deployment of reversible architectural devices and intelligent digital technologies transforms the monumental complex into an adaptive, inclusive, and augmented cultural environment, reconciling conservation imperatives with innovation and universal accessibility. In this framework, the intervention enables a significant broadening of the target public, including persons with disabilities, families, children, and elderly users, while strengthening the cultural identity of Pietrasanta as an accessible artistic hub and enhancing the Sant'Agostino complex as a reference model for integrated accessibility and best practices in cultural heritage management. Framed as an enhancement and accessibility intervention under Article 111 of Legislative Decree 42/2004, the project ensures full compatibility with the historical and artistic value of the Sant'Agostino complex. The proposed works adhere to integrated conservation principles outlined in the MIC Guidelines, with specific emphasis on architectural and functional quality of solutions, environmental and maintenance sustainability, and universal usability and safety.

The overall system, characterized by modularity and reversibility, enables a comprehensive yet non-invasive adaptation of the monumental asset, transforming it into a scalable and replicable model of integrated cultural accessibility at regional and national levels, and configuring the complex as an open civic and cultural space for inclusive participation.

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