A 3D-based Web Platform for Multi-Source Diagnostic Data Fusion and Visualization

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Keywords: 3D, web, diagnostic data, digital survey, mortar.

Abstract

Cultural Heritage conservation increasingly relies on the integration of diverse diagnostic data acquired through multiple techniques. However, managing together these data, often heterogeneous in format and origin, remains a significant challenge. Starting from this premise, we introduce a web-based platform designed to support data fusion and visualization of multi-source diagnostic analysis. Designed by a multidisciplinary research team and developed exploiting open-source technologies, the platform enables interactive access to diagnostic results through annotated 3D models, allowing users to interrogate specific areas of interest, retrieve the associated analytical data, and share them in several ways. A key feature of the platform is its JSON-driven data management system, which associates each diagnostic analysis with a specific template composed of atomic fields easily adaptable to the requirements of various analytical methods. The platform was validated through a case study on the historic mortars of a prominent 18th-century building in Catania (Italy), a context characterized by visible degradation and partial loss of plaster, ideal for sampling and analysis. Diagnostic data were acquired using a range of techniques (including XRPD, FTIR-ATR, WD-XRF, and POM) and complemented with 3D surveying methods, resulting in a rich dataset comprising both metric and analytical information. The study confirmed that fusing heterogeneous datasets within a unified system can exemplify a data-driven approach to heritage diagnostics, while the ability to annotate models and link them to specific diagnostic entries can add a layer of semantic richness crucial for interdisciplinary interpretation.

1. Introduction

The success of modern Cultural Heritage (CH) conservation projects more and more often depends on the ability to collect, manage, and interpret diagnostic data obtained through multiple analytical and surveying techniques. These data provide essential insights into material properties, degradation mechanisms, and environmental interactions, supporting informed decisions for preservation and restoration. However, the integration of such information is still a major challenge. Diagnostic datasets are often heterogeneous in format, scale, and origin, ranging from laboratory analyses to metric surveys and historical documentation (De Ferri et al., 2019). This fragmentation typically results in isolated repositories and non-interoperable tools, limiting the potential for comprehensive interpretation and collaborative workflows. Recent advances in digital technologies, including 3D modelling, web-based visualization, and data-driven approaches, have opened new opportunities for overcoming these limitations (Siotto et al., 2018, Albertin et al., 2021). Several initiatives have explored the use of Building Information Modelling (BIM), Geographic Information Systems (GIS), and digital twins for heritage documentation and monitoring (La Russa and Santagati, 2020, Colucci et al., 2024). Attempts to build a common house for different diagnostic data have been made also at the level of large research projects (Myers et al., 2016, Ponchio et al., 2016). However, while solutions like these have managed to provide, albeit with mixed success, valuable digital spaces and frameworks, they generally lack immediacy and ease of use (in the case of large infrastructural resources) or the flexibility required to accommodate the diversity of diagnostic methods and the dynamic nature of heritage science research (in case of smaller specialized tools).
Starting from this premise, we set out to design a solution for diagnostic dataset integration that was not a one-off research demonstrator tailored to a single dataset, but a flexible tool adaptable to multiple contexts, truly accessible and easy to use. Developed exploiting open-source technologies (Potenziani et al., 2015, Ponchio and Dellepiane, 2017) and following an interdisciplinary methodological approach (Sanfilippo et al., 2015, Rocca et al., 2023), our solution exploits the potential of three-dimensional representations, nowadays widely used in the CH domain and themselves a form of diagnostic data, as an ideal pivot for spatially arranging information (Apollonio et al., 2018, Storeide et al., 2023). We decided to develop this solution as a web-based platform, to enable fusion and visualization of multi-source diagnostic data within an interactive 3D environment easily accessible to everyone across locations and devices (Potenziani et al., 2018, Boutsi et al., 2019). Moreover, we equipped the web platform with an architecture based on a JSON-driven data management system, a key feature which ensures adaptability to different analytical workflows by associating each diagnostic analysis with a customizable template. Finally, the platform was validated through a case study on the historic mortars of an 18th-century building in Catania (Italy). The study involved the acquisition of diagnostic data using multiple mineralogical-petrographic and geochemical characterization techniques (Menta et al., 2025) combined with 3D metric surveys obtained via laser scanning and photogrammetry. This rich dataset provided an ideal scenario to test the platform's ability to integrate heterogeneous information and support collaborative interpretation.
The paper is organized as follows: Section 2 introduces the research methodology; Section 3 presents the web platform; Section 4 describes the case study and the data workflow; and finally, Section 5 outlines conclusions and discusses the benefits, limitations, and future developments of the system.

2. Methodology

The introduced platform was developed as part of the CHANGES (Cultural Heritage Active Innovation for Next-Generation Sustainable Society) project funded under the Italian National Recovery and Resilience Plan (PNRR) initiative. The multidisciplinary context provided by the project allows us to design our solution in close collaboration with a large team of experts active in diverse research fields (computer science, architecture, engineering, physics, sensors, geology, environmental science). This approach ensured that requirements, workflows, and interfaces were shaped by actual practice as a user-centred effort. Complementing this, we adopted an example-driven design philosophy aimed at iteratively modelling our solution on concrete diagnostic tasks rather than abstract scenarios, thereby enabling early validation of choices and rapid refinement.

2.1 A Web-Based Platform

The first design choice we made was to conceive the platform as a web application: this guarantees accessibility (users only need a modern browser, with no local installations or proprietary runtimes), reduces set-up friction and supports dispersed teams, making the system immediately and ubiquitously available. Also, by favouring browser-native delivery, we ensure consistent behaviour across operating systems and devices.

Architecturally, the system follows a client-centric model. The front end is a lightweight JavaScript single-page application that handles navigation, state management, and user interaction. On the server side, a standard web server is sufficient to host the static assets (HTML, CSS, JavaScript) and to expose a minimal set of endpoints for saving and loading user data. In our baseline deployments, this persistence layer is implemented with simple PHP handlers that receive and store data payloads and return them on demand. This design keeps infrastructure requirements modest, eases adoption in institutional contexts with constrained IT provisions, and allows the platform to be mirrored or moved with minimal overhead.

From a product-design perspective, the application is intentionally barebones. It is a single-page solution with fast start-up and responsive navigation. Crucially, it is not intended to operate as a structured repository or database system: long-term archival, complex cataloguing, and institutional preservation policies remain the responsibility of dedicated services. Instead, the platform focuses on interactive access, inspection, and organisation of working data within a project context, offering an agile environment for exploration and collaboration without imposing heavyweight information-management constraints.

2.2 The 3D Environment

The 3D environment has been designed to extend the platform's web-first philosophy into spatial exploration and understanding. As already mentioned, as a research product we decided to build it on open-source technologies. For this reason, we adopted 3DHOP - 3D Heritage Online Presenter (3DHOP Development Team, 2026) as the presentation framework. 3DHOP offers a mature WebGL-based toolkit providing interactive inspection of high-resolution 3D assets directly in the browser and a tightly integrated user interface tailored to CH.

Under the hood, 3D streaming and rendering are powered by Nexus (NEXUS Development Team, 2026), an open-source multiresolution library developed to handle very large meshes and point-based data on the web. Nexus provides out-of-core, view-dependent level-of-detail and network-aware streaming, allowing models with millions of primitives to remain responsive on commodity hardware and variable network conditions.

From a product perspective, the 3D environment is coherent with the platform's architectural choices outlined in Section 2.1. Models are served as static assets and streamed incrementally; interaction remains fluid thanks to client-side scheduling and adaptive refinement. This design supports swift start-up times and consistent behaviour across operating systems and devices, while keeping server-side requirements minimal. By grounding the environment in 3DHOP and Nexus, we inherit an ecosystem of practices and tools specifically shaped by CH use cases (high-fidelity rendering, web-native delivery, and robustness to heterogeneous datasets) thereby enabling spatially anchored exploration of diagnostic information without imposing heavyweight infrastructure or client installations.

2.3 The Data Management System

One of the key features of the developed platform is its diagnostic data management system, specifically designed to handle analytical results linked to spatial referencing. While the management of 3D representations follows the standard 3DHOP/Nexus workflow (where models are pre-processed into the NXZ multiresolution compressed format) the system for supporting diagnostic data entry and visualisation has been conceived and implemented expressly for this platform.

The core principle behind this system is flexibility, achieved through a JSON-driven architecture. Each diagnostic analysis is associated with a template defined in JSON, which specifies the structure and semantics of the data to be collected. These templates consist of atomic fields (textual descriptors, images, tables, downloadable files) arranged in a way that reflects the logic of the analytical method. Each field contains a series of key-values couples aimed at defining the structure and contain the information (Fig. 1). Elaborated in close collaboration with the multidisciplinary team involved in the project, the atomic fields represented a minimal set, certainly not exhaustive, but able to cover a large combination of diagnostic data. By adopting this approach, the platform avoids rigid schemas and instead offers a modular framework that can be adapted to different techniques and evolving workflows without requiring code-level changes. New templates can be introduced or existing ones modified simply by editing the JSON definition, making the system inherently extensible.

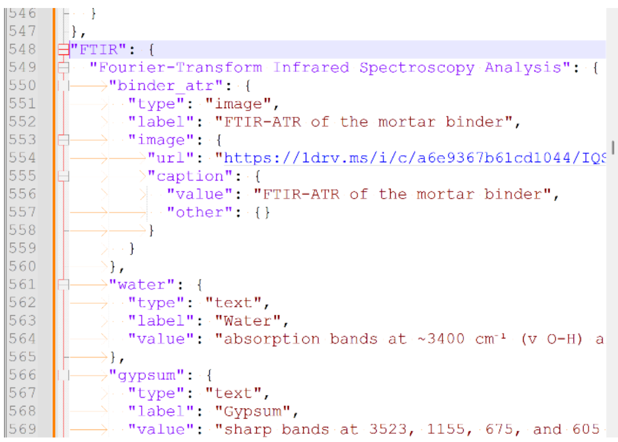

Figure 1. An example of JSON template aimed at structuring the information related to the FTIR-ATR analysis. The screenshot shows the text and image atomic fields and their key-values couples, already populated with the related information.

This design philosophy enables automatic generation of both data entry and visualisation interfaces. When a user selects a template, the platform dynamically builds the corresponding form, enforcing validation rules and field types as defined in the JSON schema. The same template drives the rendering of the visualisation layer, ensuring that the presentation of results mirrors the structure of the input. This symmetry between input and output guarantees consistency and reduces the risk of misinterpretation, while also accelerating development by eliminating the need for bespoke UI components for each analysis type.
Beyond structural flexibility, the system supports rich, heterogeneous content. Textual descriptions can be combined with high-resolution images, tabular data, and downloadable artefacts such as detailed reports, all integrated within a coherent visual framework. This capability is essential for CH diagnostics, where interpretative value often emerges from the interplay of multiple data forms. By maintaining a unified representation, the platform facilitates comparative analysis and collaborative interpretation, allowing experts to navigate complex datasets without leaving the 3D context in which they are spatially anchored.
The JSON-based approach also promotes interoperability and sustainability. Because templates and records are stored in a widely adopted, human-readable format, they can be exported, archived, or ingested by external systems with minimal transformation. This openness aligns with the broader goals of heritage science, where long-term preservation and cross-institutional sharing are critical.

3. Results

Rooted in the methodological framework outlined above, the resulting outcome is the web-based platform shown in Fig. 2, which operationalises our design principles into a working system.

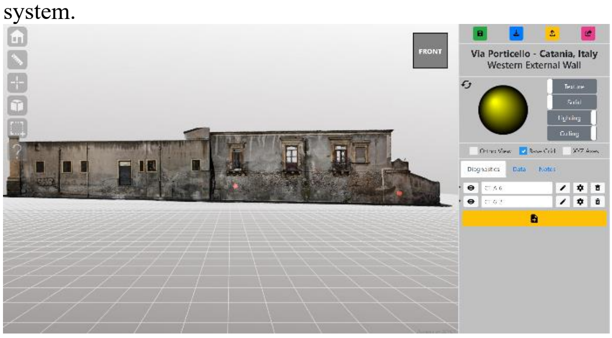

Figure 2. The resulting web platform. The space on the left is occupied by the 3D viewer and its navigation/inspection tools. The panel on the right presents a space to setup the 3D scene rendering options (on the top part); and a section (on the bottom part) to manage/customize the diagnostic hotspots and visualize the information linked to them.

The interface is intentionally minimal to reduce the learning curve and ensure immediate usability. It is structured around two coordinated components: the 3D viewer on the left and a control/information panel on the right. The viewer provides an interactive environment for navigating, inspecting, and interrogating high-resolution 3D models, and includes tools such as predefined views, measurement utilities, sectioning planes, and interactive hotspots (i.e., diagnostic visual bookmarks).
The control panel hosts scene-level options (e.g., rendering modes, lighting presets) and the tools used to manage the diagnostic hotspots associated with the model. The platform allows users to dynamically add or remove hotspots in the 3D scene (the red spheres in Fig. 2). These are listed in the lower section of the panel, where users can create, edit, or delete entries and access the information linked to each of them. A dedicated modal panel enables customization of hotspot properties, including ID, sphere size, colour, and visibility.
A specific action button allows each hotspot to be associated with the corresponding diagnostic dataset, exploiting the template-driven logic described in Section 2.3. This mechanism automatically generates the appropriate data-entry components from the JSON definitions provided by domain experts.
The information linked to each sampling point can then be accessed interactively while navigating the 3D model. Hovering the cursor over a hotspot displays its ID in a pop-up, whereas clicking on it triggers the visualisation of the associated diagnostic record (still organised according to the template-driven structure) within a dedicated tab in the lower part of the control panel. The platform maintains a bidirectional synchronisation between the 3D scene and the control panel, providing a unified workspace in which spatial exploration and data inspection are seamlessly combined.
It is worth noting that, beyond the interactive use within a single working session, the system also supports persistent management and sharing of the diagnostic setup. A small section at the top of the control panel enables the platform configuration (hotspot definitions plus their associated information) to be internally saved, exported or re-loaded as a file, or directly shared through a visualisation-only link. These options, combined with the web-based nature of the platform, enable multiple sharing scenarios, including collaborative teamworking on the same platform instance, one-to-one exchange of diagnostic configurations, or controlled dissemination of data through restricted-access visualisation links.

4. Validation

To validate the developed platform and the underlying design choices, a dedicated case study was conceived and implemented within the multidisciplinary framework of the reference research project. This approach ensured that the validation process was grounded in real-world conditions while allowing full control over data acquisition and workflow design.
As previously mentioned, the validation was carried out through a case study focused on the historic mortars of a prominent 18th-century building located in the Civita district of Catania's historic centre. The selected area, at the corner of Via Museo Biscari and Via Porticello, exhibits evident signs of decay, including partial loss of plaster and localized exposure of the original masonry. These conditions facilitated mortar sampling and provided an ideal context for diagnostic analysis
acquired using different techniques. The analytical methods were then complemented by a 3D metric digitization of the area under investigation.
The integration of these methods resulted in a comprehensive dataset combining metric, morphological, and analytical information, which served as the foundation for validating the platform's ability to ingest, organise, and visualise heterogeneous data in an interactive 3D environment.

4.1 Diagnostics Acquisition

The diagnostic acquisition focused on the mineralogical-petrographic and geochemical characterization of lime-based mortars sampled from the external masonry of the building. As known, the local construction tradition in Catania was strongly influenced by the availability of volcanic resources from Mount

Etna, among which *ghiara* and *azolo* play a significant role as aggregates in historical mortars. Ghiara is a reddish, highly porous material resulting from the thermal transformation of volcanic paleo-soils rich in organic matter, induced by overlying lava flows under oxidizing conditions. This process produces a friable aggregate with distinctive chromatic and physical properties. Azolo, in contrast, consists of incoherent pyroclastic deposits characterized by dark-grey colour and sharp, angular clasts, contributing to the textural variability of the mortars (Belfiore et al., 2022).
Sampling was conducted in five different areas affected by visible degradation allowing direct access to the original mortar layers (Fig. 3). A macroscopic description of the selected samples was carried out in accordance with current standard recommendations (UNI 11305, 2009). For each sample, the following characteristics have been described: sampling point, mortar type and function, number of samples collected, layer thickness, colour (Munsell index), cohesion and adhesion to the substrate, binder-to-aggregate ratio, grain size and particle size distribution of aggregate, aggregate morphology (roundness), state of preservation, and visible degradation forms. Photographic documentation of each sampling point was also acquired and later integrated into the digital dataset.

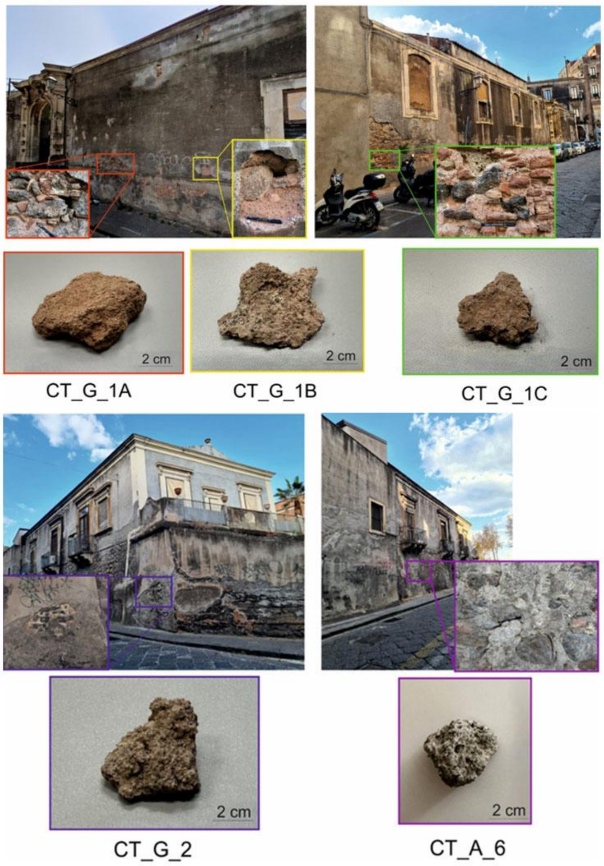

Figure 3. Five mortar sampling points located on the building façades: *ghiara* mortar (above) and *azolo* mortar (below).

To achieve a comprehensive characterization of the examined mortars, an integrated multi-analytical approach was adopted. Petrographic and mineralogical investigations were performed by polarizing optical microscopy (POM) on standard thin sections (30 μm thick), using a Leica ICC50W polarized light microscope equipped with a digital imaging system. X-ray powder diffraction (XRPD) analysis was carried out using a Rigaku Miniflex II diffractometer to identify the constituting crystalline phases of the mortars, with phase identification supported by Profex 5.5 software. Fourier-transform infrared spectroscopy (FTIR–ATR) was employed to complement mineralogical data and to detect amorphous or poorly crystalline components. A Thermo Fisher Scientific Nicolet 380 spectrometer was used, and analyses were carried out in the spectral range 400–4000 cm^{-1}. Bulk chemical composition was determined by wavelength-dispersive X-ray fluorescence (WD-XRF) spectroscopy on pressed powder pellets by using a Rigaku Supermini 200 spectrometer, with loss on ignition measured gravimetrically at 900 °C. The combined use of these analytical techniques provided a robust dataset capturing the compositional variability of the examined historical mortars.

4.2 3D Digitization

The 3D digitization workflow adopted in this study integrates photogrammetry and terrestrial laser scanning to generate high-resolution spatial data suitable for integration into the digital platform. In dense historic urban environments, data acquisition is often hindered by continuous vehicular traffic and the presence of parked cars at all hours, which severely limit the available distance between building façades and the survey equipment. Under these conditions, it is essential to adopt acquisition techniques and instrumentation capable of overcoming such spatial constraints. Despite these limitations, close-range photogrammetry proved effective in enabling detailed surface documentation and supporting the spatial visualization of diagnostic results. Photogrammetric acquisition was therefore carried out using a GoPro Hero 6 Black, whose compact size and ease of handling facilitated in-situ image capture within the restricted urban setting. In addition, the wide field of view allowed the acquisition of frames covering larger portions of the façade, reducing the total number of photographs required and consequently accelerating the post-processing phase. A dataset of approximately 280 images was processed to generate a point cloud of about 294 million points (Fig. 4). To ensure optimal visualisation of the model within the 3D platform, the photogrammetric model was chosen, because the RGB data was acquired at a high resolution.

Figure 4. Photogrammetric 3D survey: above, general view and detail of the point cloud; below, orthophoto of the mesh.

To also ensure metric reliability and geometric completeness, the photogrammetric survey was complemented by terrestrial laser scanning of the north elevation, approximately 46 m in length. Seventeen scans were acquired using a Leica Geosystems BLK360, selected for its compactness and adaptability to in-situ surveying conditions, resulting in a point cloud of approximately 304 million points (Fig. 5). In the final stage of the workflow, the

3D numerical model derived from photogrammetry was optimized into the Nexus multiresolution format to support efficient visualization and seamless integration within the digital platform.

Figure 5. Laser scanner 3D survey: above, station points and perspective view of the point cloud; below, orthophoto of the point cloud viewed in grayscale.

4.3 Working on Data

To be integrated into the web platform, diagnostic information must be organized in a coherent structure. This preliminary activity (performed by the domain experts who carried out the laboratory and on-site analyses) is non-trivial, as it requires reducing the heterogeneous information related to each analysis (texts, graphs, tables, etc.) into a representative but still informative schema, that can be consistently applied across all sampling points in which that specific diagnostic has been applied.
In our case study, experts elaborates five standardized templates that capture, in a concise yet expressive way, the descriptors that are most informative for each of the four analytical technique employed (XRPD, FTIR-ATR, WD-XRF, and POM), plus the contextual metadata (sampling location, layer function and thickness, colour, binder-to-aggregate ratio, aggregate morphology and granulometry, preservation state, and photographic documentation). These templates are able to organize the analytical results related to each specific mortar sample into an individual diagnostic record, integrating the complete set of macro- and micro-analytical data obtained (Fig. 6).
Starting from this expert-curated structure, we derived the JSON template designed to encode all the information fields defined in the standardized record, while preserving their semantics and internal relationships. The JSON template acts as the formal contract between data, interface, and visualization: on the one hand, it specifies the field types and validation rules necessary to guide accurate data entry; on the other, it provides the structural blueprint used by the platform to automatically generate the case-specific input form and to orchestrate the rendering of results during interactive visualization. In practice, once the template is loaded, the platform instantiates a data entry interface that mirrors the organization of the diagnostic record, ensuring that text descriptors, images, tabular measurements, and downloadable artefacts are captured in a consistent fashion. The same template subsequently drives the presentation layer, so that the information associated with each sampling point is displayed coherently with the underlying analytical logic, minimizing ambiguities and facilitating cross-comparison among samples.

Although the data structure developed for this study was tailored to the specificities of historic mortars and to the analytical workflow adopted, its scope is not limited to this single application. Because the template is human-readable and modular, it can be readily reused in similar contexts and adapted with minimal effort by non-experts, for example by adding, removing, or reorganizing atomic fields to accommodate different techniques or reporting conventions. This combination of domain-driven structuring and JSON-based formalization provides the necessary bridge between disciplinary practice and web-native interaction, enabling reliable ingestion of heterogeneous diagnostic datasets and their effective integration within the 3D environment of the platform.

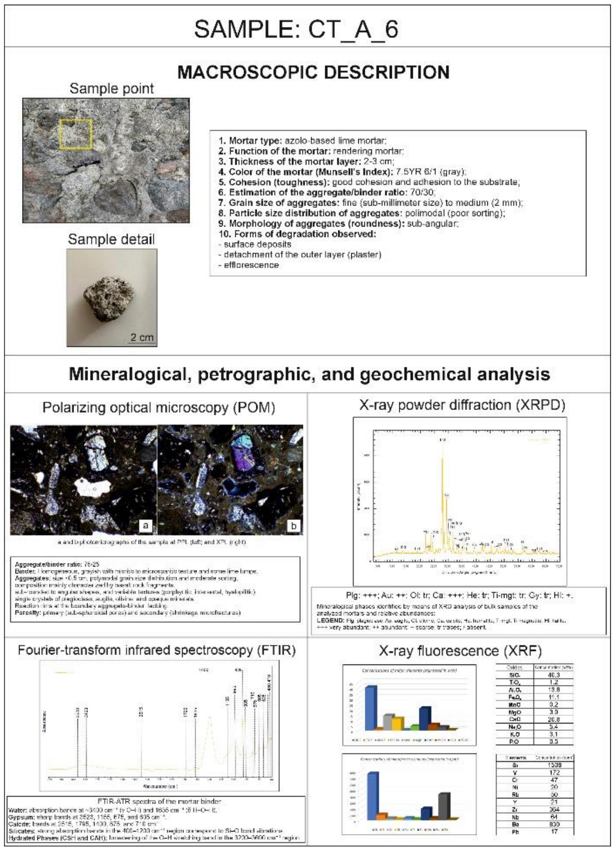

Figure 6. Diagnostic record templates integrating the complete set of macro- and micro-analytical data for each individual mortar sample.

4.4 Integration and visualization

Once the JSON template is associated with the platform, diagnostic information can be integrated with the 3D dataset. The integration process was conducted on two distinct platform instances: one enriching the 3D model of the historic building's western external wall with the information related to the sampling points CT_A_6 and CT_G_2 (Fig. 2), and the other one integrating the 3D model of the north-eastern external wall with sampling points CT_G_1A, CT_G_1B, and CT_G_1C (Fig. 7, 8 and 9).
The datasets integration basically follows a two-stage process. In the first stage, sampling points were positioned on the 3D model and saved with their spatial references (Fig. 7). The positioning occurs in a specific platform mode allowing experts to navigate the 3D scene and adding on the model visual placeholders (the red spheres). This step establishes the geometric backbone for

subsequent activities: each sphere identifies a precise surface location and is also listed in the right-hand panel, enabling bidirectional navigation between the 3D scene and its corresponding record.

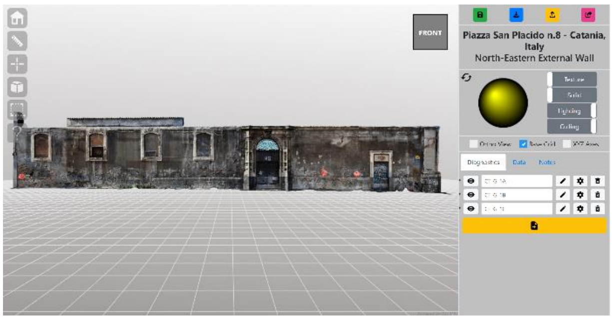

Figure 7. Screenshot of the platform showing one of the 3D models acquired during the case study and three diagnostic points (the red spheres) spatially referenced on it. Each diagnostic point corresponds to one of the list entries in the right panel.

In the second stage, diagnostic content was associated with each sampling point through the modal data-entry interface automatically generated from the JSON template (Fig. 8). The template constrains field types and validation rules, so records adhere to a common structure while preserving technique-specific semantics. This ensures that records created at different times and by different contributors remained internally consistent and comparable across the dataset.

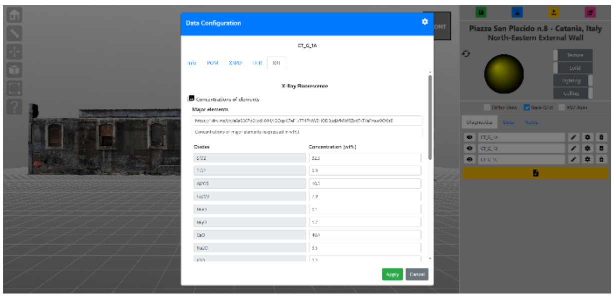

Figure 8. Screenshot of the platform showing the data entry modal panel dynamically generated from the JSON template. The information related to the specific analysis are accessible via the proper tab.

Once the modal data-entry panel is closed applying the changes, the information related to the populated fields is associated with the specific sampling point, and so spatially linked. At this point, users can retrieve the diagnostic data directly from the 3D scene (Fig. 9). Selecting a hotspot activates the corresponding record, which is rendered in the visualization panel, exploiting the information content and organization defined by the same JSON template adopted for data entry. In this way the platform enables fast recall of the information and allows experts to move seamlessly from spatial inspection to evidence-based interpretation, supporting rapid cross-comparison among samples, with users switching between points to contrast different diagnostics descriptors while maintaining spatial awareness of their distribution.

Figure 9. Screenshot of the platform, showing the interactive visualization of the data (panel on the right) associated to the diagnostic point clicked on the 3D model (CT_G_1A).

5. Conclusions

In the CH domain, diagnostic data resulting from different analytical sources are often managed on different levels, archived in different storage systems, studied with different tools. This poses significant challenges to their integration, hindering the combined interpretation and collaborative analysis of these datasets. For this reason, we focused on improving the interoperability of CH diagnostic results through the implementation of a digital platform able to define a shared environment for data management.
Developed as a diagnostic-agnostic 3D-based web tool, our solution is designed to be reused across analytical techniques and scales. It is deliberately lightweight and task-oriented (not intended to compete with comprehensive ontologies) but serves as an agile front-stage workspace from which selected fields can, where appropriate, be mapped into richer institutional schemas.
The fusion of multi-source data within our system exemplifies a data-driven approach to heritage diagnostics. By combining analytical results with spatial data in an interactive 3D environment, the platform facilitates a deeper understanding of degradation mechanisms and supports the development of preventive conservation strategies. In fact, the ability to annotate models with hotspots and link them to specific diagnostic entries adds a layer of semantic richness that is crucial for interdisciplinary interpretation (Apollonio et al., 2018).
The validation demonstrates that the platform can effectively ingest, organize, and render heterogeneous diagnostic data within an interactive 3D environment. The template-driven approach maintains data quality during entry and guarantees coherent presentation during retrieval, while the spatial anchoring of records enables synoptic interpretation across scales, from local material evidence to façade-level distribution patterns. In this configuration, the interactive querying and the integrated visualization of the diagnostic results, facilitate data sharing and support a synoptic and collaborative interpretation of the compositional characteristics and conservation state of the investigated historic mortars.
Where appropriate, the current implementation also exposed practical boundaries: when the number of annotated points grows substantially, curatorial practices (e.g., semantic grouping or filtering) become advisable to preserve visual clarity. Nonetheless, the JSON-based organization remains generalizable and reusable in analogous contexts, and makes the platform adaptable with minor, human-readable edits to accommodate additional techniques or reporting conventions. This capability, combined with the platform's web-based nature and the multiple sharing options provided, makes the system extremely versatile, supporting scenarios ranging from the simple presentation of diagnostic data gathered by a single workgroup, to the collaborative curation of analyses contributed by multiple

working groups, potentially operating asynchronously and from geographically distributed locations.
Future developments will focus on expanding the platform's capabilities, including enhanced real-time control over data structures, support for additional JSON fields, and implementation of supplementary 3D annotation schemes. The integration of extended reality (XR) visualization is also being explored, with the aim to offer new possibilities for on-site augmented analysis of the diagnostic datasets acquired. Finally, the organisation of a dedicated user study is also being considered to assess the effectiveness of the design choices with respect to the platform's intended audience.

Acknowledgements

This paper is part of the activities related to project CHANGES (Cultural Heritage Active Innovation for Sustainable Society) PE 00000020 - CUP B53C22003890006 E63C22001960006 - NRP "Italia Domani" - Mission 4 - Component 2 - Investment 1.3 - Funded by the European Union - NextGenerationEU

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Appendix

A short video demonstrating the main features and interaction workflow of the proposed platform is available at the following link: https://youtu.be/8bDGNxZw4sg.