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Managing the maintainance and conservation of the built heritage: a web-gis approach for the Richini courtyard in Milan

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The Richini courtyard is a masterpiece of northern Italy baroque and it is part of the complex that currently hosts the "Università degli Studi" of Milan. Its four internal façades are based on a double arcade structure with granitic columns along a rectangular plan. The architectural elements are enriched by an outstanding sculpted decoration made of Angera stone (a typical Lombard dolostone) with bas-relief panels, high-relief figures, mouldings and voussoirs. The courtyard suffers the consequences of a troubled conservation history: the Second World War bombardment caused devastating damages to both the structure and the sculpted surfaces, so that an extensive restoration was carried out during the early fifties. Moreover, a further and massive conservative intervention was required during the nineties due to the increasing degradation rate of the Angera stone subjected to severely polluted environmental conditions.
The overall durability of this last intervention, as well as the long-term compatibility of the restoration materials, has been evaluated almost twenty years later, in 2011. A thorough study of representative areas of the courtyard has been conducted by a multi-disciplinary research group. The aim of the study was the evaluation of the state of conservation of the ancient and restoration materials, as well as the identification of the decay phenomena. A high-accurate 3D laser scanner survey of the courtyard has been performed as well. The results of the diagnostic activity has been summarised in the present work. The wide range of different type of data (analytical and geometrical data, historical records, photographic documentation) have been managed by the latest release of a web-GIS software specifically designed for the application in the built heritage conservation. A new data structure has been purposely designed in order to maximize the efficiency for what concerning data entry, data query and data updating. The enhanced web-GIS software has become a user-friendly platform for the collection and reference of all the results of the façades, based on high-resolution images of the sculpted surfaces. The data elaboration allowed the definition of a risk priority scheme for each different type of architectural elements. Guidelines for a long term monitoring and for a sustainable planned maintenance of the courtyard has been consequently set-up.