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## DIACHRONIC 3D RECONSTRUCTION FOR LOST CULTURAL HERITAGE

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**Abstract.** Cultural Heritage artifacts can often be underestimated for their hidden presence in the landscape. Such problem is particularly large in countries like Italy, where the massive amount of "famous" artifacts tends to neglect other presences unless properly exposed, or when the remains are dramatically damaged leaving very few interpretation clues to the visitor. In such cases a virtual presentation of the Cultural Heritage site can be of great help, specially for explaining the evolution of its status, giving sometimes sense to few spare stones. The definition of these digital representations deal with two crucial aspects: on the one hand the possibility of 3D surveying the relics in order to have an accurate geometrical image of the current status of the artifact; on the other hand the presence of historical sources both in form of written text or images, that once properly matched with the current geometrical data, may help to recreate digitally a set of 3D models representing visually the various historical phases (diachronic model), up to the current one. The core of this article is the definition of an integrated methodology that starts from an high-resolution digital survey of the remains of an ancient building and develops a coherent virtual reconstruction from different historical sources, suggesting a scalable method suitable to be re-used for generating a 4D (geometry + time) model of the artifact. This approach has been experimented on the "Basilica di San Giovanni in Conca" in Milan, a very significant example for its complex historic evolution that combines evident historic values with an invisible presence inside the city.

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