GIS and 3D digital modelling for tracing and figuring out urban cultural components: Ioannina city case study

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Abstract

Being at the crossway of trade routes, at the north-western corner of Greece, Ioannina city has flourished both economically and spiritually in the past centuries. The governance by overlords of different nationalities, the coexistence and cohabitation of people of diverse religions, ethnicities and cultural identities have shaped a unique, highly fruitful and creative multicultural character for the city. Tracing and 3D digitally approaching specific landmarks of the city, thus figuring out its pluralistic profile, as it was shaped during its Post-Byzantine period, after the year 1430 when surrendered to the Ottomans, has been the main research axis of the Postdoctoral project, under the reasoning that the ever-evolving dynamics of the city have been mainly depicted in buildings, public or private, religious or secular, conventional or more elaborate, each having its own historical and architectural interest. Unfortunately, most of the landmark buildings have been destroyed due to natural disasters and the unbridled, often uncontrolled modern constructions. Under the perspective of exploring and restoring the cultural context of the Post-Byzantine era of Ioannina, all the available historiographic, bibliographic and archaeological information has been collected, analysed, cross-examined. At a further stage of research work, the afore-mentioned data have been digitally processed and furthermore combined with the study of cartographic and topographic data, as well as with optical depictions such as engravings, paintings, postcards, terrestrial and aerial photographs, of the oldest possible date they can be traced. As a result, the location of Byzantine and Post-Byzantine landmarks within the modern city's urban web, the 3D digital representation for a number of them and their subsequent incorporation in an interactive GIS has been possible. Furthermore, the registration and documentation of the Post-Byzantine edifices of the city, as well as the regular updating of the status of those few still standing has been carried out by developing a related digital platform. Under the intention to achieve more interaction of the project with the local community, digital signage has been set at the specific sites, where the landmark buildings used to stand and have been now 3D digitally developed, furnishing relevant information through an application for android devices and, also, giving access to the afore-mentioned digital platform, as well as to a related virtual museum exhibiting text, image and sound material in the framework of recalling the sense of the old city, while cultural walks within the urban web, related to the project's axis are also proposed, thus connecting the *intangible* (digital) with the *tangible* (physical space). Proposing innovative techniques for tracing and figuring out urban cultural components, safeguarding and monitoring cultural heritage, maintaining the thread of society's communication with culture even in extreme situations, like the COVID-19 pandemic, rebuilding

our societies and economies and, finally, conveying a message of solidarity, hope, and unity have been the great challenges of the research project.