

A Geospatial Integrated Tool for Historic Walking Trails in the Holy Site of Meteora, Greece

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SUMMARY

Excessive tourism activity in the world's most attractive historic venues easily override the natural and cultural bearing capacity of a site, resulting in overcrowding, traffic congestion, ecologic and cultural disruption and dissatisfaction. Proactive planning is crucial to determine the capacity of the place, as opposed to a land policy of "unregulated tourist activity". Good land policies and evidence-based decision-making for the sustainable development of tourism and the determination of the spatial distribution of touristic flows can only be put in place following the geospatial documentation, the development of a strategy and finally of a land tool that will link together geopolitical, economic and social operations with their spatial reference. In this respect, geospatial analysis has also a crucial role to play in monitoring of the implementation of the tool. The tool is implemented for the archaeological and Holy Site of Meteora, in the northwestern part of Thessaly, Central Greece, which is considered to be tourist-saturated. The site is in the UNESCO World Heritage List since 1988, characterized as a Natural and Cultural World Heritage Site, due to the natural beauty of the unique harmonious complex of more than 40 monolithic rock pillars and the active monastic community of a long history. It is also declared to be an archeological site, and more specifically a "Historic Preserved Monument". The region is mostly covered by vast forests, rich in species diversity and endemic plants that are protected as part of the Natura 2000 network.

This paper presents the implementation of a tool for the redevelopment, improvement and management of a network of ten historic walking trails of Meteora, which lead the visitors from the two neighbouring settlements of Kalampaka and Kastraki to the six Holy Monasteries that are still active since the 12th century. The trails cross beautiful forested areas which together with the gigantic rocks set the scene for the archaeological and Holy area of Meteora. These ten historic trails of Meteora constitute part of a broader trail network of various levels of difficulty and thematic categories across the whole Trikala region. The proposed trail network of the 10 historic

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trails of Meteora, of a total length of 35 km, is part of the regional strategy and local government management models and constitutes a Master Plan for the sustainable redevelopment, improvement and management through eco-tourism (walking, bicycling, adventure, cultural and other alternative types of tourism).

The paper provides necessary technical, legal, historic and administrative information related with the developed tool and its use. Data collection comprises comprehensive topographic surveying on the field, photographic documentation and walking tour video recording. The initial GIS data are geographic reference points creating line segments that trace the routes. During the logical design of the database, the requirements regarding the type of database and the relationship between its objects are specified. A unique geodatabase, which is based on relational model technology and includes vector spatial entities (feature classes), mosaics (raster) and tabulated (geodatabase tables) data is developed. Entities are created with embedded descriptive information. The connection between spatial and descriptive information is achieved through an object-oriented data model, according to which descriptive information is integrated into the corresponding spatial entities in the form of attribute fields. To interface with all entities stored in the database, metadata was integrated. The calculation of the necessary geometric information (e.g., length of paths, distances of points of interest) is conducted by performing map algebra operations. The visualization of specialized information is carried out by performing spatial, descriptive queries or correlations between attribute fields of spatial entities. The development of the geodatabase and its enrichment with the available digital data is done within the ArcGIS Pro environment.

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