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# Innovative Strategies for the Protection and Conservation of the Cultural Fabric of the Historical Town of Rethymno, Crete.

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## Abstract

The protection and conservation of historical monuments and archaeological sites constitute a basic ingredient of our societal values. Focusing in this direction, STORM (Safeguarding Cultural Heritage through Technical and Organisational Resources Management) project, funded under the scheme of EU Horizon 2020, is aiming towards the development of a mechanism, consisting of both methodological approaches and a knowledge sharing and collaborative platform, for the protection of the European cultural assets. Focusing on one of the pilot case studies of the project, the Historical Town of Rethymno in Crete, GeoSat ReSeArch Lab of FORTH and EFARETH are collaborating to study and monitor the various climatic and anthropogenic hazards that threaten the cultural fabric of the site.

Various non-invasive and non-destructive approaches have been initiated for the study and monitoring of the specific hazards that threaten the selected historical pilot site and the estimation of the risks imposed to the preserved monuments. Photogrammetric imaging & laser scanning, 4D terrestrial geophysical surveying, pXRF analysis and monitoring through crack meters and weather stations have been selected as the most appropriate methods to encounter the environmental hazard, the structural failures, the fracturing and deformation of the monuments, the intensity of the weather incidences and the weathering of the buildings and conservation materials.

In parallel, various GIS based spatial analyses and modeling approaches have been carried out aiming towards the mapping of various types of hazards such as seismic, coastal flooding, landslide, salinization, etc., with an ultimate goal to be combined with the exposure and vulnerability of buildings resulting to an integrated evaluation of the risks imposed on the standing monuments.

Data collected from the various sensors installed on site, the application of geophysical and imaging techniques and GIS modelling will feed an integrated platform offering information visualization and exchange to the authorities involved in Cultural Heritage protection in order to assist decision making towards damage prevention, protection and preservation of the cultural fabric.

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