

A service dedicated to Cultural Heritage Risk Assessment and Monitoring on the Web

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VIDEOR project, financed by the Italian Ministry of Economic Development (MISE) and strongly supported by the Ministry of Cultural Heritage (MiBACT), is developed by NAIS (Nextant Applications and Innovative Solutions) in collaboration with ISCR (Institute for Conservation and Restoration, MiBACT) and SUPERELECTRIC s.r.l. The project has the aim to provide a service to public institutions responsible of CH preservation, maintenance and restoration, for the assessment of the potential level of aggressiveness of factors responsible for cultural heritage degradation.

VIDEOR represents the first example of a continuative monitoring, consultable on the web and constantly updated. VIDEOR is based on the production of a set of products that will help institutions in the evaluation of threats linked to damages and/or loss of the cultural asset. This new approach of cultural heritage condition assessment will support “Carta del Rischio” Italian methodology, a GIS for a scientific and administrative support furnished to Public Entities and developed by ISCR.

Test site selected for project demonstration is the archaeological area of Villa Adriana, UNESCO site since 1999. The property, located near Tivoli town (30 km east from Rome), has an extension of 80ha and the buffer zone has an extension of 500ha. This area, near Tivoli and not far from Rome -political and administrative location of the Roman Empire- was chosen by Adriano emperor for the construction of his magnificent residence.

VIDEOR products and analyses are based on data coming from several sensors, such as satellites images (optical and SAR) and drones, these last used when satellites spatial resolution is considered not appropriate or when, after severe events, deeper evaluations are necessary.

After the earthquake swarm that interested Italy from August 2016 to January 2017 and that destroyed a huge amount of unmovable cultural properties close to zone of the epicenter, analyses were performed over the test site, for which also UNESCO reports indicate the earthquake as a potential risk for the Villa.

Seismic waves of the most severe events recorded in central Italy were well distinguished also in Rome and surroundings, damaging some monuments and private buildings of the city.

After the stronger seismic events of October 2016 and January 2017 (magnitude superior to 5.5), VIDEOR service activated for performing interferometric analyses over Villa Adriana for the assessment of monuments’ stress associated to the static-structural modified conditions. The system, in fact, recorded movements (of few millimeters) of some of the Villa Adriana’s monuments. These monuments, furthermore previously surveyed and recorded by ISCR in summer 2016 during the project’s phase of cataloguing, are located on different geological conformation that justified differences in monuments behaviors. Soon after earthquake events, additional inspections in loco were done by ISCR, while multispectral acquisitions by drones allowed to deepening analyses performed by satellite and the general monuments status.