



The extraordinary plan for monitoring and conservation of Italian cultural heritage

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The present paper illustrates and summarizes the activities carried out so far for the implementation of the first "Extraordinary National plan for monitoring and conservation of Italian cultural heritage". This initiative is part of the wider context of the institutional activities of the Ministry of Culture - General Directorate for the Safety of Cultural Heritage, aimed at the conservation and protection of cultural heritage, and specifically on its safeguarding towards the impacts from different risk factors, including climate-induced extreme events. This two-year plan has 2 fundamental pillars and targets: 1) to carry out both remote and in situ integrated monitoring systems of the most vulnerable monuments and sites (e.g. bell towers, monumental complexes, archaeological areas in urban, coastal and remote areas) in relation to their structural and environmental level of different risks; 2) to provide a decision support tool (e.g. an integrated monitoring system, DSS) for supporting owners and managers of immovable Cultural Heritage to activate the necessary procedures and any subsequent conservation and preventive intervention and measure. With reference to the satellite downstream services, to be provided in the context of the National Mirror Copernicus Program, the implementation of the aforementioned Plan is therefore useful for updating the knowledge resources, already available in the various information systems and repositories of the Ministry (e.g. *Carta del Rischio* and *SecurArt* projects), as well as the main data aimed at the architectural and structural characterization of the whole CH. In this first year, the technical committee purposely set up by the General Directorate for the Safety of Cultural Heritage, implemented and initiated the following activities through 10 work tasks which include: 1) agreements with research bodies and governmental institutions; 2) general plan management and technical support; 3) sensor installation for on-site monitoring activities; 4) integration of different monitoring technologies and calibration by use of satellite monitoring techniques; 5) implementation and filling of specific datasheet for the vulnerability assessment; 6) creation of an IT dashboard for the development DSS, data management and interoperability between systems; 7) adaptation of existing IT structures and purchase of those necessary for local sites managements, satellite data management and post-processing services; 8) evolution of a unique information system (new dashboard) integrated with the *Carta del Rischio* and *SecurArt*, also by the use and implementation of satellite data and in situ monitoring; 9) general implementation of national monitoring plan integrated by and in situ sensors; 10) test validation in different areas at diverse scales: identification of sites, monuments and

buildings differentiated by typologies, risk, relevance, installation of systems for monitoring, degradation and potential damage. As part of the plan, at least 18 test areas have already been identified throughout the whole country. At the same time, the filling survey and the implementation of the IT dashboard were launched