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The Palace of Knossos and the Venetian Fortress «Rocca a Mare» (Koules) in Heraklion, Crete,Greece: How the HERACLES activities and platform will contribute to their protection and resilience against climatic events

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The Palace of Knossos bears unique testimony to the Minoan civilization, which was arguably considered as the first centrally organized civilization to flourish in Europe and amongst the first civilizations worldwide. It is also unique because of its continuous habitation from the Neolithic (7000-3000 B.C.) to the Mycenaean Age.
The first palace was destroyed around 1700 BC and the new one was erected according to a specific architectural plan, befitting its character and function as the centre of political, economic and religious authority. Limestone ashlars, gypsumstone, green schist, wood were the main materials used on the construction,whilethe decoration was supplemented by colourful plaster, frescoes and gypsum slabs.
The excavator, Sir A.Evans and his colleagues after 1925 attempted a reconstruction of the monument with large-scale use of reinforced concrete. Today, Evans's intervention is integral part of the monument and its history.
Generally, the damage to the monument is associated with external factors connected to the environmental conditions and to the history of the Palace, as well as to endogenous factors arising from the structure of the foundations and the characteristics of the building material themselves. Significant degradation effects for the masonries are concerned with the cracks affecting both the ancient and the restored masonry.
The Venetian Fortress «Rocca a Mare» is situated at the edge of the NW breakwater of the Venetian harbour of Heraklion. The construction began before 1525, and was completed by 1540. After conquer of Candia, in 1669, by the Ottomans, have been carried out many interventions in the building.
The shape of the fortress is roughly quadrangular, with a semi-circle bastion at the SE side. The thickness of the outer walls reaches 8,70 m. Limestones and sandstones were the main materials used on the construction. Large limestones come partly from the Hellenistic fortifications of the city.
The Fortress represents all the typical coastal monuments in the European territory, which undergoes significant impact from the sea, directly connected to the risk of hazards from the climatic change. The main structural issues derive from the transportation and accumulation of soluble salts and the loss of the original material due to the "salt hydration distress".
The main goal of the Ephorate is the prevention, protection and promotion of these important monuments of Heraklion.Towards this end HERACLES contribution relies on an advanced and customised analytical and diagnostic strategy, which offers a number of techniques for studying site materials, crusts and accumulations. Furthermore, sensing, diagnostic and in-situ analytical methodologies are taking place in order to monitor and correlate the pathology to extreme weather events. In addition, the designed platform will support the decision making process of the Ephorate, in terms of long term maintenance and risk management for the monuments, according their requirements, taking also into account all social, economic and technical parameters. Finally, models able to activate "early warning" indication, based on the historical information and on the information acquired from the sensors, support the decision for preventing, managing and mitigating a crisis due to extreme climatic events.