

Recent studies highlight the potential impact of Climate Change and geo-hazards (such as landslides and earthquakes) on historic areas hosting Cultural Heritage sites and monuments, which in turn yield significant adverse impacts on economies, politics and societies. The deterioration of Cultural Heritage sites is one of the biggest challenges in conservation; aspects such as building technologies/materials, structural responses, preventive measures and restoration strategies, resilience and adaptation methodologies must be considered.



HYPERION will leverage existing tools and services (e.g., climate/extreme events models, and their impacts, decay models of building materials, Copernicus services, etc.), novel technologies (terrestrial and satellite imaging for wide-area inspection, advanced machine learning, etc.) to deliver an integrated resilience assessment platform, addressing multi-hazard risk understanding, better preparedness, faster, adapted and efficient response, and sustainable reconstruction of historic areas.

HYPERION will take into account the local eco-systems in the Cultural Heritage areas, mapping out their interactions and following a truly integrated/sustainable reconstruction approach, by incorporating active communities participation and by supporting new business models based on the concept of a “load-balancing” economy, and offering financial risk-transfer tools that can ensure the immediate funds availability to fuel timely build-back-better efforts.



fb.me/HyperionEUProject

twitter.com/EuHyperion

linkedin.com/company/HyperionEUProject

www.hyperion-project.eu

Project Coordinator: Dr. Angelos Amditis

Institute of Communication and Computer

Systems (ICCS), 9 Iroon Polytechniou str.

GR-157 73 Zografou Athens, Greece

a.amditis@iccs.gr



Hyperion

The HYPERION integrated resilience assessment platform offers an overarching strategy that includes risk management, protection and preparedness as complementary strategies to prevent damages to cultural sites, identify and ward off additional threats and promote adaptation, reconstruction and other post-disruption strategies to restore normal conditions to the historic area, as well as long-term strategic approaches to adapt to Climate Change and to wield policy tools for economic resilience.

THE PARTNERS



OSLOMET



42-month EC Funded project. Start date: 1st June 2019. This work is part of the HYPERION project. The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 821054.



HYPERION's ambition is to produce a comprehensive tool to assess the threats of CC in tandem with other natural hazards, visualize the built heritage and cultural landscape under future climate scenarios, model the effects of different adaptation strategies, and ultimately prioritize any rehabilitation actions to best allocate funds in both pre- and post-event environments. In order to meet this goal, HYPERION will set out to produce the following outcomes until the end of 2022.

- Reliable quantification of climatic, hydrological and atmospheric stressors
- Analysis of building materials and deterioration processes
- Implementation of a Hygro-Thermal simulation
- Improved prediction of Structural and Geotechnical safety risk
- Environmental and material monitoring including state identification and damage diagnosis
- Design of a Holistic Resilience Assessment Platform and a Decision-Support-System, enabling communities' participation
- On-site Integration, Demonstration and Validation of the HYPERION platform through case studies in Greece, Italy, Norway and Spain
- Project Handbook
- Multi-Hazard modelling

TEST SITES

HYPERION will perform extensive tests in four demo sites, in Greece (Rhodes), Spain (Granada), Norway (Tønsberg) and Italy (Venice). The historic areas will be modelled at building level through reduced-order models based on archetype structures of each area. A number of selected structures (CH value) will be modelled and monitored in detail. The demonstration shall prove the suitability of the HYPERION platform for multiple hazard assessment and optimized operational and strategic decisions for management and maintenance of the historic areas, considering as well other hazards relevant for other sections of the city.



The city of Venice



The Municipality of Rhodes



*The Municipality of Tønsberg
(Norway)*



The Municipality of Granada

IMPACT

- Multi-hazard risk understanding
- Better preparedness
- Faster, adapted, efficient response
- Sustainable reconstruction
- Quantitative impact assessment

HYPERION COMPONENTS

