

## DECISION SUPPORT, RESILIENCE AND SUSTAINABLE RECONSTRUCTION OF HISTORICAL CITY CORES UNDER SEISMIC THREAT: THE HYPERION APPROACH

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Historical city cores are a blend of cultural heritage (CH), residential function and economic activity that forms the heart of many urban areas in the world. When built in seismic areas, they become the obvious soft spot that can cripple the local and regional economy even if moderate seismic events occur. Tackling their vulnerability and enhancing their resilience is a complex endeavor with far-reaching social, environmental and economic repercussions, which mirrors the intricate nature of historical areas. The breadth of the investigation invariably requires considering (a) CH assets (historic buildings, monuments, bridges, canals), (b) nearby/supporting non-CH structures and infrastructure (slopes, newer bridges, transmission power lines, telecommunication towers, etc.), as well as (c) the interconnectivity among them that makes a historical core function. To further complicate matters, each structure has been built to different design standards and level of workmanship while typically having witnessed many decades, centuries or even millennia of life, as well as successful or failed rehabilitation interventions. In light of these challenges, the HYPERION project was conceived, bringing together 26 European organizations (municipal/regional/national authorities, universities, private entities, and cultural heritage agencies) to leverage existing tools and services together with novel technologies in order to deliver an integrated resilience assessment platform. Its focus is addressing multi-hazard risk understanding, better preparedness, faster, adapted and efficient response, and sustainable reconstruction of historic areas subject to multiple hazards. Herein, the seismic hazard, risk and resilience modules of HYPERION are discussed, highlighting the core directions of research to be undertaken in this on-going project.