



ENRICH



ENHANCING THE
RESILIENCE
OF ITALIAN **HEALTHCARE**
AND **HOSPITAL** FACILITIES

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ENRICH is a three-year project funded by the Ministry of University and Research under the Projects of Major National Interest Programme 2022-2025.

It aims to enhance the resilience of Italian hospitals and healthcare facilities by focusing on non-structural elements.

FOUR Work Packages and FIVE Italian institutions ensure a robust and coordinated effort to enhance the resilience of healthcare facilities in Italy.

THREE PILLARS



Seismic Performance: ensuring that non-structural elements can withstand seismic activity and maintain their functionality.



Functional Adaptability: enhancing the ability of healthcare facilities to adapt and continue operations during and after seismic events, ensuring critical services remain available.



Risk Perception: assessing seismic risks perception among healthcare staff, patients, and stakeholders, fostering a culture of preparedness and proactive risk management.

🎯 FOUR OBJECTIVES

- **INCREASE** the knowledge of the Italian healthcare facilities' resilience.
- **DESIGN** and validate technologies aimed to the improvement of Non-Structural Elements.
- **DEFINE** technical guidelines and management tools.
- **DEVELOP** communication strategies for improving the resilience through stakeholder's awareness.

👥 FIVE PARTNER INSTITUTIONS

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The relevance of non-structural elements in hospitals and healthcare facilities

Hospitals are pivotal in disaster risk management, bolstering community resilience.

Ensuring building integrity during earthquakes is vital, yet equally important is safeguarding hospital operational capabilities.

Seismic damage often neglects non-structural elements (NSEs) like medical equipment and architectural components, which are critical for hospitals function and community resilience.



WP1 has finished his work

WP1 ended successfully achieving its objectives.

It **focused** on gathering critical insights on the resilience of Italian healthcare facilities.

Activities involved cataloging nonstructural elements for seismic risk, identifying key case studies, evaluating capacities, and assessing seismic resilience. More than 40 NSEs have been catalogued in multiple hospital facilities (ASL Lecce and AORN Caserta).

WP1's **deliverable** included a detailed report on Italian healthcare facilities' seismic capabilities and flexibility across various scenarios, including an initial resilience assessment.



WP2 under completion

WP2 **aims** to enhance Italian hospitals' resilience through innovative systems and technologies.

It **focuses** on improving the adaptability and seismic resilience of NSEs such as movable walls, fixtures, and medical equipment during health emergencies and earthquakes.

Activities involve laboratory tests, simulations, and the development and validation of innovative technologies. Numerical models have been developed to simulate seismic response of NSEs. Experimental tests will be carried on more than 60 specimens, accounting for ground and building floor motion responses.

WP2's **deliverable** includes engineering solutions and prototypes that enhance the functional adaptability and seismic performance of NSEs.



WP3 just started

WP3 **aims** to pioneer new methods for evaluating resilience in Italian healthcare and hospital facilities through critical analysis and innovative systems. It seeks to improve operational continuity and safety while influencing European standards.

It **focuses** on establishing technical guidelines, including reports, pre-code standards, and professional recommendations, aimed at enhancing healthcare and resilience nationwide.

Activities involve developing BIM tools for seismic design of NSEs, defining robust guidelines, and introducing prototype innovations.

WP3 will **deliver** technical guidelines - reports, pre-code standards, and professional recommendations – and design and maintenance tools like BIM.



WP4 is ongoing

WP4 **aims** to establish a seismic risk communication strategy to enhance resilience in hospital facilities.

It **focuses** on studying seismic risk perception in Italian hospitals, starting with pilot cases.

Activities include 3 focus groups in the pilot sites (Lecce ASL and Caserta AORN), involving 67 healthcare staff members.

FINDINGS | The focus group sessions highlighted key needs and priorities. Participants urgently called for training, notably willing to dedicate time despite frequent complaints about heavy workloads and low awareness levels.

WP4 will **deliver** an informative augmented reality web application.

