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## **Introduction**

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### **Antonio Formisano**

Department of Structures for Engineering and Architecture,  
University of Naples 'Federico II',  
P.le Tecchio 80, Naples, Italy  
Email: antoform@unina.it

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The impact of earthquakes on exposed elements such as people, buildings, infrastructures and economic values in regions induce seismic risk at an exclusively high level and it has increased dramatically in recent times. This situation, when left unmitigated, is expected to cause unprecedented deaths, huge economic and ecological losses, serious infrastructure and service failures and poses a major threat for civil security, as well as sustainable development in the future.

In order to mitigate those hazards a detailed knowledge of seismic risk is required. The basic components required for the assessment of seismic risk are represented by both the seismic hazard and the seismic vulnerability of elements at peril. The experience acquired to date leads to the conclusion that the difficulties and uncertainties related to seismic vulnerability appear to be more severe than those related to seismic hazard. In particular, it is crucial to know about the behaviour of the buildings under seismic loads. However, information about building inventories and associated seismic vulnerability is often outdated, unavailable, or simply non-existent in many earthquake prone regions.

Therefore, the knowledge of seismic vulnerability of different typologies of structures mainly diffused all around the world represents the first important task to protect existing built-up areas, also eventually by planning effective retrofitting interventions.

To this purpose, in this special issue, some papers dealing with both large-scale assessment of historical centres and local evaluation of reinforced concrete, masonry and timber structures are presented aiming to illustrate the current seismic vulnerability methodologies used at an international level in earthquake prone areas.