Can we extend probabilistic performance based engineering to other hazards?

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Performance-based engineering has been applied to Earthquake Engineering for the past 2 decades and it has become a reliable and robust method to both design and assess buildings and other engineering structures subjected to seismic loading.

First included in FEMA356 (2000) and then as a standard in ASCE-41-06 (2006) and its successive revisions in the USA, and included conceptually in the 2004 versions of EC8 part 1 and part 3, and now fully included in the current revisions, the concepts underpinning performance based engineering and the probabilistic approach have been fundamental to the development of frameworks and platforms, such as the Global Earthquake Model Platform (GEM), which has become the standard to support studies on seismic risk at regional and national level, allowing for better targeted policies and investments on resilience, bringing closer the engineers, the insurers and the decision makers.

In relation to other hazards, MH- HAZUS (2004), which covers windstorm and flood risk, as well as earthquake, has introduced a common framework to fragility assessment. However, while the seismic engineering community has already developed a second generation of sophisticated analytical and computational tools, the same standard has not yet been reached for other hazards, meaning that heuristic and empirical approaches to determine vulnerability of buildings and other structures to wind and flooding at territorial scale, are still commonly used.

The talk will illustrate the issues faced by the analysts in developing a robust framework for multi-hazard risk assessment by using two applications: the first to road networks, the second to historic masonry structures.

See speaker’s bio here