Recent destructive earthquakes demonstrate that a single hazard map cannot meet the requirements from different end-users. The engineering community understood that Peak Ground Acceleration (PGA) estimates alone are not adequate for design, mainly for special objects and infrastructures (displacements may play a critical role and the dynamical analysis of the structure response requires complete time series). When dealing with cultural heritage and critical structures (e.g. nuclear power plants), where it is necessary to consider extremely long time intervals, the standard probabilistic estimates of seismic hazard (PSHA) are by far unsuitable, due to their basic heuristic limitations. An effective alternative to traditional PSHA is the scenario-based methodology, named neo-deterministic approach (NDSHA) that, relying on the physical modeling of seismic waves generation and propagation, allows for a time dependent definition of seismic input, through the routine updating of formally defined intermediate-term middle-range earthquake predictions. Accordingly, a set of deterministic scenarios of ground motion, which refers to the time interval when a strong event is likely to occur within the alerted area, can be defined.

The time-dependent NDSHA approach is currently applied to the Italian territory and updated scenarios are routinely delivered to the Civil Defense (Friuli Venezia Giulia Region, NE Italy) thus providing information that can be useful in assigning priorities for timely mitigation actions and, at the same time, allowing for a rigorous prospective testing and validation of the proposed methodology.