

TG3 - “Structural Vulnerability and Earthquake Scenario”

The recent earthquakes in Italy, Turkey and Algeria remind us that most of schools, hospital and, generally speaking, buildings and facilities playing fundamental roles for the Civil Protection action or hosting high value content, from a social and economical point of view, are highly vulnerable to earthquake. A strong need for their vulnerability and risk assessment is now evident. In some countries, like in Italy, a medium term evaluation program has been set up, and this will probably be one of the main topic of risk evaluations in the future all over the world. Due to the awful number of such facilities and to the need of concentrating the attention on individual rather than class of structures and infrastructures, new methods for vulnerability assessment are required, that operate at a definition level higher than currently used methods for dwelling buildings, so that individual vulnerability can be assessed. In the meanwhile, it is not possible to think that modelling and analysing methods such as the ones required by seismic regulations can be used to evaluate the awful number of structures of public interest.

Looking at the above exigencies, the objective of the Task Group will be re-addressed towards problems of structural vulnerability assessment of individual structures, of seismic hazard evaluation and local effect prediction in individual sites, and towards seismic scenarios especially dealing with the assessment of damage to important public structures and facilities. Special attention should be devoted to methods and procedure that, though implying in situ inspections, tests and measurements, do not require large amount of money, take account all structural (and non structural) features affecting the actual seismic behaviour of a structure and all the important hazard and amplification parameters affecting the shaking intensity and frequency content, use simplified but up-to-date models, provide a satisfactory level of damage prediction for different earthquake intensities, address possible rehabilitation interventions and evaluate their costs and convenience.