

FOREWORD

Naples, Italy – July 2009

Two non independent events significantly affected Italian earthquake engineering community in the last few years. First of all the Italian code was superseded by one comparable, for quality and technical content, to the last generation of seismic codes at international level. Second, the ReLUIS (*Rete dei Laboratori Universitari di Ingegneria Sismica*, <http://www.reluis.it>) consortium, networking the institutions with the largest facilities, both experimental and numerical, for earthquake engineering research, was born. ReLUIS was founded by the Italian Department of Civil Protection (DPC) via a 15 billion of Euros project developed between 2005 and 2008; the largest project in earthquake engineering ever in Italy for both funding and number of researchers involved, about six hundreds.

Needless to say, the new Italian code is based on Eurocodes, still it has benefitted of some state-of-the-art advances brought in the community by the ReLUIS project, which actually had as one of the main purposes the development of the seismic code. I had the opportunity of following such a process from a close standpoint as a past president of the consortium, and personally think this proximity with alive and active research was successful and visible in the code. This is especially true with respect to those aspects related to assessment and retrofit of existing, both reinforced concrete and masonry, structures (it is to recall that existing buildings are certainly the largest issue regarding structures in Italy which has the most of seismic risk carried by these type of constructions), but also for what concerns geotechnical earthquake engineering, and finally seismic actions on structures. This latter goal, could have not been achieved without the advanced probabilistic seismic hazard analysis provided by INGV (Istituto Nazionale di Geofisica e Vulcanologia) and DPC, which is now available for the whole national territory allowing to determine design seismic actions on a rational basis, yet manageable by practitioners.

The osmosis between the two processes is even clearer if one thinks that two consecutive ReLUIS chairs, I and Mauro Dolce, were also in the new seismic code committee. Conversely, the ReLUIS research was stimulated by many code-based issues.

On the other hand, earthquake engineering research itself not only developed results to be taken in by the new code, but also performed large experimental tests distributed all over the country still non-overlapping and coordinated at national level. The amount and quality of experimental data gathered within the ReLUIS project is something unseen before, probably not only for Italy.

The results are not only represented by the new code, which was enforced on July 1st 2009, but also by the step ahead of earthquake engineering as a whole, ranging from the mentioned improvement in understanding of seismic risk of existing structures to new design paradigms and innovative approaches to seismic risk reduction as well as emergency management, directly employed in the recent L'Aquila earthquake in which ReLUIS was side-to-side with DPC acting as one of its centers of competency.

It is my belief that part of the advances implemented in the code and supported by consistent research, may be useful for the developments of Eurocodes, and this motivated the publications of the proceedings of the workshop giving the title to this book, which is divided in chapters reflecting the Eurocode 8 structure: i.e., *Ground Conditions and Seismic Action, Concrete Buildings, Steel and Concrete Composite Structures, Masonry Buildings*.

I finally can't skip to thank those enthusiastically participating to all of this, Gaetano Manfredi current president of ReLUIIS who managed to integrate the workshop at the end of the final meeting of the ReLUIIS project where the main results were presented, and Iunio Iervolino who has helped in organizing the workshop and the proceedings.

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