

## INTEGRATED PLATFORM OF RESEARCH AND DEVELOPMENT FOR THE BEHAVIOUR OF STRUCTURES UNDER EXTREME ACTION

### Goal of the project

The framework goal of the project is the development of the research capacity of the departments within the Faculty of Civil Engineering from the Politehnica University of Timisoara, through the increase of the performances and the capacity of laboratories, and by integrating them into a multidisciplinary platform that should cover theme directions regarding the behaviour of structures subjected to extreme action: natural hazard – earthquakes and effects of climate changes, respectively human actions – explosions, fire, errors of construction and operation, etc

### Project implemented by

The Politehnica University of Timisoara  
Faculty of Civil Engineering

### Implementation period

02.09.2013–30.09.2016

### Main activities

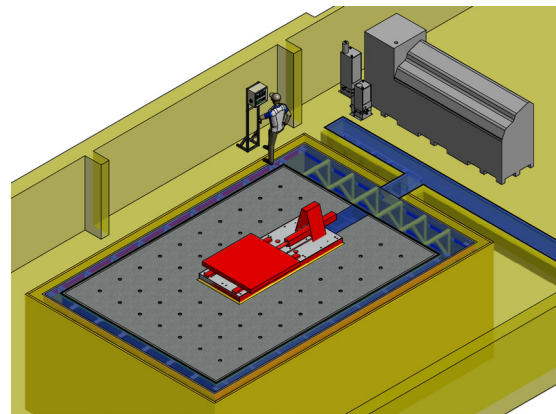
The Research platform integrates the four departments within the Faculty of Civil Engineering from the Politehnica University of Timisoara, namely: Department of Steel Structures and Structural Mechanics, Department of Overland Communication Ways, Foundations and Cadastral Survey, Civil Engineering and Equipments, and Hydrotechnical Engineering. The projects aims at updating laboratories by adding equipments / stands / systems, on one hand, and at achieving new laboratories, by the acquisition of equipments / stands / systems, in view to achieving the goals of the project.

The following laboratories are updated, at the Department of Steel Structures and Structural Mechanics:

- Laboratory for the study of materials;
- Laboratory for the testing of structures and structural elements under static and dynamic actions, under ambient temperature and under low / high temperatures;
- Laboratory for advanced numerical analysis of structures

The following laboratories are updated, at the Department of Overland Communication Ways, Foundations and Cadastral Survey:

- Laboratory of geomatics;
- Laboratory for the testing and assessment of the quality of materials for road covering;
- Laboratory for the testing and assessment of physical and mechanical parameters of the foundation terrain;
- Laboratory for the macroscopic modelling of the road traffic and for the assessment of the environmental impact.



The following laboratories are updated, at the Department of Civil Engineering and Equipments:

- Laboratory for the testing and assessment of physical and mechanical properties and of the behaviour of materials, components and structural elements, under the action of extreme climate;
- Laboratory for the advanced numerical analysis of structures made of masonry, concrete, composite materials or wood, under the action of climatic effects and in case of natural or induced hazard.

The following laboratories are updated at the Department of Hydrotechnical Engineering:

- Laboratory for the assessment and monitoring of the quality of the environmental elements (water, air, soil), under normal operation and under the effect of weather changes;
- Numerical laboratory for the modelling, assessment and the optimization of water resources exploitation, in natural or developed environment.

The four departments are connected at the level of the Faculty of Civil Engineering, by means of an HPC cluster with data storage system.



## Applicability and transferability of the results

The development of the project is in line with the priority axis 2 of POS CCE (Competitiveness through research, technological development and innovation), particularly with the goals of the operation 2.2.1. (development of the existing RD infrastructure and creation of new RD infrastructures) through:

- The achievement of a multidisciplinary axis of research, that satisfies various RD requirements with direct impact on the economic environment, or coming from the economic environment;
- The improvement of the basis of knowledge within priority themes of the construction sector;
- The training of the human resource, in particular of doctoral students, post-doctoral students and young teaching staff;
- The increase of the participation to the RD circuit, within large cooperation and projects, nationwide and worldwide;
- Technological transfer activities, including the support and promotion of innovative solutions regarding the economic environment

## Financed through/by

The total value of the project is 21.000.000 lei, out of which 21.000.000 lei is non-refundable financial assistance.

The project is co-financed through the European Regional Development Fund, based on the financial agreement signed with the Ministry of National Education, as Intermediary Institution, on behalf of the Ministry of European Funds, as Management Authority for the Sectoral Operational Programme „Increase of Economic Competitiveness”, co-financed by the European Regional Development Fund Axis 2, Operation 2.2.1.

## Research Center

The Research Centre for Mechanics of Materials and Structural Safety – CEMSIG, Politehnica University of Timisoara.

## Research team

Acad. Prof. Dan Dubină, PhD  
Assoc. Prof. Aurel Stratan, PhD

## Contact information

Acad. Prof. Dan DUBINĂ, PhD  
Member of Romanian Academy  
Department of Steel Structures and Structural Mechanics  
Address: Str. Ioan Cărea, No. 1, RO300224, Timisoara  
Phone: (+40) 256 403 920  
Fax: (+40) 256 403 917  
E-mail: dan.dubina@upt.ro