

# *First Prometidos Summer School*

Madrid, 19-21 September

PROMETIDOS-CM (*Madrid Program in Rigorous Methods for the Development of Software*) is a R+D program funded by the regional government of Madrid, Spain, that involves some leading research groups in Computer Science in the region (IMDEA-Software, CLIP-UPM, BABEL-UPM, FADOSS-UCM, GPD-UCM). The scientific interests of PROMETIDOS-CM cover all aspects of development of software based on modular, scalable and realistic rigorous methods.

One of the strategic purposes of PROMETIDOS-CM is the realization of effective training actions to introduce young post-graduate and PhD students in the research area of rigorous methods. The announced Summer School attempts to be a contribution in this sense.

**Ricardo Peña**

## *Static Analysis and Certification of Safety Properties of Memory Usage*

The talk summarizes the work done by the author and his group in the last few years on the functional language Safe. This is an experimental language aimed at platforms with limited memory resources, and at a proof-carrying code framework. Its programming model allows explicit deallocation of data structures, and its runtime system additionally supports regions, i.e. disjoint parts of the heap allocated and deallocated in constant time, which replace the more traditional garbage collector. The Safe compiler is equipped with a battery of static analyses and with a special type system which are able to first ensure, and then to formally certify, safety runtime properties such as absence of dangling pointers, and bounded memory consumption. Compiled programs are endowed with Isabelle/HOL scripts proving that these properties actually hold.

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