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Mateo Valero is awarded an ERC Advanced Grant, the most prestigious grant for scientific projects

- The European Research Council (ERC) has awarded an Advanced Grant in the category of physical sciences to Mateo Valero, the director of the Barcelona Supercomputing Centre – Centro Nacional de Supercomputación (BSC-CNS) for his project 'Riding on Moore's law'
- Valero is one of the 302 senior researchers who have received this prestigious grant in 2013. The grant awarded to Mateo Valero amounts to 2.3 million Euros

The project 'Riding on Moore's law' (RoMoL)

The project intends to start a new line in designing supercomputers, cased on co-designing architecture and the software execution environment to overcome the current deadlock in the efficiency obtained in computing systems.

Since the middle of the 1960s' what is known as Moore's Law has been observed, whereby the number of components in a chip double every two years. An expected consequence is that the performance of computers therefore doubles every two years. This empirical law has been observed, and indeed is still observed today regarding integration capacity, but the expected improvement in performance reached a standstill in the first years of this century. Due to issues with energy consumption and the level of sophistication/complexity in designing the core, the outcome of doubling the number of components used in designing the core meant that it no longer doubled its performance. The alternative has been to increase the number of cores, passing the issue of their efficient use onto the programmer.

The project lead by Mateo Valero suggests a totally new way of conceiving computers with parallel architectures, where the level of abstraction offered to the programmer is increased, meaning the programmer will have to think in terms of tasks rather than low level instructions. The system's software will be in charge of mapping the computational demands (tasks) with the physical resources of the system (cores, memory). Some fundamental elements for this architecture will be processors and vector techniques since they are highly efficient energy-wise. The project defines (proves) the need to design the architecture and the software system together, so the result of this collaboration is optimising the efficiency and productivity of computer systems.

2012 edition

In this edition, 45% of the winning proposals fall within the field of physical sciences and engineering, the category of Mateo Valero's projects, whereas 37% are in the field of life sciences and the remaining 18% are in the fields of social sciences and humanities. The awardees were chosen by a jury of renowned scientists from around the World.

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Nine of the researchers who received this prestigious grant work in centres based in Catalonia, accounting for around 60% over the total grants given in Spain. So, besides Valero, other Advanced Grants were awarded to: Xavier Oliver (International Centre for Numerical Methods in Engineering), Núria Sebastián-Galles and Vicent Caselles (Pompeu Fabra University), Xavier Tolosa (Autonomous University of Barcelona), Antonio Echavarren (Institute of Chemical Research of Catalonia), Albert Marcet (Markets, Organizations and Votes in Economics) and Susana Narotzjy (University of Barcelona).

CV summary of Mateo Valero

Engineer and Doctor in Telecommunication. Since 1983 he is a full professor at the Polytechnic University of Catalonia (UPC). He has published over 600 articles on high-performing computer architecture. He is the director of the Barcelona Supercomputing Centre – Centro Nacional de Supercomputación. He has been awarded prizes such as the 2007 Eckert-Mauchly Award, the most relevant international award in the field of Computer Engineering, the 'Harry H. Goode' Award in 2009 presented by the IEEE, two national awards in research: the 'Julio Rey Pastor' award in IT Technology and/or Mathematics and the 'Leonardo Torres Quevedo' Award in Engineering. The Rey Jaime I Award in Research presented by the Valencia Regional Government. Member of the ICT European Program 'Hall of Fame' selected as one of the 25 most influent European researchers in IT. He is also a Fellow of the IEEE, a distinguished fellow at Intel and also a Fellow of the ACM. He is a founding member of the Spanish Royal Engineering Academy and is a *correspondant academic* of the Royal Academy of Exact, Physic and Natural Science; he is a member of the Royal Academy of Science and Art of Barcelona, a member of the European Academy and a *correspondent academic* of the Mexican Academy of Science. He is an honorary doctor of the universities of Chalmers, Belgrade, Las Palmas, Veracruz and Zaragoza. In 1998 he was named an 'honorary citizen' of his village, Alfamén, where its school was named after him in 2006.

For an extended version of Mateo Valero's CV: http://www.bsc.es/cv-mateo/1-summary

For more information on the ERC Advanced Grants 2012:

http://erc.europa.eu/sites/default/files/press_release/files/press_release_adg2012_results.pdf