Researcher David Carrera awarded one of the European Commission's most prestigious grants to study how data centres can learn how to become more efficient

Awarded an ERC Starting Grant for a project which will help to solve the problem of high energy consumption by data centres

Data centres are estimated to consume as much energy as the whole of Italy

Increased use of 'the cloud' to save and share documents is one of the causes of increased traffic to data centres

(Barcelona, 11 March 2015) – Barcelona Supercomputing Center (BSC) researcher David Carrera has been awarded one of the most prestigious grants offered by the European Commission to study how data centres can learn how to become more energy efficient independently. It has been estimated that servers around the world currently consume as much energy as the whole of Italy; as such, their efficiency is one of the main problems facing computer science today.

David Carrera, who holds a PhD in Computer Science, has been awarded the grant for his project Hi-EST: Holistic Integration of Emerging Supercomputing Technologies. In this project, the BSC researcher and Universitat Politècnica de Catalunya-BarcelonaTech associate professor will set out to ensure that services use the information which they themselves generate about their activity to learn how to autoconfigure their settings and thereby achieve maximum efficiency while consuming minimal energy. This process is to be carried out using artificial-intelligence techniques which help the servers decide which types of hardware should be used for each task and where data should be saved, among other parameters which improve their efficiency.

Carrera's research interests are focused on the performance management of data-centre workloads, the topic of his doctoral thesis. He has carried out work

for IBM and Microsoft and leads various projects relating to server configuration and big-data processing at BSC.

The exponential growth of global data traffic

Data-centre efficiency has become an issue of international concern following assessments showing that [the energy consumption of servers around the world is comparable to that of Italy](#). Such elevated consumption is essentially due to the exponential increase in data traffic over the Internet over the last few decades and to the growing storage requirements for data and files which need to be constantly available for use.

According to estimates in international reports, in 2014 [data centres moved more than 3800 Exabyte.](#) Three quarters of this traffic takes place within data centres: of this, 60% relates to fulfilling the requirements of individual customers and the other 40% to meeting business operational needs.

The increase in use of 'the cloud' – external storage systems – to save and share documents is one of the causes of this rapid growth, which is estimated to rise by 122% annually over the coming years.

About BSC

Barcelona Supercomputing Center (BSC) is the leading supercomputing centre in Spain. Its purpose is twofold: to provide infrastructure and supercomputing services to Spanish and European scientists and to generate knowledge and technology which can be transferred to society.

A Severo Ochoa Centre of Excellence, BSC is a hosting member of the PRACE (Partnership for Advanced Computing in Europe) research infrastructure and it manages the Spanish Supercomputing Network (RES, after its initials in Spanish).

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