AMPERE: Strengthening European Leadership in Energy-Efficiency and Parallel Computing

Image: The AMPERE team in the first project meeting at BSC

18 March 2020, Barcelona - Launched on 1 January and coordinated by Barcelona Supercomputing Center (BSC), the European project AMPERE (A Model-driven development framework for highly Parallel and EneRgy-Efficient computation supporting multi-criteria optimisation) will implement an innovative software architecture that takes into account the non-functional requirements inherited from the cyber-physical interactions, such as time predictability, energy-efficiency, safety and security. The aim is to provide the high-performance capabilities needed for the most advanced functionalities of cyber-physical systems (CPS). This novel technology will be employed in the automotive and railway domains.

Specifically, AMPERE will develop a novel system design and computing software ecosystem for the development and execution of CPS, targeting the most advanced energy-efficient and highly-parallel heterogeneous platforms, with the objective of fully exploiting the benefits of performance demanding emerging technologies, such as artificial intelligence or big data analytics. It will achieve this thanks to the combination of model-driven engineering (MDE) and parallel execution, two important technical challenges at the system design and the computing software stack of CPS.

“AMPERE will strengthen European leadership in the development advanced CPS functionalities, by combining the MDE used in CPS and the parallel programming models used in high-performance computing (HPC). AMPERE will bridge these two domains by providing a complete software stack capable of exploiting the most advanced parallel hardware architecture to bring the overall system efficiency of

cars and trains to a new level of performance, safety and security and energy efficiency," says Eduardo Quiñones, senior researcher at BSC and AMPERE coordinator.

About AMPERE

The European funded project AMPERE is a Research and Innovation Action (RIA) project, which kicked off on 1 January 2020 and which will run for three years. It benefits from a €4.9 million budget, fully funded by the European Union (EU). To reach its goals, AMPERE brings together nine EU partners: BSC (Spain) as coordinator, ISEP (Portugal), ETH Zürich (Switzerland), SSSA (Italy), EVI (Italy), BOSCH (Germany), THALES (France), THALIT (Italy) and SYSGO (Czech Republic). These leading academic institutions and industrial partners will provide the required expertise to develop the novel framework and application of the use cases. .

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Further information

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