

## **An Ecosystem of Tools for Broad Heterogeneous Memory Usage**

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### **Abstract**

Since providing the required amount of memory for upcoming exascale applications is non-viable by means of top-performance technology only, due to energy consumption and dissipation constraints, vendors are incorporating a variety of additional memory subsystems built upon different technologies, which provide diverse features and limitations (e.g., Intel's Optane DC Persistent Memory). Deciding what data to host in each memory subsystem is far from trivial and poses notable performance implications. Recent research has focused on their use for specific purposes such as resilience or to host selected data objects based on some basic criteria. The aim of this Intel-BSC collaboration is to move a big step forward and develop technology to build an innovative generic software ecosystem to facilitate the efficient use of heterogeneous memory systems, what will be crucial to leverage the full potential of exascale platforms. We will present the developed software ecosystem and our early performance analysis.

### **Bio**

Marc Jordà is a Research Engineer at the Barcelona Supercomputing Center (BSC), working in the Accelerators and Communications for HPC team. He is part of the Intel-BSC Exascale Laboratory, where he collaborates in this project with Antonio J. Peña (BSC) and Harald Servat (Intel). His interests include performance tuning for heterogeneous memory systems, GPU-enabled applications, and deep learning frameworks.