

Deucalion

A supercomputer called “Deucalion” will be acquired, to be installed in Portugal and which will be co-financed by European funds as part of the EuroHPC Joint Undertaking. The new system represents an investment of 20M€ and is central to the national advanced computing strategy set out by the Ministry of Science, Technology and Higher Education of Portugal for the development of advanced computing infrastructures, competences, technology and services that will strengthen Portugal's scientific and technological capabilities and industrial competitiveness.

Deucalion aims at making a fundamental contribution to the development of both European and Portuguese HPC capabilities across various disciplines and at different levels:

Firstly, by supporting and fostering research and innovation in the co-design of HPC systems, from their implementation all the way to their optimization and exploitation, a major priority of Europe’s HPC and EPI initiatives;

Secondly, by building capacity on management and operation of HPC systems;

And, thirdly, by fostering the creation, expansion and consolidation of computational engineering and innovation teams and centres on European and national high-priority scientific domains requiring either large scale digital simulations or very large-scale data management and processing.

Fundação para a Ciência e a Tecnologia (FCT), the Portuguese public agency that supports science, technology and innovation, is set to procure a heterogeneous 10 petaflops state-of-the-art system that should be evenly based on the x86 and the ARMv8 architectures.

Deucalion should sport a subset of GPU accelerated nodes and another of bleeding edge HPC-oriented RISC nodes for experimentation purposes. The new system should offer a high-speed shared storage of at least 10 petabytes and be fully connected by state-of-the-art interconnect and Ethernet networks. The power consumption of the whole system is expected not to exceed 1MW and to be fully supplied by renewable energy sources.

Additionally, it should be possible to fully run and manage Deucalion with open source software. To serve the research community, the system will have to efficiently run a large and diverse set of applications, including those devoted to fluid dynamics, molecular dynamics, material science, high energy physics, as well as emerging scalable data-driven applications for analytics and machine learning.

The supercomputer will be installed at Minho Advanced Computing Center and is expected to start operating by the end of 2020.