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| Exploiting the power of HPC: Benefits and technology transfer**Eleni Kanellou**1#\*, Christos Kozanitis1, and Angelos Bilas1,21 Institute of Computer Science (ICS), Foundation for Research and Technology - Hellas (FORTH), Greece2 Computer Science Department, University of Crete, Greece# Presenting author: Eleni Kanellou, email: kanellou@ics.forth.gr\* Corresponding author: Eleni Kanellou, email: kanellou@ics.forth.gr |

abstract

High-Performance Computing (HPC) refers to the use of so-called supercomputers as well as of parallel processing techniques, for the purpose of solving complex computational problems at high speed. As such, it has become an important tool for both science and industry, and, over the past three decades, it has evolved into a mature technology that supports many sectors. Apart from tackling problems which, on a regular computer, would take a prohibitive amount of time to be solved, HPC can also deal with computations which, due to the cache or storage space they require, would not be possible at all on a simpler machine.

The use of HPC applies, among others, to sectors that rely on modeling, simulation, and machine learning, which includes innovation-driving sectors such as health, energy, engineering, or environmental sciences. In such sectors, the uptake of HPC has not only been demonstrated to further scientific and technological progress, but also, to provide entrepreneurial benefits to companies that adopt it.

In this presentation, we illustrate the benefits of HPC through case studies that highlight both the scientific as well as the industrial progress that it can foster. We further explore the challenges to overcome and the best practices to keep in mind when fostering the technology transfer of HPC-related tools and frameworks to industry, with a particular focus on SMEs.