

High Performance Computing: The Engine of Innovation and new opportunities in Europe and Italy.

25 January 2024, 11:00, Room 1.6, Renato Ricamo Building (Coppito 1)

High-performance computing (HPC) is the use of advanced computing techniques and technologies to solve complex problems or perform large-scale computations at speeds and scales beyond the capability of conventional computers. HPC is becoming increasingly important in Italy and Europe, as it is used in a variety of domains, including weather forecasting, climate modeling, and artificial intelligence. In Italy CINECA is the National HPC center that operates several supercomputers, including Leonardo, one of the most powerful in the world. Co-funded by the Ministry of University and Research and by EuroHPC Joint Undertaking, Leonardo has been designed by CINECA and is hosted in its new data center at Tecnopolo di Bologna. Several are the international and national initiatives that emerged during these last years around Leonardo and the HPC: EuroHPC at European level; ICSC, the Italian National Research Centre for High Performance Computing, Big Data and Quantum Computing; Destination Earth, a flagship initiative of the European Commission to develop a highly accurate digital model of the Earth on a global scale, are just some important examples. Several are also the educational activities and job opportunities born around this ecosystem for young students, PhDs and researchers.

Gabriella Scipione holds PhD in Physics from the University of Bologna and currently leading the “Data Management and Data Analytics” division of the CINECA High Performance Computing department. Her team focuses on big data management, data analytics exploiting HPC resources and creating custom applications to visualize scientific data. She has been technical project manager and coordinator of several European projects in the weather, climate, environmental and life science domains. She has been the coordinator of the Leonardo EuroHPC supercomputer proposal, Italy’s candidacy to host the EuroHPC pre-exascale system in Tecnopolo di Bologna. Since 2019, she is also technical advisor of Italian Ministry of Education, University and Research in the EuroHPC board. Since 2017, she has been actively involved in PRACE (Partnership for Advanced Computing in Europe), holding the role as council delegate for Italy.



Paola Inverardi, rector of the GSSI. Previously Rector of the University of L’Aquila where she also led the Software Engineering and Architecture Research Group. Paola Inverardi’s main research area is in the application of rigorous methods to software production in order to improve software quality. In the last decade her research interests concentrated in the field of software architectures, mobile applications and adaptive systems. Inverardi serves in the editorial boards of the IEEE Transaction of Software Engineering, Springer Computing and Elsevier Computer Science Review. She has been general chair or program chair of leading conferences in software technology (i.e. ASE08, ICSE09, ESEC/FSE03). She is Chair of the ICSE Steering Committee, member of the ACM Europe Council and member of Academia Europea. She has received an Honorary Doctorate at Mälardalen University Sweden. Paola Inverardi received the prestigious 2013 IEEE TCSE Distinguished Service Award for outstanding and sustained contributions to software engineering community.



Fabio Di Sante received his master's degree at the University of L’Aquila and his Ph.D. in Earth Science and Fluid Dynamics from the University of Trieste. He has dedicated several years to developing and applying coupled atmosphere-ocean-river regional climate models to investigate the impacts of climate change on regional weather patterns. Joining Cineca in 2022, his primary focus has been on porting and optimizing weather and climate models for new architectures using GPUs. Additionally, he has been involved in the development and management of weather chains, which are complex systems utilized for generating weather forecasts.

