EuroHPC Summit Week 2021 including PRACEdays21

Thursday 25 March 2021, 10:00 – 10:45, Scientific Keynote Talk

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Abstract

Computing Challenges at CERN and the potential of High-Performance Computing

High-energy physics faces unprecedented computing challenges in preparation for the 'high-luminosity' phase of the Large Hadron Collider, which will be known as the HL-LHC. The complexity of particle-collision events will increase, as will the rate of data collection rate, substantially outstripping the gains expected from technology evolution. The LHC experiments are actively pursuing improvements in software and techniques that reduce the resource gap, but new resources will be needed.

The efficient use of HPC facilities is seen as important to addressing the anticipated resource gap. In this talk I will discuss the future computing needs in high-energy physics and how those needs can be met through engagement with HPC centers. As a community, we have identified common challenges for integrating these large facilities into our computing ecosystem. In this presentation, I will discuss the current progress in addressing those challenges and utilizing HPC sites. I will summarize the work in software development for heterogeneous architectures, data management at scale, and supporting services. I will close with plans for the future and opportunities for collaboration.

Bio

Maria Girone graduated from the University of Bari, Italy. She was awarded her Ph.D. in high-energy physics in 1994. Maria became a research fellow with the ALEPH experiment performing analysis and serving as accelerator liaison.

Later, Maria developed detector hardware for the LHCb experiment as a research associate at Imperial College London.

In 2002, Maria joined the IT Department as an applied scientist and CERN staff member.

In 2004, Maria was appointed as coordinator of the Oracle database services for the LHC experiments.

In 2009, she was appointed deputy group leader of the CERN IT Experiment Support group. In 2012, Maria became the founding chair of the WLCG Operations Coordination team, responsible for the core operations and commissioning of new services in the WLCG.

In 2014, she was appointed the Computing Coordinator for the CMS Experiment at CERN for two years. As coordinator, Maria was responsible for 70 computing centres on five continents and more than 100 FTE of effort yearly to archive, simulate, process and serve petabytes of data.

In 2016, Maria joined the management team of CERN openlab, taking over the position of CTO as of January 2016. In her role as CTO, Maria is managing the overall technical strategy of CERN openlab plans towards R&D in computing architectures, HPC and AI, in collaboration with the LHC experiments for the upgrade programs for software and computing, promoting opportunities for collaboration with industry.