



CINECA to Build World's Fastest AI Supercomputer with NVIDIA and Atos

New "Leonardo" System to Deliver 10 Exaflops of AI Performance to Power Italy's HPC and AI Research

NVIDIA today announced that the Italian inter-university consortium [CINECA](#) — one of the world's most important supercomputing centers — will use the company's accelerated computing platform to build the world's fastest AI supercomputer.

The new "Leonardo" system, built with Atos, is expected to deliver 10 exaflops of FP16 AI performance to enable advanced AI and HPC converged application use cases. Featuring nearly 14,000 [NVIDIA Ampere architecture-based GPUs](#) and [NVIDIA® Mellanox® HDR 200Gb/s InfiniBand networking](#), Leonardo will propel Italy as the global leader in AI and high performance computing research and innovation.

Leonardo is procured by EuroHPC, a collaboration between national governments and the European Union to develop a world-class supercomputing ecosystem and exascale supercomputing in Europe, and funded by the European Commission through the Italian Ministry of University and Research.

"The EuroHPC technology roadmap for exascale in Europe is opening doors for rapid growth and innovation in HPC and AI," said Marc Hamilton, vice president of solutions architecture and engineering at NVIDIA. "We're working with CINECA and Atos to accelerate scientific discovery across a broad range of application domains, providing a platform to usher in the era of exascale computing."

Modern scientific computing requires high-performance simulation, data analytics, AI and machine learning, and visualization. NVIDIA's computing platform accelerates all of these workloads while providing extremely high throughput and low power consumption, making it ideal for scientific computing. Examples of research using this approach include work in such areas as:

- [Drug discovery](#): Using genomic analysis to identify promising proteins that can be targeted with a specific drug to fight COVID-19 and other diseases.
- [Space exploration and research](#): Harnessing the tools of multi-messenger astrophysics — which incorporates data from wide-ranging sources, such as electromagnetic waves, gravitational waves and neutrinos — to better understand the universe.
- [Weather modeling](#): Predicting extreme weather conditions with greater accuracy and speed.

The Leonardo supercomputer will help solve scientific challenges across many disciplines, from material sciences to high-energy physics to climate change. Scientists and researchers will be immediately productive on the new system as it will run all the same [CUDA® software](#) as CINECA's existing NVIDIA-powered system, currently the fastest higher education research supercomputer in Europe.

"CINECA plays a critical part in evolving both the research and industrial community in accelerated HPC application development," said Sanzio Bassini, director of the HPC department at CINECA. "The Leonardo supercomputer is the result of our long-term commitment to pushing the boundaries of what a modern exascale supercomputer can be."

"The call for accessibility in HPC, and the expansion of AI in research and industries, have dramatically increased the requirements for more flexibility, and simplicity, in how the world's leading supercomputers are built," said Giuseppe di Franco, CEO of Italy at Atos. "As Europe's leading supercomputer maker, Atos has made a commitment to embracing these modern-day standards and is raising the bar in further democratizing the world of supercomputing."

Leonardo will be built from Atos' BullSequana XH2000 supercomputer nodes, each with four NVIDIA Tensor Core GPUs and a single Intel CPU. It will also use NVIDIA Mellanox HDR 200Gb/s InfiniBand connectivity, with smart in-network computing acceleration engines that enable extremely low latency and high data throughput to provide the highest AI and HPC application performance and scalability.

NVIDIA Ampere architecture GPUs can accelerate over 1,800 HPC applications such as Quantum Espresso for material science, SPECfem3d for geoscience and MILC for quantum physics by up to 70x, making previous big challenge simulations almost real-time tasks.

Learn more about CINECA's Leonardo system and three additional AI supercomputers powered by NVIDIA's accelerated computing platform recently [announced by EuroHPC](#).

About NVIDIA

NVIDIA's (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market, redefined modern computer graphics and revolutionized parallel computing. More recently, GPU deep learning ignited modern AI — the next era of computing — with the GPU acting as the brain of computers, robots and self-driving cars that can perceive and understand the world. More information at <http://nvidianews.nvidia.com/>.

Certain statements in this press release including, but not limited to, statements as to: CINECA building an AI supercomputer with NVIDIA; the benefits, performance, impact and abilities of the new supercomputer and Leonardo system, NVIDIA's computing platform and NVIDIA Ampere architecture GPUs; the Leonardo system propelling Italy as a global leader in AI and high performance computing; the EuroHPC technology roadmap driving growth and innovation; NVIDIA accelerating scientific discovery and providing a platform to usher in the era of exascale computing; Leonardo helping to solve scientific challenges across disciplines; scientists and researchers being immediately productive on the new system as it will run the same software as CINECA's existing system; CINECA's role in evolving HPC application development and Leonardo being a result of their long-term commitment to pushing boundaries; and what Leonardo will be built from and will enable are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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Kristin Uchiyama
Enterprise and Edge Computing
+1-408-486-2248
kuchiyama@nvidia.com