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### **SUPERCOMPUTING: ITALY SELECTED AS ONE OF THE COUNTRIES THAT WILL HOST THE PRE-EXASCALE SUPERCOMPUTER**

Italy will host one of the supercomputers that will build up the European network for supercomputing, a strategic European digital infrastructure in which Europe has invested a total of approx. 900 million euros. The EURO-HPC (European High Performance Computing) project envisages the commissioning, in the coming years, of pre-exascale class computers, i.e. machines with very high computing capacity, at three major European supercomputing centres: one in Italy, based in Bologna, one in Finland in Kajaani, and one in Spain, in Barcelona. The project also involves the construction of four peta-scale computers that will be hosted by Bulgaria, in Sofia, the Czech Republic, in Ostrava, Luxembourg, in Bissen, Portugal, in Minho, and Slovenia, in Maribor. All the centres will be interconnected with the European Géant network and, in Italy, the Bologna node will be connected with a double 100 Gbps connection with the GARR network.

50% of the computing power generated by each machine will be available to research institutes, universities, but also companies, in the host country; the remaining part, on the other hand, will be used by the countries participating in the project. The European supercomputing network will support European researchers, industry and companies in the development of new applications in a wide range of sectors, from research in physics and astrophysics to the design of medicines and new materials, from the fight against climate change to non-destructive field surveys, artificial intelligence and cyber security.

The Italian supercomputer will be called Leonardo and will have a peak power of 270 petaflops. It will be hosted at the Technical Hub in Bologna, formerly the INFN Tier-1 site, the data centre that manages the data produced by the Institute's largest international projects such as LHC and Virgo.

Our country put itself forward last January, thanks to a joint Consortium with Slovenia led by the CINECA Inter-university Consortium, together with the INFN and the International School for Advanced Studies (SISSA). The appointment as a host country was announced on 10 June at a press conference at the MIUR (Italian

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Ministry of Education, Universities and Research) and took place in the last Governing Board of the EuroHPC Joint Undertaking, a body sponsored by the European Commission to promote the development of a network of supercomputers, which had the task of choosing the locations of this international project. The overall financial commitment of the MIUR amounting to 120 million euros will be distributed over the years from 2019 to 2025. A further 120 million euros will be made available by the European Commission, for a total investment of approx. 240 million euros.

In the coming weeks, the tender for the acquisition of the machine components will be launched. The assembly, commissioning and testing of the computer will start in the second half of 2020. With the installation of these machines, the Bologna Technical Hub will become a unique hub of its kind and will attract skills from around the world. ■