



16th edition of Forum Teratec

Next challenges for HPC: European cooperation & novel uses

As the world enters the quantum era while politicians define the future face of a digital Europe, High Performance Computing (HPC) shape the necessary and expected post-Covid rebound. Held from June 22 to 24, 2021, the 16th Forum Teratec highlighted the major challenges facing the entire HPC sector and the European community: autonomous production of supercomputers, democratization of HPC uses, and pooling of knowledge and skills at the European level.

Democratization of HPC use across businesses

As participating companies have shown us during this Teratec Forum, supercomputers are becoming increasingly popular in several sectors even outside industry, such as medical optics for smart glasses, and archaeology for large-scale, ultra-precise surveys... However, these are still unsettled uses.

Industries in all sectors see supercomputers as a possible solution to the complex problems encountered by their customers along with new products yet to be created to address them.

With growing number and diversity of users of High Performance Computing (HPC) as for data storage consequently, new challenges will appear to manufacturers and technology providers. The increase in demand will match an increase in computer power and, consistently in energy consumption and computer costs. As President of Teratec, Daniel Verwaerde, points out: "In the next few decades, the world of supercomputers must be able to offer solutions closely reaching carbon neutrality."

If they want to offer seamless interfaces without loss of performance and from a sole technical standpoint, manufacturers will need to ensure that data is managed consistently between conventional processor, accelerator, and coprocessor.

Minister Delegate to the Minister of Economy, Finance and Recovery, in charge of Industry, Agnès Pannier-Runacher recalled that if quantum technology is to bring "the promise of a major technological breakthrough by shortening computing times by a factor of 1 billion within 5 to 10 years", the investment will of course have to be made in hardware equipment as planned by the French Quantum Plan (1.8 billion euros over five years) beside European projects, also enabling to engage accelerators and quantum computers in operation within computing centers.

As reported by Daniel Verwaerde: "Failing to work in these three areas simultaneously, the investments made will be all the more useless because they are so important."

Europe-wide cooperation

Whether France aims to be among leaders in these technologies and particularly in quantum computing requires cooperation on a European scale. Even if France indeed has been pursuing a proactive policy in this field since the 1960s, financial stakes for the next generations of supercomputers are such that the nation cannot act alone. Since French and European policies are in line with each other, the expertise acquired over decades can only give France a leading role.

As Daniel Verwaerde reaffirmed: "for supercomputers are strategic tools for our European development and our collective security, failing to be autonomous in this field would be a serious economic handicap (supercomputers are high value-added products) but also a societal one (production generates jobs, from most qualified to other many technical and manufacturing skills)."

Anders Dam Jensen, Executive Director of EuroHPC, recalled the missions of the joint European venture: to provide Europe with eight supercomputers ranked, if possible, in the top five in the world which will enable it to compete on equal footing with its competitors, and to develop a complete supply chain so that Europe can be autonomous in the production of such supercomputers. One among deadlines is to produce a European-based technology computer over the next call for tenders for the production of exaflops computers starting in 2023.

This collaboration is fully expressed in the future implementation of one interconnection between all the major European computing centers, planned after 2025. National competence centers will be referenced for each member country so that all industrial companies have access to high-performance computing, including SMEs and government agencies. In France, Teratec has been designated by the government and EuroHPC to be the national competence center, in cooperation with Cerfacs (European Center for Research and Advanced Training in Scientific Computing) and GENCI (Grand Equipement National de Calcul Intensif).

"We are at a turning point [...] and this is where European involvement is particularly important," said Hervé Mouren, Director of Teratec. And Daniel Verwaerde added: "Investing in the European project increase chances that the policy decided by Europe will be the one that France needs."

To be released, a summary of various presentations at Teratec

A summary will soon be available to outline the richness of interventions that took place during the 16th Forum Teratec:

- public authorities (Agnès Pannier-Runacher, Minister in charge of Industry; Anders Dam Jensen, Executive Director - EuroHPC; Neil Abroug, Director - National Quantum Program);
- users (Alessandro Profumo, Chairman and CEO - Leonardo; Ghislain Lescuyer, General Manager - Saft; Catherine Jestin, CIO - Airbus; Gilles Le Saux, Senior Vice President Foresight & Research - Essilor International);
- providers (Jensen Huang, Chairman & CEO - NVIDIA; Elie Girard, CEO - Atos; Théau Peronnin, Co-fondateur et CEO - Alice & Bob; Yves Ubelmann, Co-founder and CEO - Iconem);
- and academic and scientific representatives (Satoshi Matsuoka, Director - Riken/R-CCS; Eric Labaye, President - École polytechnique and Institut Polytechnique de Paris; Bruno Sportisse, President – Inria; Wolfgang Marquardt, Chairman of the Board of Directors - Forschungszentrum Jülich)

Workshops were also held on targeted topics: hybrid quantum computing, communicable diseases, cyber threats, satellite data for the environment and climate, autonomous systems and HPC storage.

Finally, focusing on technological challenges of high-performance simulation and the diversity of uses of HPC, the roundtables reviewed:

- the evolution of vendor offerings in relation to the rise of AI;
- data processing in HPC environments in relation to new requirements for resolution, security, energy... ;
- the French Competence Center for HPC, HPDA and AI technologies, a Marketplace of reference accessible to industry and academia.

Next Forum Teratec 2022: June 14 & 15, 2022

➔ **Find all interventions from the Forum 2021 here:**

<https://teratec.eu/forum/index.html>

➔ **For Press and Journalists only**

Find Exhibitors' news in the virtual Press Service

<https://1drv.ms/u/s!Ag-fEfGyBq5xhcFil6-lIn26bvkhgw?e=bdsZUs>

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