

# Press Release

New research infrastructure:

## 'Alps' supercomputer inaugurated

Zurich, 14 September 2024

On 14 September, ETH Zurich officially inaugurated the new 'Alps' supercomputer at the Swiss National Supercomputing Centre (CSCS) in Lugano. The celebrations were attended by Federal Councillor Guy Parmelin and well-known personalities from the worlds of science and politics.

The new research infrastructure is based on a Cray Supercomputer EX from Hewlett-Packard Enterprise (HPE) and has 10,752 of the world's coveted NVIDIA Grace Hopper superchips. This makes 'Alps' one of the fastest computers in the world. In the Top500 list of supercomputers from June 2024, it was ranked 6th in the first expansion stage. When fully expanded, 'Alps' will have a maximum performance in the order of half an exaflop. One exaflop corresponds to one billion billion floating point operations (flops) per second. Exact figures on the final expansion status are expected in November.

### **Result of combined forces and many years of cooperation**

"'Alps' is an expression of our vision of a future characterised by knowledge and progress," said Federal Councillor Guy Parmelin in his speech. At the same time, the new supercomputer is a tribute to the discoverers of as yet unknown scientific fields and the epitome of absolutely outstanding technology. The head of the Federal Department of Economic Affairs, Education and Research explained that the new research infrastructure is the result of the combined efforts of the Confederation, cantons and communes.

ETH Vice President for Research Christian Wolfrum also emphasised the long-term commitment of the Confederation and the ETH Domain. With regard to the chips installed in the research infrastructure, he also emphasised the importance of the long-standing collaboration between CSCS and industry: "'Alps' is a stroke of luck, but no coincidence. After all, the latest supercomputer is part of a long tradition of collaboration between CSCS and industry."

### **Utilising the full potential of artificial intelligence**

The new supercomputer has been developed to meet scientific research's extreme data and computing requirements. With 'Alps', scientists in Switzerland have an infrastructure that allows them to fully utilise the possibilities of artificial intelligence (AI), Wolfrum continued.

The new supercomputer is a central element of the Swiss AI initiative. It was launched by ETH Zurich and EPFL to position Switzerland as the world's leading hub for the development and implementation of transparent and trustworthy AI solutions.

"'Alps' makes it possible to train complex AI models for important applications, for example, in medicine and climate research," says Andreas Krause, who heads the AI Centre at ETH Zurich. At the

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same time, thanks to the new research infrastructure, methodological progress can be made in the areas of transparency, reliability and sustainability of AI.

### **Tailored to the specific needs of user communities**

'Alps' is a key component of the research infrastructure at CSCS. " With its cloud-native architecture, we can create versatile software-defined clusters (vClusters) tailored to the specific needs of user communities, ensuring the maintenance of the necessary confidentiality," explains Thomas Schulthess, Director of the CSCS. Several institutions are taking advantage of this new opportunity, most notably the Paul Scherrer Institute. He is convinced that 'Alps' will pave the way for addressing scientific challenges, encouraging scientists in high-performance computing and extreme data analytics to think outside the box.

However, the hardware is only one piece of the puzzle. The other part is the multifaceted software development. Here, the engineers from CSCS play an important role, working closely with the researchers to develop tools and software that translate scientific questions into the language of the computer. Together, they are driving advances in scientific research in Switzerland – often with a direct benefit to society. For example, "Alps" has allowed MeteoSwiss to switch to a much higher-resolution model for weather forecasts that better reflects Switzerland's complex topography of mountains and valleys.

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