

Piz Daint, Alps and MeteoSwiss

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For a decade the flagship of the centre was Piz Daint, a Cray system installed in the new building in December 2012 and progressively upgraded with graphics processors. In its upgraded configuration of 2016 and 2017 Piz Daint was the most powerful supercomputer in Europe and ranked among the top three in the world in the TOP500 list.¹ It was succeeded by Alps, an HPE Cray EX system with 10,752 NVIDIA Grace Hopper superchips, which was inaugurated on 14 September 2024 in the presence of Federal Councillor Guy Parmelin. In June 2024, in its first expansion stage, Alps ranked sixth in the TOP500 list. Its maximum performance when fully expanded was given as "in the order of half an exaflop".² The CSCS described Alps as having a "cloudnative architecture" that allows virtual clusters to be configured for individual research communities while maintaining confidentiality.³

The federal meteorological service MeteoSwiss has used dedicated computing resources at the CSCS for its numerical weather forecasts since 2001. In 2023 its forecasting computer, named "Pigne d'Arolla", was located at the Cornaredo centre and ran the regional COSMO model for the Alpine region.⁴ With Alps, MeteoSwiss was able to switch to a model with a much higher resolution.⁵ The centre's User Lab gives researchers free access to its computers after a competitive scientific evaluation. In 2023 it served about 1,800 users in 103 projects with 42 million node-hours. Chemistry and materials science used 38 per cent of the resources, physics 23 per cent, biology 17 per cent and environmental sciences 12 per cent. The CSCS employed 127 people from 23 countries, with English as its working language, and had an operating budget of CHF 37 million and an investment budget of CHF 20 million.⁶

1 The Swiss AI Initiative and Apertus

The Alps system was conceived as the "central element of the Swiss AI initiative" launched by ETH Zurich and EPFL, whose aim is to position Switzerland as a leading location for "transparent and trustworthy AI solutions".⁷ On 2 September 2025 EPFL, ETH Zurich and the CSCS released Apertus, a fully open multilingual large language model. The model was published in two sizes, with 8 billion and 70 billion parameters, and had been trained on 15 trillion tokens of text in more than 1,000 languages, 40 per cent of them other than English, including Swiss German and Romansh. Its development used more than 10 million GPU hours on Alps and more than CHF 10 million of funding from the ETH Board. The model is released under a permissive open licence that allows educational, research and commercial use.⁸

The developers stated that they had paid "particular attention to data integrity and ethical standards" and had taken into account Swiss data protection law, Swiss copyright law and the transparency obligations of the European Union's Artificial Intelligence Act.⁹ Swisscom became the strategic partner and offers the model to business customers through its Swiss AI platform. The model can also be downloaded from the Hugging Face platform.¹⁰ For banks and asset managers in Lugano, Apertus is of interest for three reasons. It can be run on the institution's own infrastructure or on a Swiss platform, which reduces the outsourcing and data protection issues discussed below. Its training data and methods are documented, which facilitates the documentation and explainability required by FINMA. Its multilingual training includes Italian and the Swiss national languages, which matters for a financial centre whose documents are in Italian, German, English and French. Whether an open model of this size can compete in quality with the large commercial models is a separate question that each institution must test for its own use cases.

In figures. The CSCS was founded in 1991 and moved to Lugano-Cornaredo in 2012, in a building financed with CHF 67.5 million by the Confederation and CHF 5 million by the canton.¹¹ It draws lake water from a depth of 45 metres through a 2.8-kilometre pipeline at up to 760 litres per second.¹² Alps, inaugurated on 14 September 2024, has 10,752 Grace Hopper superchips and ranked sixth in the TOP500 list of June 2024.¹³ Apertus, released on 2 September 2025, was trained on 15 trillion tokens in more than 1,000 languages with more than 10 million GPU hours.¹⁴

2 Notes

1. Wikipedia, "Piz Daint (supercomputer)", [https://en.wikipedia.org/wiki/Piz_Daint_\(supercomputer\)](https://en.wikipedia.org/wiki/Piz_Daint_(supercomputer)) (consulted as a last resort) (original system "installed in December 2012", consistent with the CSCS brochure, above; after the upgrade of autumn 2016 "the third most powerful supercomputer in the world", a position held in the TOP500 list of June 2017; already before the upgrade ranked eighth until the end of 2015, "higher than any other supercomputer in Europe"). ↩
2. CSCS, press release "'Alps' supercomputer inaugurated" (September 2024), https://www.cscs.ch/fileadmin/user_upload/contents_publications/news/news_2024/press-release-alps-supercomputer-inaugurated.pdf. ↩
3. CSCS, press release (September 2024, above). ↩
4. "MeteoSvizzera: il supercomputer a Lugano-Cornaredo", Tio.ch, 27 April 2023, <https://www.tio.ch/ticino/attualita/1663702/meteosvizzera-lugano-cscs-cornaredo>; Wikipedia, "Swiss National Supercomputing Centre" (above) (dedicated resources for MeteoSwiss since 2001). ↩
5. CSCS, press release (September 2024, above). ↩
6. CSCS brochure 2024 (above). ↩
7. CSCS, press release (September 2024, above). ↩
8. EPFL AI Center, "Apertus: a fully open, transparent, multilingual language model" (2 September 2025), <https://ai.epfl.ch/apertus-a-fully-open-transparent-multilingual-language-model>. ↩
9. EPFL AI Center (2 September 2025, above). ↩
10. EPFL AI Center (2 September 2025, above). ↩
11. CSCS brochure 2024 (above); CSCS media release of 31 August 2012 (above). ↩
12. CSCS brochure 2024 (above). ↩
13. CSCS, press release (September 2024, above). ↩
14. EPFL AI Center (2 September 2025, above). ↩

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