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The WLCG Journey at CSCS: from Piz Daint to Alps

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The Swiss National Supercomputing Centre (CSCS), in close collaboration with the Swiss Institute for Particle Physics (CHiPP), provides the Worldwide LHC Computing Grid (WLCG) project with cutting-edge HPC and HTC resources. These are reachable through a number of Computing Elements (CEs) that, along with a Storage Element (SE), characterise CSCS as a Tier-2 Grid site. The current flagship system, an HPE Cray XC named Piz Daint, has been the platform where all the computing requirements for the Tier-2 have been met for the last 6 years. With the commissioning of the future flagship infrastructure, an HPE Cray EX referred to as Alps, CSCS is gradually moving the computational resources to the new environment. The Centre has been investing heavily in the concept of Infrastructure as Code (IaC) and it is embracing the multi-tenancy paradigm for its infrastructure. As a result, the project leverages modern approaches and technologies borrowed from the cloud to perform a complete re-design of the service. During this process, Kubernetes, Harvester, Rancher, and ArgoCD technologies have been playing a leading role, providing CSCS with enhanced flexibility in terms of the orchestration of clusters and applications. This contribution aims to describe the journey, design choices, and challenges encountered along the way to implement the new WLCG platform, which is also profited from by other projects such as the Cherenkov Array Telescope (CTA) and the Square Kilometre Array (SKA).

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