Contribution ID: **37** Type: **Oral**

Challenges and opportunities in migrating the CNAF datacenter to the Bologna Tecnopolo

Tuesday, 25 October 2022 14:30 (20 minutes)

The INFN Tier1 data center is currently located in the premises of the Physics Department of the University of Bologna, where CNAF is also located. Soon it will be moved to the "Tecnopolo", the new facility for research, innovation, and technological development in the same city area; it will follow the installation of Leonardo, the pre-exascale supercomputing machine managed by CINECA, co-financed as part of the EuroHPC Joint Undertaking.
The construction of the new CNAF data center will consist of two phases, corresponding to the computing requirements of LHC: Phase 1, starting from 2023, will involve an IT power of 3 MW, and Phase 2, starting from 2025, involving an IT power up to 10 MW.
The primary goal of the new data center is to cope with the computing requirements of the data taking of the HL-LHC experiments, in the time spanning from 2026 to 2040, providing, at the same time, computing services for several other INFN experiments, projects, and activities of interest, being they currently in operation, under construction, in advanced design, or even not yet defined. The co-location with Leonardo will also open new scenarios, with a close integration between the two systems able to share dynamically resources.
In this presentation we will describe the new center design, with a particular focus on the status of the migration, its schedule, and the technical challenges we have to face moving the data center without service interruption. On top of this, we will analyze the opportunities that the new infrastructure will open in the context of the PNRR (National Plan for Resilience and Recovery) funding and strategic plans, within and beyond the High Energy Physics domain.

Significance

It is a status report, but includes the analysis of the technical challenges we had to face to migrate the data center without service interruption and the integration of the data center itself with a pre-exascale machine.

References

Experiment context, if any

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Session Classification: Track 1: Computing Technology for Physics Research

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