

HL-LHC contribution

HL-LHC is actively working in order to exploit the first prototype of an open access Datalake for the ESCAPE community: the ESCAPE Data Infrastructure for Open Science (e-DIOS).

ATLAS successfully completed a first exercise, consisting of re-analysing the data that led to the discovery of the Higgs boson on the ESCAPE Datalake, by using public data from CERN's ATLAS experiment passing through the path defined by the different components of the ESCAPE infrastructure:

- Upload ATLAS Open Data in ESCAPE Datalake (WP2) and provide a simple and efficient access interface to exercise data analysis (JupiterLab-WP5, collaboration with CERN and LAPP-CTA)
- Opportunity to test new Rucio options (QoS flag,...) before deployment in ATLAS production
- Significant effort necessary to migrate Rucio tool code from cvmfs to singularity/docker

The next objective is extending to other physics channels (with higher computing needs) and read data directly from ESCAPE Datalake.

CMS completed the first compute and Datalake integration through a cache layer, using Experiment's Open Data, a useful test for data import and discovery mechanics validation, in details:

- Successfully imported data into the Datalake, including replication based on QoS label and data discovery.
- On demand analysis facility based on k8s cluster and supporting multi-tenancy jupyter access was deployed and completely integrated with IAM based AuthN/Z for both data and compute resources access

CMS carried out with success a proof of concept running analysis workflows on Marconi A2 HPC system at CINECA (Italian PRACE Tier-0), using data from the CMS experiment at CERN, hosted on the ESCAPE Datalake prototype prepared by the WP2 (e-DIOS).

Next objectives are to test X509-free RUCIO to enhance further testing with embargoed data in Datalake, with full IAM token authorization flow. Extending the testing to more I/O intensive physics workflows using multi-level cache layers is next in line.

Overall HL-LHC has not met major issues so far, nor foresees problems to transform / extend WLCG sites to the ESCAPE Datalake.