deRSE25 and SE25 Timetables



Contribution ID: 100

Type: Talk (15min + 5min)

Software Infrastructure for fully Containerized Computing Cluster at GSI / FAIR

Tuesday 25 February 2025 14:50 (20 minutes)

Scientific research at the FAIR accelerator facility spans a wide range of fields, including Nuclear Physics, Atomic Physics, and Heavy Ion Physics. Workflows for simulations and data analysis in FAIR experiments range from High Throughput Computing to OpenMPI calculations and traditional batch processing. Operating a shared computing cluster that is scalable enough to meet the diverse needs of such a heterogeneous user community presents a significant challenge.

We present the principles of a fully containerized approach used in the GSI/FAIR computing cluster, which has been successfully operating for five years. This approach is based on a complete separation of user application environments from the host system, providing greater flexibility and scalability.

This new approach involves additional software infrastructure to support a reproducible containerized environment and enable reliable testing. To enhance the user experience in working with containers, we introduced the concept of a Virtual Application Environment, allowing users to interactively log into the container with access to an extensive software stack.

I want to participate in the youngRSE prize

no

Primary author: KRESAN, Dmytro (GSI, Darmstadt)

Co-author: Dr AL-TURANY, Mohammad (GSI, Darmstadt)

Presenter: KRESAN, Dmytro (GSI, Darmstadt)

Session Classification: Facets of large Software Infrastructures

Track Classification: Research Software: infrastructures for scientific computing