

# Highlights of the HPC Strategy meeting, Ljubljana, 5-6 September 2024

JENA computing WP1 (HPC) meeting,  
9 Sept 2024

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# Meeting Summary

Hosted at Institut Jožef Stefan in Ljubljana, Slovenia

- Strong connection with VEGA, which is hosted in Maribor and is primarily a CPU resource and has been used by ATLAS, and recently CMS through interTwin

## Meeting Format

- No talks! Very few bullets/ slides to structure/guide the discussion allowed/encouraged.

## Meeting Attendance

- Representatives from HPC sites in Europe and LHC experiments: a small group to foster discussions foster focused discussions
  - ~15 people: good technical representation from the sites and experiments



# Meeting Goals

- Discuss the current status and challenges of HPC integration in Europe (combining information from other regions).
- Compile a list of the impediments to integration in two columns: things that can be solved or improved and things that just need to be accommodated or worked around.
- Develop a list of topics we believe would benefit from dedicated initiatives
- Develop a list of topics that are common to HPC integration in different regions (Europe, USA,..)
- Document and capture the discussions and main conclusions, with the aim of writing a white paper

# Agenda Topics

- Topics to discuss
  - Thursday 5th September
    - HPC and HEP needs and future evolution
    - Strategies for Integration
    - Report from the US meeting
  - Friday 6th September
    - Networking
    - Storage
    - Software Strategies
    - Writing Assignments / strategy
  -

# Setting the Scene

The first session was designed for an exchange of information on needs and plans for the HPC and HEP communities:

- European HPC sites presented their
  - Technical plans
  - What is needed from the supported sciences
- Reports from LUMI, SURF, GENCI, JULICH, VEGA, DEUCALION, CSCS
  
- WLCG and the LHC experiments presented their
  - Expected computing needs and growth
  - Strategies for engaging with HPC sites

[COLLECTIVE MINUTES here:](https://docs.google.com/document/d/1A0tKmHb1CE3ptcMiYQ8dHyLzWbOKUEVbjXHxLykHD14/edit)

<https://docs.google.com/document/d/1A0tKmHb1CE3ptcMiYQ8dHyLzWbOKUEVbjXHxLykHD14/edit>

# Report from US HPC Meeting

The U.S. held a similar meeting in January 2024

Discussions focused on

- Provisioning
- Interfaces
- Software
- Data Management
- Workflows

Higher percentage of managers at the U.S. meeting and therefore the discussions were less technical than in Ljubiana.



## Strategy For HPC Integration (US) Whitepaper

Authors: Debbie Bard, Doug Benjamin, Paolo Calafiura, Simone Campana, Taylor Childers, Ian Fisk, Maria Girone, Oliver Gutsche, Dirk Huffnagel, Alexei Klimentov, Eric Lançon, Verena Martinez Outschoorn, Frank Wuerthwein  
Indico: <https://indico.cern.ch/event/1356688/>  
Passcode: HPCS12024

### Introduction

High-Performance Computing (HPC) sites represent the most substantial computational resources available to the scientific community. Since the inauguration of the Large Hadron Collider (LHC), these HPC facilities have experienced an astonishing 1000-fold increase in computing power, now reaching the exascale level. As upcoming High Energy Physics (HEP) experiments and other data-intensive scientific endeavors are projected to generate exabytes of data annually, there is an urgent need to efficiently collect, distribute, process, and analyze this vast amount of information.

HEP, with its extensive datasets and intricate connections to various scientific fields, has the potential to stand at the forefront of this integration effort. To fully harness the physics potential of this data and enable speculative exploration, it is imperative to explore and adopt new processing techniques, technologies, and resources. The convergence of Artificial Intelligence (AI) with HPC further amplifies the potential for groundbreaking discoveries and drives innovation across these domains.

[https://docs.google.com/document/d/1V-vy5y9JUswWctiq3f6q3DmOQlzTJj6eKlwprzPW7\\_7w/edit#heading=h.g65tt9rswf8c](https://docs.google.com/document/d/1V-vy5y9JUswWctiq3f6q3DmOQlzTJj6eKlwprzPW7_7w/edit#heading=h.g65tt9rswf8c)

# Technical Discussion Points

Strategy

Location policies and opportunities

Edge nodes and AAI

Type of workflows

Networking

Software

Storage handling

A document will be prepared with the intent of collecting requirements and needs by HEP as discussed and documented in the following link:

[https://docs.google.com/document/d/11xico7X\\_tC7LLqPejcy\\_vB36nfBNs3nn9cPqIWivXQ/edit](https://docs.google.com/document/d/11xico7X_tC7LLqPejcy_vB36nfBNs3nn9cPqIWivXQ/edit)

# Next Steps

A document will be prepared with the intent of collecting requirements and needs by HEP as discussed and documented in the following link:

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Access: CERN IT will coordinate via CERN on development calls and start the process of information gathering for regular access calls. Develop a portal to put common information for experiments (LHC, DUNE, CERN-TH,..) ,

We will organize a joint meeting with representation from all regions to develop common requirements and strategy

- Late Fall 2024, location TBD, proposal is CERN