WLCG/HSF Workshop 2025

Monday 5 May 2025 - Friday 9 May 2025

IJCLab, Paris

Scientific Programme

The WLCG/HSF Workshop 2025 brings together the Worldwide LHC Computing Grid (WLCG) and the HEP Software Foundation (HSF) communities to discuss key technical and strategic topics shaping the future of computing and software for high-energy physics. With the challenges of HL-LHC approaching, this workshop serves as a platform to exchange ideas, review ongoing developments, and coordinate efforts across our partially overlapping communities.

Several important themes will be explored, spanning WLCG Technical evolution, operations, software innovation, and long-term sustainability, all with the ultimate goal of ensuring that LHC ambitious physics program is fully enabled by cutting-edge computing infrastructure and software solutions.

AI impact in WLCG & HSF

Artificial Intelligence (AI) is reshaping computing across all domains, and high-energy physics is no exception. While AI techniques—including deep learning and machine learning—have been used in HEP for decades, we now face a critical moment to structure our initiatives strategically. This is essential not only to maximize scientific impact but also to ensure that we can efficiently leverage funding opportunities.

This session will explore two key areas:

AI for WLCG Facilities & Services – Applications such as anomaly detection for system monitoring, failure prediction, resource optimization, and data transfer efficiency.

AI for HEP – The latest advancements in AI-driven analysis techniques, including AI-enhanced simulation models.

Analysis at scale

With HL-LHC increasing data volumes by orders of magnitude, the way we analyze data must evolve. This session will review ongoing R&D efforts aimed at tackling scalability, efficiency, and infrastructure readiness for next-generation physics analyses. Topics will include adaptive workflows, heterogeneous computing (focusing on GPUs), and smart data management strategies.

Environmental sustainability

Ensuring long-term sustainability is a crucial responsibility for our community. This discussion will address both environmental sustainability—minimizing the energy footprint of large-scale computing—and the sustainability of our people by fostering a strong, diverse, and well-supported community.

WLCG

In addition to presenting the WLCG Technical Roadmap, we will focus on DOMA, WLCG Operations and Facilities, covering the most pressing challenges and improvements in computing centers, data management, and distributed workflows. As computing never stops evolving,

continuous improvements are crucial for maintaining a reliable and efficient infrastructure.

WLCG Technical Coordination

The WLCG Technical Coordination Board will present and discuss the draft structure of the WLCG Technical Roadmap, which outlines the evolution of WLCG for Run 4 and Run 5. The roadmap aims to ensure a sustainable and efficient infrastructure capable of meeting the increasing demands of HL-LHC computing.

WLCG Operations

A discussion on WLCG operations and strategies for enhancing their efficiency, with a primary focus on recent updates to the WLCG helpdesk and ticketing system, as well as advancements in the WLCG accounting infrastructure.

DOMA

We will discuss the most pressing challenges and improvements in data management and distributed workflows

HSF

The HSF plays a key role in shaping the future of software for HEP. We will discuss the importance of software training, knowledge transfer, and community-driven development efforts to ensure that the next generation of physicists and software developers can effectively contribute to and maintain HEP computing ecosystems.

Common Software and Software Projects

Training

Recognition of Sustainable Software