

Short Summary of the PRACE/CERN Workshop

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Workshop Agenda

- The growth in computing needs for HEP by HL-LHC will outpace technology evolution improvements, leaving a significant resource gap
 - High Performance Computing offers very promising opportunities
- Representatives from PRACE and CERN met on October 22nd 2018
 - The morning was devoted to PRACE organization and opportunities
 - There was a focus on training and support
 - The afternoon focused on the experiment plans and activities in HPC
- Material available at <https://indico.cern.ch/event/760705/>

10:00	→ 10:10	Welcome and Workshop Goals Speaker: Maria Gironé (CERN)	10m
10:10	→ 12:10	Presentations from PRACE How PRACE works, how to interact together, mechanisms for resource allocation, scheduling in terms of I/O, data serving, authentication and authorization, firewalls, etc.. PRACE versus other EU initiatives. PRACE plans for the next generation of deployments (FPGAs, Apache Pass NVRAM, next generation interconnects, more integrated storage, etc.) and how they may impact use-cases.	
10:10		PRACE in a nutshell Speaker: Serge Bogaerts (PRACE)	15m
10:30		Current PRACE Access Mechanisms Speaker: Florian Berberich (PRACE BoD, Jülich Supercomputing Centre)	15m
10:50		PRACE trainings Speaker: David Vicente (BSC)	15m
11:10		High Level Support Teams for HPC users Speaker: Stéphane Requena (member of PRACE BoD, GENCI)	15m
11:30		PRACE scientific code projects Speaker: Fabio Affinito (CINECA)	15m
11:50		PRACE pilots for Large scientific instruments Speaker: Frederic Suter (PRACE)	15m
12:15	→ 13:30	Lunch break	1h 15m
13:30	→ 15:50	Presentations from CERN	
13:30		The role of HPC: experience and outlook - ALICE perspective Speaker: Costin Grigoras (CERN)	15m
13:50		The role of HPC: experience and outlook - ATLAS perspective Speaker: Andrej Filipcic (Jozef Stefan Institute (SI))	15m
14:10		The role of HPC: experience and outlook - CMS perspective Speaker: Markus Klute (Massachusetts Inst. of Technology (US))	15m
14:30		The role of HPC: experience and outlook - LHCb perspective Speaker: Stefan Roiser (CERN)	15m
14:50		The role of HPC: experience and outlook - perspectives from the COMPASS experiment at the SPS Speaker: Riccardo Longo (Univ. Illinois at Urbana Champaign (US))	10m
15:10		Requirements on HPC from the HEP ML perspective Speaker: Maurizio Pierini (CERN)	15m
15:30		Implementing a common layer for accessing HPC - A perspective from CERN IT Speaker: Tim Bell (CERN)	20m
15:50	→ 16:05	Coffee break	15m
16:05	→ 17:05	Discussion and Next Steps	1h

Workshop Goals

- Learn how PRACE works and how we can interact together
- Understand mechanisms for resource allocation, scheduling, I/O and data serving , authentication and authorization, and firewalls
- Understand the interactions of PRACE with other EU HPC initiatives
- Understand PRACE plans for the next generation of hardware deployments
- Understand how all of these elements impact the scientific use-cases

- Understand how HEP software and best exploit HPC resources
- Present the current experience of the experiments on HPC
- Discuss what changes on the infrastructure and the workflows could be the most beneficial to efficiently working together

Some notes from the discussion

- It was recognized that the LHC and other data intensive sciences like SKA are often open-ended multi-year projects that need predictable computing resources
 - not coherent with PRACE annual proposal-driven allocations
- Most LHC/HEP applications currently make very little use of communication between data processing instances (running processes) due to the nature of HEP workflows
 - PRACE has resources for code optimization and support for hardware transitions, which could be very beneficial to HEP
- A common set of interfaces for authorization, resource allocation, workflow submission, data management and access are needed to reduce the cost of adoption
 - Expertise from HEP could be beneficial
 - Prototypes like FENIX that could be a starting point

Next steps

- A number of joint strategic and technical actions/activities were discussed, some could be in common with SKA
- A two-page summary of the discussion is being prepared capturing actions and possible demonstrators