

Architects Forum Meeting

Date / Time: 31 Aug 2023, 14:00

Agenda: <https://indico.cern.ch/event/1251047/>

Present: Predrag, Graeme Stewart, Valentin Volkl, Guilherme Amadio, Andre Sailer, Axel

Remote: Simone Campana, Gabriele Cosmo, Giulio Eulisse, James Catmore, Liz Sexton-Kennedy

Excused: Andrea Valassi, Alberto Ribon, Marco

Next meeting: 05 Oct 2023, 14:00

Announcements and upcoming events

Draft minutes of the last meeting can be found [here](#).
The minutes of the previous meetings can be found [here](#).

9-12 October 2023	PyHEP workshop , online ‘virtual’ meeting.
6-9 November 2023	JuliaHEP workshop , Erlang, with remote participation available
November 2023	Gaudi/Allen framework evolution workshop at CPPM in Marseille

SFT Line Management

- Arrivals
 - 1 September
 - Mateusz FILA, EP R&D fellow, heterogenous frameworks
 - Tim EHMANN, technical student, Stacks
- Departures :
 - 31 August
 - J Lopez, EP R&D fellow, RNTuple
 - Ole MORUD, technical student, Stacks

Report from the SFT Projects

ROOT	• v6.28/06 is out, several bug fixes • v6.30 scheduled for October - requires C++17! • LLVM 16 upgrade progressing well, to be merged around October • v6.32 (with LLVM 16) tentatively scheduled for May 2024 • SYCLOPS general assembly Sept 4+5 • RNTuple workshop Nov 6+7 with experiments (LHC and more) • Giving training @ software carpentry again
Simulation	• New monthly development releases of Geant4 (11.1.ref07 and 11.1.ref08), including the developments of last two months (July and August), deployed and installed on CVMFS at CERN • Geant4 Space Users Workshop scheduled for December 5-7th (Pasadena, USA) https://indico.esa.int/event/477/ • Geant4 assessment of AdePT and Celeritas R&D simulation projects scheduled for December 13-14th • Advanced Course of Geant4 scheduled for October 16-20th; registrations are open, still places available: https://indico.cern.ch/e/geant4_advanced_course_2023
CernVM	• 2.11.0 has been published in testing repositories, will be released for production next monday • Ongoing investigation of a stratum-1 replication failure for lhcbdev.cern.ch • Ongoing investigation of reports of stuck mount processes for clients of osgstorage.org

SPI	• LCG 104 has been released: Announcement, Packages ◦ gcc11, gcc12, gcc13 (C++20), clang16 (C++20), mac, ubuntu ◦ First release with EL9 based stacks • New layer for ATLAS: LCG 102b ATLAS 25/26 • Started to think about LCG 104a (ROOT 6.28/06 etc.)
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Related Projects & IT	
XRootD	• XRootD 5.6.1 is the last released (11 July 23) • TLS issues observed with the new client in OSG, will be addressed in 5.6.2 • Next release expected soon (after outstanding bugs are addressed) • EOS 5.2 will also be released soon and use XRootD 5.6.x
HSF	• Upcoming workshops focusing on Python and Julia (see above) ◦ Abstract submission open for both, all contributions encouraged • Training ◦ Software Basics, 13-14 November ◦ C++ Advanced Course, 16-20 October • Compute Accelerator Forum ◦ 13 September, RISC-V architecture • Other activities now restarting after the break ◦ Tools and Packaging Group, Meeting Tuesday 5 Sep, 17h, next week on

	container helper wrapper Denv
CERN openlab	•
IT R&D	•
EP R&D	• Restarting meetings after the summer
AIDAinnova	• Next annual meeting will be in Catania, March 2024. We will organise another hackathon.

Stakeholders feedback

ALICE	• Ongoing preparations for HI Run. • We would like to have CVMFS_CACHE_REFCOUNT=1 set by default, as soon as it's deemed stable.
ATLAS	• Working on the assumption that AL9 will be supported, ATLAS is advancing preparations to base its end-of-year reprocessing release, and the 2024 data taking releases, on AL9+LCG_104+gcc13. Nightly builds are running and physics validation will take place over the coming months. • ARM production queue on WLCG (Glasgow) now accepting test jobs (evgen, simulation, reconstruction, DAOD production), largely smooth so far • Ready for HI

CMS	● Significant effort flowing into the last steps of the preparation for the Heavy Ions run, including deployment of the data taking release, featuring the code allowing to save RAW', a preprocessed and smaller version of the RAW data to maximise the physics harvest with more statistics at disposal of the analysis community. ● <i>[Linux]</i> CMS closely follows the evolution of the situation relative to the Linux distribution at CERN. For the moment, the original plan remains unchanged: the production Linux distribution of CMS is Alma8. ● <i>[Event generation]</i> ○ The usage of compressed gridpacks from CVMFS leads to identical results compared to local execution. The LHE files show perfect agreement, which proves reproducibility of the production. Tests at scale will take place in about a month for now. ○ LHE-level events have been successfully produced starting from gridpacks produced with the GPU version of Madgraph. We are currently benchmarking gains at the gridpack production level and event generation level. The CMS Generators team plans on starting regular meetings with the Madgraph4GPU team. ● <i>[Simulation]</i> The experience accumulated with the 10.7 series of the Geant4 toolkit was used to integrate the 11 series for the currently open CMSSW release series, featuring an even better physics description and code performance. The physics validation of Geant 4 11 is being currently ongoing. ● <i>[ROOT]</i> CMS is considering to jump to 6.30 if released at the end of September, skipping 6.28.
LHCb	●
CLIC	● NTR

FCC

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AOB

- Technical Training on Linux perf: <https://cern.ch/perf-training-2023> by the author/maintainer of perf. Please sign up and spread the word to your colleagues.
- Status of enabling frame-pointers by default in production (for use with perf)
- Event generators' and N(n)LO codes' acceleration workshop: <https://indico.cern.ch/event/1312061/>. 13-14 Nov.

Action Items:

- Follow-up re. the rate limiting gitlab.cern.ch to understand what the problem is.
 - There is a workaround involving harbour.cern.ch.
 - Spack follow-up:
 - Started our discussions with Spack users. Interrupted by the summer break and will restart in September.
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Minutes:

CVMFS:

- Valentin explained the release procedure for the new CVMFS version (which has not changed), where new versions are released first to testing, then into the production repositories.
- Giulio explained that ALICE would like the new feature for ref counting of file descriptors, which is important for their asynchronous reconstruction (see ALICE report).
- Simone suggested that ALICE contact WLCG operation coordination to ask for the deployment to be planned and accelerated.
- Valentin explained the CVMFS_CACHE_REFCOUNT=1 can be set in the CVMFS config repository, so this is under

the control of the SFT team.

Xrootd

- New version increased the number of threads, which ROOT appreciated.
- There should be an offline follow-up regarding multi-streaming.

ALICE

- Further discussion on the CVMFS REFCOUNT feature (see above).

CMS

- Is there a deadline for CMS to jump to 6.30? Could cope with the beginning of October. It's not a hard deadline, but there is time pressure as the LHC restarts earlier in 2024.

ATLAS/CMS

- Do you use RHEL9? Yes, so both experiments care about binary compatibility with Alma9. Need to ensure results are the same on both platforms.
- ROOT comments that at the moment they only test on Alma9.
- At the moment Alma and RHEL are binary compatible, but there is a question regarding the future that is still open - this is being looked at by the Linux Future Committee, a statement expected in the autumn.

Compilers

- At the moment, “enable frame pointers” is not enabled by default in LCG releases (There was a gcc10fp build in the past, but LHCb did not re-request it, and ATLAS prefers the frame-pointer is not enabled). This feature does slow down some codes (RDataFrame).

LHCC Training Presentation

- It would be good to include Geant4 training material also on the Training Centre
 - Geant4 will discuss this at their next collaboration meeting
- “EPR” is a CMS specific term, so should update with a more generic description - “Service/Experiment Work Credits”, for example
- Software projects also invest in training efforts, so they have a double load - should point that out
- James - C++ course is pretty unique, so we should mention (verbally) that it’s a contribution to a wider STEM community