Applications Area Summary Of Progress – 2010Q1

Software development has continued on the various projects of the Applications Area (AA), although no major new versions have been released since all projects made a major release at the end of the year. On the contrary, a number of bug fix releases has been made available to the experiments typically on demand.

The SPI project has further continued with the enhancements of the AA software stack distribution and quality assurance. The activities include the grouping of python extension modules into bigger "chunks" and distributing them via those groups. This was necessary because of the huge demand of new modules and shows once more the very high acceptance level for Python within the LHC environment. The whole AA software stack has been successfully migrated to the latest Mac OSX 10.6 ("snow leopard") and first releases shall follow soon. The nightly builds has been extended to include the new compiler suite LLVM. Results show that the maturity of this compiler for C++ compilations needs to be further improved before using it for serious evaluation work. On the infrastructure side, the Savannah bug-tracking service has been successfully migrated to SLC5 based hosts in the CERN computer centre. We are currently investigating a new way of deploying the AA software stack that makes all packages usable in an easy way without configuration management tools. First deployments are currently being tested by the CERN Theory group and feedback has been very positive so far.

New versions of all Persistency Framework projects have been released during the quarter for five new configurations. ATLAS requested the two configurations based on ROOT 5.22. The configuration LCG_56e, in particular, was motivated by the need to downgrade CORAL from the Oracle 11g to the Oracle 10g client as a workaround for an issue observed on AMD multi-core processors on the ATLAS Grid sites. The other three configurations based on ROOT 5.26, were requested by LHCb. LCG_58c, in particular, was motivated by the inclusion of a performance fix of the CORAL LFC replica service. The five new configurations include several other enhancements and bug fixes in all PF projects, such as a CORAL fix for Oracle 11g database servers needed by ATLAS at DESY, as well as other fixes in POOL collections, in CORAL transactions, in COOL retrieval of CLOBs and in COOL handling of NULL string payloads.

There was little progress instead in this quarter on the enhancement of the CORAL server software, due to the workload from the releases and more generally from experiment support during data taking. The new bug in the Oracle 11g client on AMD multi-core, as well as the long-standing issues caused by OCI and OCCI text relocations on SLC5 with SELinux enabled, have been followed up with Oracle support. Three new patches have been received and installed as a new '11.2.0.1.0p1' client. This is already used by the latest LHCb release, while ATLAS will only adopt it after fully validating the fix for AMD multi-core.

The simulation project effort has been put in improving the regression-testing suite of Geant4 to better integrate with the GRID setup and for standalone runs. A new patch to release 9.2 (9.2.p03) was made available, including a set of fixes for LHC experiments, which were already part of the latest December release 9.3. Members of the Geant4 SFT group have been involved in the first series of meetings for the

Geant4 architecture review, in program for 2010. Progress has been made in the validation studies for understanding the discontinuities in energy response of the QGSP_BERT physics-list. The first validation suite for C++ MC Generators using the Rivet tool has been put in place.