QUARTERLY STATUS REPORT				
Project Name			**Date**	
Applications Area			23.03.2009	
Report Period			**Author Name**	
2009Q1			**Pere Mato**	
Milestones for the Quarter			**Status**	**Comments**
SPI				
SPI-16	**30.06.08** **31.12.08** **31.03.09**	Deployment of a web content management system, after a quick survey, needed for the restructuring of the SPI web to provide a coherent and complete source of information of all services for users and maintainers.	Done	After a group internal meeting the decision was taken to move test and verify the Drupal Content Management System. A test page is currently being setup and first contents being converted into it. After the initial test phase the web page will be presented to the other projects in PH/SFT who may use the same setup for their web presentations.
SPI-18	**30.09.08** **31.03.09** **30.06.09**	Migration of the current SPI web contents to the newly deployed content management system. This will require the manual inspection and possibly correction, re-writing of the pages.	In progress. Rescheduled.	First parts of the SPI web are currently being fed into the new Drupal web page infrastructure.
SPI-22	**31.12.08** **31.03.09**	Nightly builds with a "client server architecture"	Done	The client / server infrastruture has been put into place allowing a major speedup of the nightly build system. The system is supposed to go into production with in the coming week.
SPI-24	**31.03.09**	Automatic external s/w stack rebuild	Done	The tool for automatic rebuild of the external s/w stack has been produced and successfully used while migrating to the new slc5 and gcc4.3 platforms (used for LCG Configuration 56 released Feb. 13 09)
ROOT				
ROOT-16	**30.06.07** **31.12.07** **31.12.08** **30.06.09**	Cint 7.2 will use Reflex for storing all information regarding types (aka replace the G__struct global array).	In progress. Rescheduled.	CINT7 is fully functional: it passes all of roottest and CINT's test. Nevertheless we reconsidered making CINT7 the default for the December release: it would have risked the stability of a production release that is used by the experiments for an extended period. Interpreting ROOT macros with CINT7 is now between 4 to 10 times slower than with CINT5. We are confident to reduce this slow-down to below a factor 2 and to allow it to be filled from Reflex dictionaries directly (i.e. remove Cintex) until 30.06.2009.
ROOT-22	**31.12.08** **31.01.09**	Restructuring of the ROOT web site and documentation system.	Done	The ROOT web site has been complete redone using Drupal content management system.
POOL				
POOL-15	**30.09.08** **31.12.08** **31.03.09** **30.06.09**	CORAL Server (read-only) scalability and stress tests pass. Validation using the Atlas HLT tests.	In progress. Rescheduled.	This milestone has been reduced in scope to tests of the read-only functionality and performance required by the Atlas HLT team. Good progress has been achieved in both areas using the new implementation developed in Q1 2009. Simple functional tests already succeed against the Oracle COOL data needed by the Atlas HLT. Similar tests, as well as a more complex global data validation procedure, still need to be executed against the geometry and trigger configuration data. Performance tests and optimizations are also underway to reduce the overhead of running through a CORAL server rather than connecting directly to Oracle.
POOL-16	**31.10.08** **31.12.08** **31.03.09** **30.06.09**	First CORAL release with read-only CORAL server support. COOL and CORAL read-only tests pass. Start of experiment validation.	In progress. Rescheduled.	This milestone, previously expected for October 2008, has been reduced in scope to the release of the read-only functionality. The releases of more complete CORAL server software with secure authentication and full write functionalities have been rescheduled as milestones POOL-17 and POOL-18. Progress has been slow in 2008. An internal review of the software was held in December 2008, leading to a new architecture design. This has significantly sped up the progress of development, which has restarted in Q1 2009 when resources have been freed after the LCG_56 release. An implementation with read-only functionalities has been completed and passes COOL and CORAL read-only tests. Before its release, functionality and performance are being fully validated for the Atlas HLT use case (POOL-16). A locking issue when Oracle connection sharing is enabled has been observed during the tests. Its resolution has been rescheduled as a separate milestone POOL-24. This is very important to fully exploit the multiplexing capabilities of the CORAL server in the general case, but is irrelevant for the Atlas HLT use case which adds an intermediate caching proxy.

POOL-17	**31.10.08** **30.04.09** **30.07.09**	Release of CORAL Server with secure authentication. All functional tests pass.	In progress. Rescheduled.	This is a rescheduled milestone, previously expected for October 2008 as part of POOL-16. A first implementation of secure data transmission and grid certificate authentication using openssl and VOMS and openssl has been prepared in Q1 2009, using the new design for component architecture. The integration of openssl and VOMS with LCGCMT needs to be completed before these functionalities can be released. The addition of tools to provide VO-related authorization basedon VOMS is underway.
POOL-18	**31.10.08** **30.04.09** **30.09.09**	Release of CORAL Server with full write functionality (DML and DDL). All functional tests pass.	Rescheduled.	This is a rescheduled milestone previously expected for October 2008 as part of POOL-16.
POOL-19	**31.12.08** **28.02.09**	CORAL support for gcc4.3.	Completed.	The CORAL port to gcc4.3 was completed in Q4 2008 and is ready to be released in LCG56. This required several API changes ('const int f()' -> 'int f()') to fully comply with the gcc4.3 standard.
POOL-20	**31.12.08** **28.02.09**	POOL support for gcc4.3 (without fully compliant API).	Completed.	The POOL port to gcc4.3 was partially completed in Q1 2009 and released in POOL 2.8.3 as part of LCG_56 (February 2009). The API and implementation changes ('const int f()' -> 'int f()') required to fully comply with the gcc4.3 standard still need to be prepared. This results in build warnings, but the full POOL functionality is available. This task has been rescheduled as POOL-23.
POOL-21	**31.12.08** **28.02.09**	CORAL support for MS VC9.	Completed.	The CORAL port to VC9 was completed in Q1 2009 and released in CORAL 2.2.0 as part of LCG_56 (February 2009).
POOL-22	**31.12.08** **28.02.09**	POOL support for MS VC9.	Completed.	The POOL port to VC9 was completed in Q1 2009 and released in POOL 2.8.3 as part of LCG_56 (February 2009).
		COOL		
COOL-26	**30.09.08** **31.12.08** **28.02.09**	Support for the gcc4 compiler on Linux.	Completed.	The port of the COOL code and configuration to support gcc4.1 was completed in COOL 2.3.0 (January 2008). This has never become an officially supported platform in the LCG AA, because it has been replaced by gcc4.3. The port of the COOL code to gcc4.3 started in October 2008 and was completed in Q4 2008. This required several API changes ('const int f()' -> 'int f()') to fully comply with the gcc4.3 standard, stricter than the gcc4.1 standard. COOL has been released for gcc4.3 in COOL 2.7.0 (February 2009), also thanks to the completion of the CORAL port (POOL-19).
COOL-28	**30.09.08** **31.12.08** **31.03.09** **30.06.09**	Support for the 'CORAL server' backend.	Rescheduled. Depends on POOL-16.	Support for 'coral://' URLs was first prototyped in COOL 2.4.0 (February 2008), allowing simple tests against early prototypes of the CORAL server and the definition of additional constraints on its development for its integration into COOL. The COOL read-only tests are now routinely used to validate the CORAL server implementation (POOL-13). Full support in COOL depends on the release of the CORAL server (POOL-16).
COOL-29	**30.09.08** **31.12.08** **31.03.09** **30.09.09**	Expose transaction management in the user API.	In progress. Rescheduled.	Prototypes of the API and implementation have been prepared in Q4 2008 and are ready to be internally reviewed for inclusion in one of the upcoming COOL releases. This task has been postponed due to more urgent priorities for the PF (new platforms and externals in Q1 2009, CORAL server developments in Q2 2009).
COOL-30	**30.09.08** **31.12.08** **31.03.09**	Allow session sharing in the user API.	Rescheduled. Depends on COOL-29.	This milestone depends on transaction management (COOL-29).
COOL-34	**31.12.08** **28.02.09**	Support for MS VC9 (except for PyCool).	Completed.	A significant effort was spent during Q3 2008 on the port of the COOL code and configuration to support the Microsoft Visual Studio Express 2008 (VC9) compiler. In cooperation with the SPI and ROOT teams, this resulted on good progress also in fixing several issues with gccxml, ROOT and
COOL-36	**28.02.09**	Support for Linux SLC5 (except for Oracle).	Completed.	The port of COOL and all other PF projects to SLC5 has been relatively smooth, involving only few configuration changes. COOL has been released on SLC5 in COOL 2.7.0 (February 2009).
COOL-37	**30.10.09**	Full support for Oracle on Linux SLC5.	In progress.	For the time being, support for Oracle on SLC5 can only be provided if a special installation procedure is used to bypass the SELinux security constraints for the Oracle client libraries. This is due to known incompatibilities of these libraries and SELinux, which are being followed up by the PF team with Oracle Support. The issue is expected to be fully resolved by the upgrade to the upcoming Oracle 11.2 client libraries in Q3 or Q4 2009.
		SIMU		
SIMU-10	**30.06.07** **31.12.07** **31.12.08**	Application of corrections of test-beam data, for validation of stand-alone simulation, to the LHC calorimeter test-beams (VD703)	No progress. On hold.	No progress. Experiments are still working to complete their test-beam analyses.

SIMU-20	**30.11.07** **30.11.09**	Review, redesign and debugging of the FLUGG tool (SF711)	In progress. Rescheduled.	The new technical student has started looking at the FLUGG tool. Some time is required for him to become familiar with the tool and the usage of Geant4.
SIMU-21	**15.12.07** **31.12.08** **15.03.10**	Thin-target validations of Geant4 forward physics (G4712)	On hold. Rescheduled.	Remains limited by the lack of manpower, which was exacerbated by the extra duty of Alberto Ribon to lead the GENSER project in 2008. The new fellow, who will start working on July 1st, is expected to contribute to the forward physics validation of Geant4. Being rescheduled to March 2010.
SIMU-25	**30.03.08**	4th simple benchmark for Geant4 and Fluka: diffraction of nuclei (VD801)	On hold. Rescheduled.	Waiting for the new fellowship to start on July 1st. Milestone to be rescheduled for March 2010.
SIMU-29	**30.09.08**	Fluka extension to the ATLAS HEC test-beam analysis (VD804)	Cancelled	It is proposed to abandon this milestone; in fact, its main motivation was to investigate an apparent discrepancy between the Geant4-based simulation results of the ATLAS TileCal (i.e. a scintillator calorimeter) test-beam analysis, and the ATLAS HEC (i.e. a liquid argon calorimeter) test-beam analysis. Thanks to detail studies carried on the instrumental effects (time-cut and Birks quenching), is has been now reached a good consistency of the results between the two, based on the Geant4 QGSP_BERT physics-list. For this reason, and taking into account the limited man-power, it has been decided to cancel this milestone and concentrate the available resources on more urgent topics, namely the transition between hadronic models, and the forward physics. The existing setup will be used as a test-bed for improvements to the FLUGG tool.
SIMU-31	**01.06.08** **31.12.08** **30.06.09**	Extend Rivet validation to new C++ generators (GS808)	On hold	No progress, due to the fact that the manpower was devoted to fulfill the requests of installing new generator versions, and in part to migrate to SLC5 (see milestone GS902).
SIMU-35	**1.12.08** **30.06.09**	Test of MCDB in CMS large productions (GS817)	In progress. Rescheduled.	MCDB is currently used by CMS as database to store LHE files (i.e. ascii parton-level files in the Les Houches Event format) to be used in production.

Summary Of Progress

After several months of preparation the latest LCG Configuration 56 has been released Feb 13th. This is the basic configuration on which all the experiments will be building their software releases for this year running period. It contains the production version of ROOT 5.22.00 released in December and new versions of all the other projects including a number of changes in external packages such as Boost. In addition, this new configuration has been prepared for the new supported compilers (gcc 4.3, VC9) and the new platform (slc5). The new configuration has been already successfully adopted by ATLAS and LHCb.
A new version of the SPI nightly build system for testing LCG Configurations has been developed during last quarter. It is based on a new architecture client / server and a better use of the available multi-core build servers, which implies that the total build time of the LCG/AA software stack will be further decreased.
SPI has also been active in discussing and defining a new solution for web content management within the LCG Applications Area. After initial discussions with all project leaders the decision was to adopt a new content management system called Drupal. The ROOT project has already migrated their web site to this new tool. The same system is going to be setup for the SPI project and will be presented to the projects too. The idea is to make it easy for other projects do take the SPI solution and adopt it for their needs.

The main achievement of the Persistency Framework (PF) projects in this quarter has been the release of new versions of CORAL, COOL and POOL for the LCG_56 configuration (February 2009), involving major upgrades in the ROOT, Boost and CMT versions, a new CMT tag policy, and support for several new platforms such as the gcc4.3 compiler on Linux, the VC9 compiler on Windows, and the SLC5 Linux operating system. For the time being, support for Oracle on SLC5 can only be provided if a special installation procedure is used to bypass the SELinux security constraints for the Oracle client libraries.
The PF effort is presently focusing on the development of the CORAL server software components, which has restarted in February 2009 according to a new architecture design that has significantly speed up its progress. A first implementation with read-only functionalities is being validated for the Atlas HLT use case, and the addition of secure authentication using VOMS and openssl is underway.

During the first quarter of 2009, most of the activities in the Geant4 project have been focused to the preparation of the 2009 Delta review of the project; the review has been accomplished with rather positive outcome and appreciations by the review committee for the efforts carried out by the Geant4 Collaboration in addressing all the recommendations proposed since the previous 2007 review. Positive feedback has been received from the LHC experiments (mainly ATLAS and CMS) on the December release 9.2. A new public patch 9.2.p01 of Geant4 has been released in March, including fixes to the problems reported since December. CMS and ATLAS are going to utilise Geant4 9.2 for their 2009 productions. It has been reached an agreement for EvtGen to converge to a unique version of the package for LHC aiming to unify the different approaches. Also agreed on the contents of the new HepMC 2.05 release to be made available during Spring.

Issues During the Quarter

Milestones Changes and Actions

References and Hyperlinks

New and Next Quarter Milestones	Status	Comments

COOL-35	**30.06.09**	Migration from CVS to SVN.	New.	
SIMU-37	**30.04.09**	Prepare the migration to SLC5 and gcc-4.3.2 in GENSER (GS902)	In progress	Given the large set of generators and versions, it has been decided to concentrate on the SLC5 32-bits g++ 4.3 platform (i686-slc5-gcc43-opt). Some generators, like Pythia6 420, LHAPDF 5.7.0, Pythia8 120 have been already migrated; others, like Herwig and Jimmy are undergoing. The progress has been slower than expected, due to many requests to install new versions of generators, in time for the coming large productions before LHC start-up. A priority list of generators to migrate has been established according to the usage of such generators.
SIMU-38	**1.06.09**	Evaluation of Rivet and HepMC Analysis Tool for regression testing based on distributions (GS905)	New	2nd level milestone. Finalise evaluation of Rivet and HepMC Analysis Tool for generators validation
SIMU-39	**1.06.09**	New HepMC release 2.05 (GS906)	New	2nd level milestone. New release based on agreed features to be added
SIMU-40	**19.12.09**	Contributions to the December 2009 public release of Geant4 (G4908)	New	Developments scheduled for the public release of December 2009 include: improvements to the QGS hadronic model fragmentation; the extension and tuning of the CHIPS model for hadron-nucleus collisions up to 100 GeV; a review of the internal cross section in binary cascade and QGS model; a review of physics models to identify and fix cases of event irreproducibility; tuned model of fluctuations for ion ionisation; prototype for applying strict production thresholds for EM particles per geometrical regions; improvement of the Spline interpolation for physics vectors; the extension of geometrical regions to local magnetic fields; improved implementation of selected CGS shapes; interface for computing isotropic safety and geometry step for multiple and single scattering.
SPI-25	**30.06.09**	Migration of more Hypernews instances into Sharepoing	New	After the successful migration of the Atlas Hypernews instance into sharepoint also other instances used by LHC experiments can be migrated. Candidates for these migrations are LHCb and Alice.
SPI-26	**31.09.09**	Infrastructure setup for Drupal web pages	New	The new Drupal based web pages solution will also require some infrastructure to be setup. This will include a test page where new versions of modules can be tested and to allow easily to replicate the current setup of the SPI page for other instances.
SPI-27	**31.09.09**	Code coverage testing for nightly builds	New	The nightly builds system will be enhanced with code coverage testing, which will allow a better overview of the testing of the LCG/AA software stack allowing to see hot spots of better and less better tested areas.
POOL-23	**30.06.09**	Fully compliant POOL API for gcc4.3.	New.	This is a rescheduled milestone, previously included in POOL-20. API and implementation changes ('const int f()' -> 'int f()') in POOL are required to fully comply with the gcc4.3 standard.
POOL-24	**30.09.09**	Full support for Oracle connection sharing in the CORAL server	New.	This is a rescheduled milestone, previously included in POOL-16. Complete support for Oracle connection sharing is needed to fully exploit the multiplexing capabilities of the CORAL server in the absence of an intermediate caching proxy. To achieve this, the locking issues observed in the Oracle plugin when connection sharing is enabled must be addressed
Comments and Additional Information				