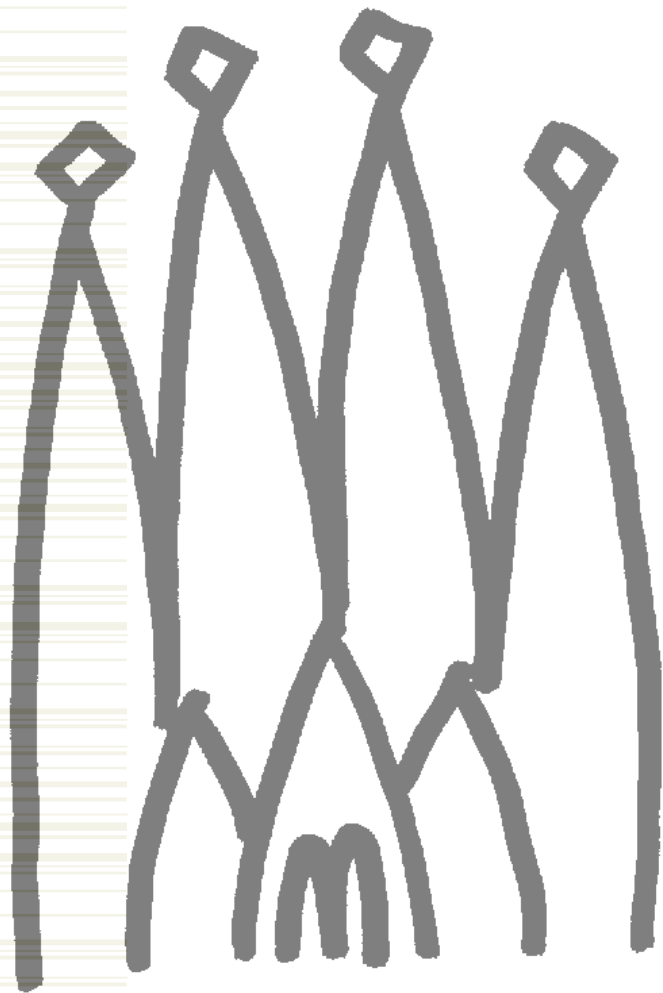
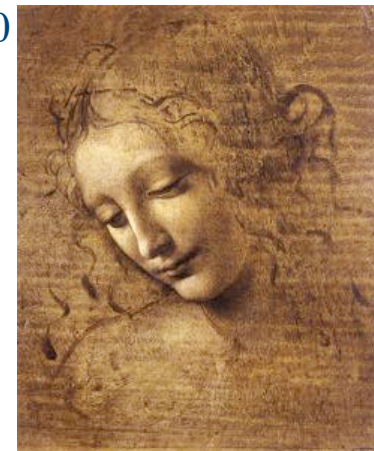




LHCb report
2nd LCG-AA Internal review
Ph.Charpentier, CERN-LHCb



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Boole





General comments

- Organisation of the AA
 - Good communication with project & management
 - AF is an effective way of running the project
 - Thanks Torre for the work accomplished in 3 years
 - LHCb pleased to work with his successor
 - ☆ ... although we miss him!
- Outline
 - Review each sub-project
 - Comments on the SEAL-ROOT merge
 - Other comments
 - Apologies as many of the topics were already extensively discussed during the review...



SPI

- General remarks
 - Very good support of LCG & external
 - Responsive to requests
- Software releases
 - Problems with pre-releases
 - ☆ For Gaudi integration we need a full chain Root→SEAL → POOL/PI
 - ☆ Require complete build on slc3 & win32 (minimum)
 - ☆ Should be located on standard release area
 - ☆ Why not use minor version numbers rather than alpha/beta/iota?
 - ☆ Need for a consistent scheme
 - ☆ Pre-releases shouldn't be removed without consultation (LIM)
 - LHCb will provide a web page with active versions of LCG/Externals
 - ☆ Not only latest version used (as now)



SPI (cont'd)

- Bug fixes
 - When needed, bug fixes should be back-ported (valid for all projects)
 - ☆ Cf. slc3 issues in POOL 1.7
 - Fixes to build system (re-build or changes in scram) should not change version numbers
- CMT interface packages
 - We rely on them heavily, should be supported (for all LCG-AA)
 - ☆ LHCb can help...
- Documentation
 - Request to provide dOxygen versioned doc (for all LCG-AA)
 - ☆ For LCG / External (at least CLHEP) / Root
 - ☆ Include tag files (AFS accessible)



SEAL

- General remarks
 - Extensive use of LCGDict / pyLCGDict (GaudiPython, persistency)
 - Mainly used through POOL and for external libraries
 - Move to SEAL plugin foreseen in 2005
- CLHEP
 - Extensively used in the LHCb code
 - ... but most problematic external library
 - ☆ How to get bugs fixed
 - ☆ What is the influence on changes (e.g. incompatibilities between 1.8 and 1.9...)
 - ☆ Why do we need SPI-special releases?
 - ☆ Plans for going to 2.0? GEANT4?
 - ☆ What is the future of CLHEP in SEAL+ROOT?

- General remarks
 - In production since late 2003 for data persistency
 - Dictionary currently generated using Gaudi Object Description (GOD) - XML → .h & _dict.cpp
 - ☆ Plan to move to using GCCXML
- File catalog
 - No direct access from the applications to a remote FC (yet)
 - ☆ Use XML slice of the FC shipped with the job
 - ☆ Registration external to the application
 - Should consider what a PFN really is (tURL, SURL...)
 - ☆ Main consequence is to the underlying I/O (LHCb prefers SURL)
- POOL refs
 - Confirm the need for file navigation (GUID or LFN based)
 - ☆ From child file to parent file / from event tag collection to file



COOL

- LHCb ConditionsDB framework services rely on COOL
- Currently testing (pre-)releases of COOL
 - Contributing to defining priorities on implementation
 - A lot of feedback to developers
- **Urgent needs (now addressed)**
 - Long_long validity (in order to use time)
 - Multi-version
 - Global tagging (i.e. tagging folder containers)
- Still to be understood
 - Where will the payload be? Internal/external?
 - ☆ Currently XML implemented



Simulation

- GENSER
 - Use as generator libraries "repository" (currently Pythia and PHOTOS)
 - LHCb is main contributors for EvtGenLHC
 - New collaboration starting for direct J/Psi production in Pythia
 - Possibly use other libraries in the future (e.g. Herwig, LHAPDF)
 - **Need for a modular distribution for separate libraries!**
 - ☆ Packages distributed as released by author in externals.
 - ☆ When changed (e.g. common block size) new version number as internal
- Geant4
 - Used for large production in DC04 (>300 million events)
 - Much more stable and reliable in the last (1-2) year(s)
 - We rebuild Geant4, hence no strong dependencies on externals besides CLHEP (but important!)
 - ☆ Mind the step to CLHEP 2.0...



Simulation (cont'd)

- FLUKA
 - Used for radiation studies
 - Welcome GDML for exporting LHCb Geant4 geometry to FLUGG
 - Expect it to be centrally installed...

- Physics validation
 - Collaborate to it with test beam comparisons
 - Welcome a central repository of test results
 - ☆ As well as of comparison with data performed by authors
 - ☆ Allows to make informed choices (physics lists)



PI

- Used in the Gaudi services for Histograms / Tuples
 - Use the ROOT implementation
- Start implementing POOL storage back-end for Event Tag Collections using the AIDA Tuple interface



SEAL+ROOT merge

- Convergence to a single set of software is a very good move
- Dictionary
 - We want to move to Reflex (i.e. POOL moves) ASAP
 - Best strategy for convergence to be better understood
 - ☆ Hope this will be transparent seen from POOL
- Mathlib
 - Support very strongly **standalone** libraries
 - ☆ Not pulling ROOT when using a few math function in an application
 - ☆ Licensing issue to be clarified
 - Concerned with **CLHEP-ROOT** merging
 - ☆ Would like to see this happen ASAP at least for Physics vector
 - ✧ Major component of the event model... Event model review after summer
 - ☆ No dependencies on TObject!



SEAL+ROOT merge (cont'd)

- Plugin manager
 - We didn't move to SEAL's yet
 - ☆ Probably should wait for convergence, but this should happen soon
 - Concerned with invasiveness of ROOT's plugin manager
 - ☆ Major changes in the LHCb software as it concerns all Gaudi components (algorithms, tools...)
- Graphics
 - Qt interface is fine with us...
- PROOF
 - Although currently part of ROOT, disconnected from the Core foundation SW (see next slide on Distributed Analysis)



Distributed analysis

- Was part of the early plans of LCG-AA
 - Both in PI and SEAL
 - Has gone from the plans...
 - ARDA went as a separate area of LCG
 - ☆ Originally was planned for LCG-AA
- Need for a strong coupling between AA and Grid services
 - Data management : file catalogs, SRM
 - ☆ Important for POOL & ROOT
 - Interactive & batch analysis tools: PROOF, Ganga, Bender in LHCb (python-based analysis framework using GaudiPython and pyRoot)
 - Encourage LCG-AA to house a meeting point between expt developments / ARDA / Grid services



Conclusions

- LHCb uses extensively LCG-AA software
- LHCb welcomes the merge of SEAL and ROOT
 - The new project should conform to the LCG-AA practices
 - Experiments priorities should be taken into account
- Still a lot of developments around ConditionsDB
 - Aim at a DC05 in October/November using it...
- Starting to make use of SPI testing / QA tools