



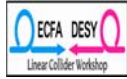
Geant4 activities at DESY

3rd Ecfa/Desy workshop
Prague November 2002
Frank Gaede DESY -IT-



Outline

- Introduction
- Current work
- Near term goals
- Looking ahead
- Conclusion



Introduction

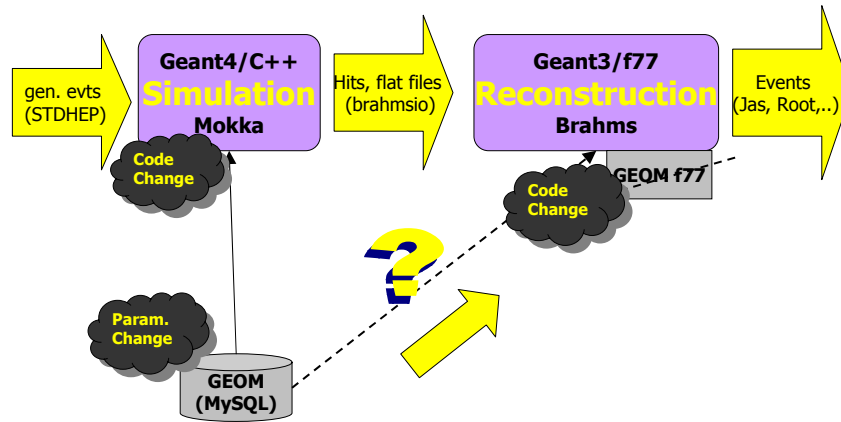
- Common understanding, that the simulation and Analysis Software for the TESLA detector will:
 - be based on Geant4
 - implemented in OO languages, i.e. C++, Java
 - be flexible for changes (e.g. geometry, reconstruction algorithms,...)
- Until recently only full simulation and reconstruction f77 based BRAHMS
 - this needs to be changed -> **done now !**



Interfacing Mokka and BRAHMSreco

- BRAHMS has been split up into a simulation and a reconstruction part (c.f. Ties' talk)
- Interface based on:
 - flat files (cio and zio)
that can be read from C++, Fortran, Java, ...
- Start using the existing Geant4 simulation Mokka
- Mokka output:
 - ASCII files (one per event and detector)
 - incompatible with BRAHMS
- Need additional output format in Mokka
-> **brahmsio**

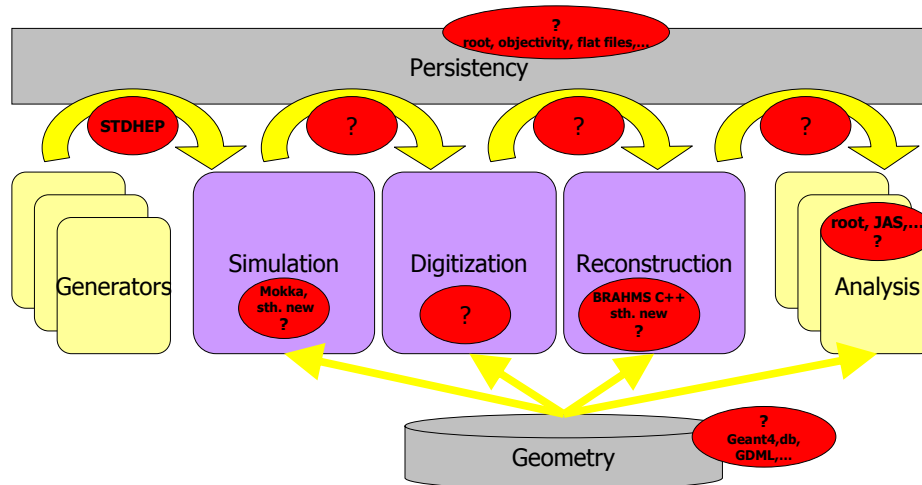
Full-Simulation Software Chain



Next steps I

- finish work on brahmsio
 - > have first full-simulation reconstruction chain based on Geant4 in place soon
- start to do physics with it !
- need to gain further experience with Geant4
 - possibly use Geant4 for testbeam simulations
 - > understand the simulated physics
- start to look ahead:
 - > **at the bigger picture**

The bigger picture I



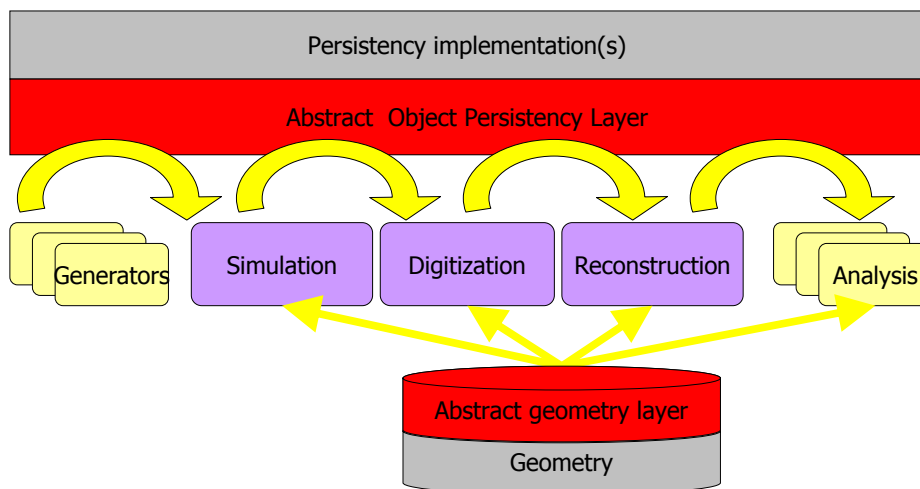
A TESLA Detector SW-Framework

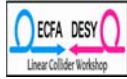
- a lot of questions are open if one thinks of a complete simulation software framework for Tesla detector and physics studies:
 - interfaces, data models
 - persistency formats
 - tools
- how to answer these questions:
 - find dedicated people working on the issue
 - go on a 'shopping tour' at experiments that have already solved (some of) the problems: **Atlas, CMS, BaBar, LHCb**
- **Start this rather sooner than later !**

Next Steps II

- define a data model for persistency that will be used by all (most) groups involved in LC simulations:
 - generated particles
 - hits and digies
 - tracks, clusters, jets
 - links (pointers) between all of the above
- define a first implementation format
- get interested and experienced people involved (US, France,...)

The bigger picture II





Conclusion

- The first full-simulation-reconstruction for the TESLA detector using Mokka and BRAHMSreco will be in place soon
- Further work and verification needed
 - physics analysis
- Start thinking ahead towards a more general simulation framework
 - define abstract persistency layer and first implementation