Simulation for a Future Linear Collider

Ties Behnke, DESY

- Current System:
  - based on "old" technologies: Fortran, Patchy, Zebra, etc
  - GEANT 3 based
  - heavily profits from exisiting and well understood software packages

  - BRAHMS: full simulation and reconstruction package for the TDR detector
  - SIMDET: fast simulation program

- Major drawbacks:
  - longterm support of packages used is questionable
  - we ignore the development of the software over the last 20 years of so
  - real disadvantage in software managament
  - structures?
  - who wants to work in Fortran anyway these days .....

"Decision" for ECFA/DESY workshop:
start a migration to more modern system after the TDR has been finished:
NOW!

The new Simulation System

Undisputed: GEANT4 and C++ are the main candidates for the simulation system

Capitalise on the experience from LHC, Babar, from our american collegues, and, of course, from the calorimeter simulation MOKKA

Make a smooth transition

Try to split the simulation and the reconstruction, make a partial move practical

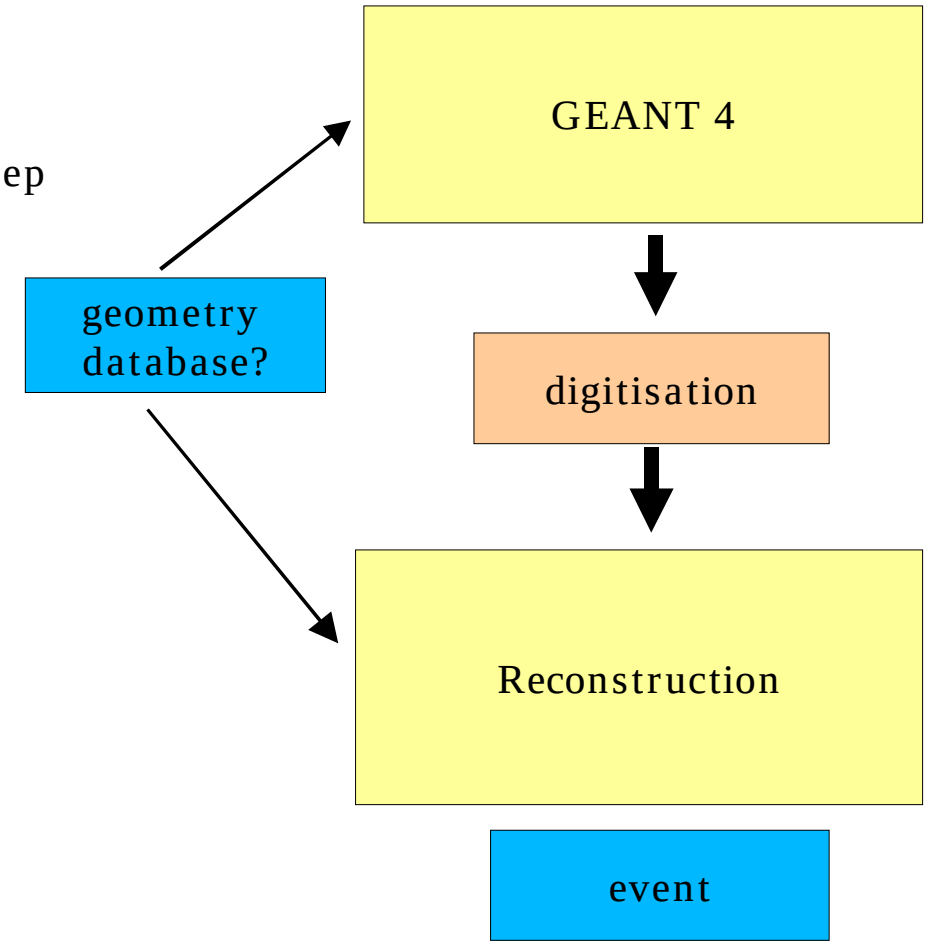
The next steps:

- learn as much as possible at this meeting
- closely collaborate with the american and the japanese collegues
- however make sure that the old system remains operational and supported

Important Issues

There are a number of important questions which we have to address:

- definition of the detector geometry
  - database?
  - scipting language based (XML)?
- storing information after the simulation step
  - which persistency model
  - commercial / non−commercial
  - full database?
- the digitisation ("detector smearing") step
  - how
  - where
  - parameter input?
- interfacing the reconstruction systems
  - multi−language support
  - easy user entry points
  - graphical interfaces



Structure of this meeting

THURSDAY: morning: review of the existing systems in the ECFA/DESY study and in other LC studies

afternoon: reports from different experiments who have made or are making the transition: what can we learn

FRIDAY: dedicated to discussions and actual work:
try to address some of the isues
try to identify names to start solving the issues

Our Goal: define a strategy
focus the work already done at different places
initiate a close collaboration with the other regions
start the transition for real

More personpower is very welcome: please contribute to the effort.