

# Simulation for a Future Linear Collider

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## • Current System:

- ➔ based on "old" technologies: Fortran, Patchy, Zebra, etc
- ➔ GEANT 3 based
- ➔ heavily profits from existing 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 management
- ➔ 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 colleagues, 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

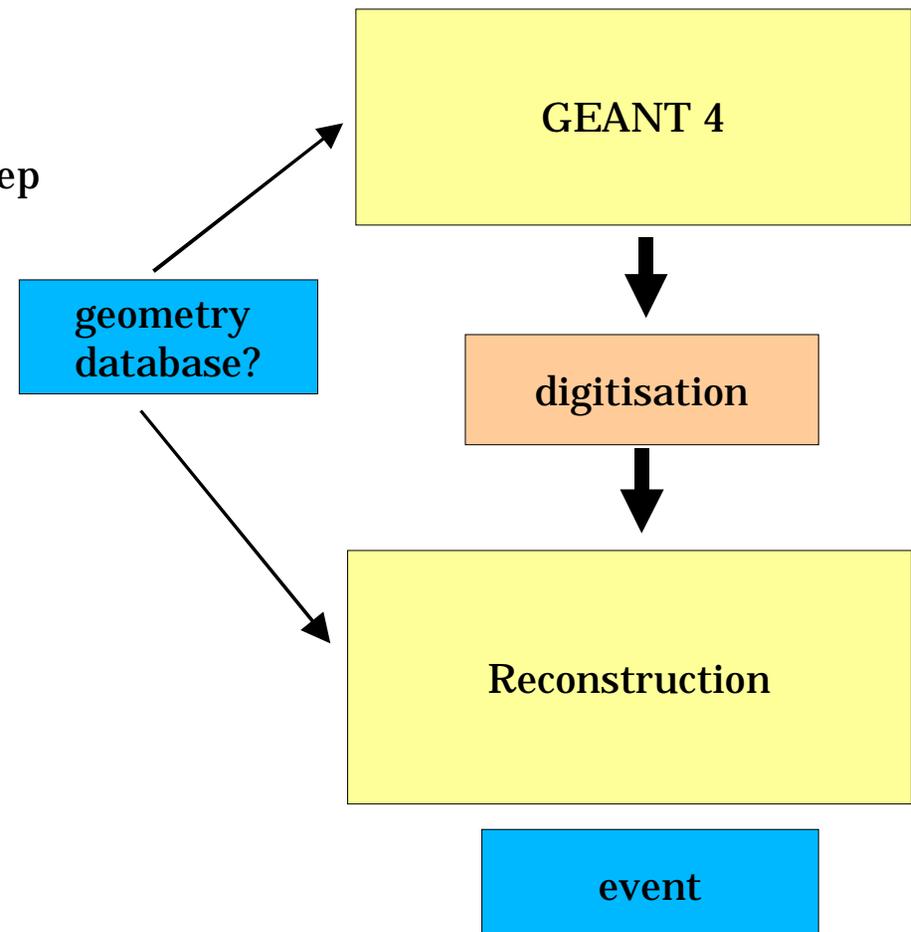
The next steps:

- learn as much as possible at this meeting
- closely collaborate with the american and the japanese colleagues
- 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?
  - ➔ scripting 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 issues  
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.**