Simulation News

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ALCPG Workshop

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Simulation workshop @ SLAC

- Two days JAS/AIDA/Wired/Geant4
- Two days lcd-specific software
- AM presentations / PM tutorials
- Two dozen participants
- www-conf.slac.stanford.edu/lcsimworkshop/

Full Simulation

- Canonical samples of SM processes, backgrounds + diagnostic events on server.
  - sdjan03 + GISMO
- American xml detector geometry description available within Mokka framework.
  - Complex beamline geometries added
  - LCIO output available
  - QA ongoing
- LCDG4 subject of next presentation.
- Merger of two desirable!

LCIO

- Simple, extensible data model.
- MC output formats defined for “generic” tracker and calorimeter hits.
  - SimTracker- and SimCalorimeter- Hits
- Persistence uses, but not tied to, SIO.
- Java and C++ interface (Fortran also).
- v1 to be released soon.
- beta version implemented in Mokka.
- European-American standard for IO.

Persistent Data: MC

- Event definition and framework.
- Generic definitions for ideal MC information implemented in SimTracker- and SimCalorimeter-Hits in LCIO.
- Monte Carlo Particle heirarchy classes.

Persistent Data: Reconstruction

- Tracks & Calorimeter Clusters
  - Requirements well understood
  - First implementation written
  - Use cases being assembled
- ReconstructedParticle
  - Requirements still need to be fleshed out.
  - Hope to initiate discussion with following presentation.
  - Persistent implementation not yet available.

Intermediate Fast Simulations

- Fast Monte Carlo systems which generate hits in trackers and calorimeters.
- Lelaps (W. Langeveld)
  - Standalone C++ program
  - internal diagnostic or stdhep input
  - MCS and dE/dx for tracks
  - Parameterizations for calorimeter showers
  - SIO output (LCIO soon)
- Java shower parameterizations (S. Pathak)

Reconstruction

- LCDEvent model being refactored to improve design and to utilize newer features of Java.
- Analysis examples being modified to access LCIO data instead of SIO.
- Comprehensive geometry package still lacking
- Much work still to be done in clustering, tracking and ReconstructedParticle.
- W. Walkowiak's vertexing package being used by D. Jackson.
- Particle ID in following presentation.

Documentation & Organization

- Tutorials and other documentation being updated as code base changes.
- Attempting to remove/improve outdated or incorrect webpages.
- Need feedback from users!
  - What works
  - What doesn't
- Try to encourage use of cvs for archiving and storing software/dosumentation.
- Institute formal release schedule.

Status

- Simulation & Reconstruction efforts are currently in a state of flux.
- Existing GISMO/SIO/JAS2 framework transitioning to Geant4/LCIO/JAS3.
- Using this occasion to refactor many aspects of the simulation environment.
- Nearing critical mass of users/developers.
  - Need better structure and communication.
- International cooperation strengthened by sabbatical of T. Behnke @ SLAC. Thanks!

Continuing Communication

- Mailing lists: lcd-sim, lcd-dev
- HyperNews forum
- Regular phone meetings (esnet?, VRVS?)
  - Tuesdays, 8AM Pacific Time
- Improved website
  - Plan to start with fresh portal
  - Only current information
  - Plan to update regularly