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**Geant4 & GAUDI**

- **Geant4**
  - *Geant4 & C* installation at lxplus
  - *GEANT4* CMT package
  - *GEANT4Examples* CMT package

- **Geant4 & GAUDI**
  - *G1GA* Service
  - *G1GA* evolution
  - *GiGa* CMT package
  - *GiGaExamples* CMT package

**LHCb computing meeting, May 15th 2000, E-mail: Ivan.Belyaev@itep.ru**
**Geant4**: `$/LHCBCHOME/geant4/geant4.1.1/`

### Current Installation
- **VERBOSE** mode
- not good for performance measurements
- global libraries
- shared libraries

### Future Installations
- **VERBOSE** mode and **NO-VERBOSE**
- **OPTIMIZE** and **DEBUG**
- global libraries
- shared libraries

- **DAWN & DAWNFILE**
- **VRML & VRMLFILE**
- **OPACS**
- **OpenGL**
- no RayTracer

- **OPACS**
- **Terminal**
- **GAG**
- **Xm, Xaw**
- no **XVT**

*no "environments"!*

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Geant4 Friends

• DAWN, version 3.81a
  – installed in $LHCBHOME/geant4/DAWN directory
  – nice visualisation
  – imitation of virtual reality
  – faster then VRML, slower then OPACS
  – high quality PostScript plots
  – "DTREE"

• DAVID, version 1.34a
  – installed in $LHCBHOME/geant4/DAVID directory
  – co-works with DAWN
  – nice (and the only one!) tool for geometry debugging
$LHCBSOFT/GEANT4 directory

v1r1 "version"

corresponds to 1.1.0 version of Geant4

dummy package

used to define via requirements file and CMT all environment variables

use source setup.csh to configure Geant4 for stand-alone applications

allows to develop stand-alone Geant4 applications under CMT environment
Geant4 & GAUDI

Geant4 is available in GAUDI via GiGa Service.

GiGa Evolution: Phase I

- direct communication of User algorithms with GiGa Service
- some Geant4 classes are accesible in user algorithms
- any stand-alone Geant4 application are naturally fitted into GiGa Scheme without any changes in codes!
- use GAUDI general services and facilities in ”stand-alone” Geant4 applications.
**Geant4 & GAUDI**

**GiGA Evolution: Phase II**

Transition Phase

1. enhance the functionality of GiGA by making possible to extract the event record from **GAUDI Event Store**
2. enhance the functionality of GiGA by making possible to get the Detector Description by pointing into the root of already constructed Geant4 tree
3. automatic translation of **GAUDI** Detector Description into Geant4 detector description.
4. automatic creation of Geant4 Hits and Sensitive Volume from their description via XML.
5. automatic translation of Geant4 Hits into **GAUDI** Monte Carlo objects
6. automatic population of **GAUDI Event Store** by information from Geant4 Trajectories

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**GIKA Evolution: Phase III**

- No any user’s algorithm deals directly with GIKA Service and Geant4 classes.
- All knowledge of Geant4 will be absorbed by set of specific Converters.
- Specific Converters form an additional layer in the data flow,
- configuration of Geant4 Physics List and/or Cut-Offs using internal GAUDI features like jobOptions Service and/or interactive scripting language.
- embedding of the essential commands from Geant4 interactive User Interface into GAUDI interactive scripting language.
- remove Geant4 user interface (visualisation?)
GiGa  CMT Package

- $LHCBSOFT/GiGa  directory
- GiGa Service
- documentation file GiGa.tex in $GIGAROOT/doc directory

GiGaExamples  CMT Package

- $LHCBSOFT/GiGaExamples  directory
- Examples of usage of GiGa Service
- All 6 novice Geant4 examples works under GAUDI environment without any changes in codes!

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