# **CALICE Software Status**



Roman Pöschl LAL Orsay



- Review on Software for past data taking
- Things to be done for CERN
- Data Management
- Monte Carlo Tools
- Summary and Outlook



## **CALICE Software Packages**

#### - LCIO Conversion

All data of 2006+07 (DESY/CERN) have been converted using the version v04-02-xx of the converter Current version v04-02-03 (mainly updated for SCECAL)

#### - Reconstruction

A lot of runs have been reconstructed for the Ecal using Version v04-02-01 of the reco package see lfn:/grid/calice/tb-xxxx/reco/rec\_v0402

'Unexperienced users' are encouraged to use these as an <u>entry point</u> to the data analysis

Hcal Reconstruction v00-01-18 (S. Schmidt) Implemented into reco package

Current version v04-03-pre4 (Details see next slide) Software has been also used for analysis of TCMT data (G.Lima)

- userlib (Common to all packages)

Current version v04-06-01

# AHCAL in calice\_reco

- HCAL software included into official CALICE reconstruction software
- Test runs on the grid revealed some minor problems in the first version
  - Relative detector positions were wrong  $\rightarrow$  fixed
  - Cell Index for HCAL wrongly implemented  $\rightarrow$  fixed in the data base for /cd\_calice/cern\_beam\_test
  - Missing modules in August lead to different reconstructions steerings for August and October data →to be fixed by dummy calibrations
- Now everything is understood and ok
- Next step: include more sophisticated saturation corrections (as being studied by Nanda)

Reco version v04-03-pre4

- Tracking Code provided by UK group
- Ecal Reconstruction

'New' Handling of SIPS by Marcel

- Has been run over 13 cern runs and a number of DESY runs
- Benefits from new calibration constants by Marcel Reinhard

#### - Suffers

from Alignment problems which are due to the new convention on the coordinate frame.

Otherwise these files can be used!!!!

- MC reconstruction - A.M.Magnan Reconstruction of MC Samples under study

# Next steps ....

#### CERN Running Si/W Ecal Ahcal TCMT

- Implementation of lower part of Ecal Testruns taken during ECAL setup at DESY
- Implementation of coarse Hcal layers

#### **DHCAL Running**

- (Primarily) Preparation of Conversion Code

#### **ScEcal**

- Reconstruction Code? Will there be any?

Comparison between different techniques !!!!

# Data Handling and Processing (for coming CERN Running)



New server for data transfer and online monitoring

- Class Grid Server - Dedicated hardware for networking

- Power Redundancy

- Tests to be performedice and a star and the performedice and the performance of June

# The Virtual Organisation - vo calice

#### Hosted by DESY: Page for registration is https://grid-voms.desy.de:8443/voms/calice

B	Virtual Organization Membership Service		
The calice VO	Administration « Users » List of users		
ADMINISTRATION USERS	There are 28 users in /calice :		
LIST OF USERS SEARCH FOR USERS CREATE A NEW VO USER GROUPS LIST OF GROUPS SEARCH FOR GROUPS CREATE A NEW GROUP ROLES LIST THE ROLES SEARCH FOR ROLES ADD A NEW ROLE GLOBAL ACL	/C=UK/O=eScience/OU=Birmingham/L=ParticlePhysics/CN=nigel watson     /C=UK/O=eScience/OU=Cambridge/L=UCS/CN=david ward     /O=GermanGrid/OU=DESY/CN=Roman Poeschl     /C=UK/O=eScience/OU=Imperial/L=Physics/CN=anne-marie magnan     /DC=orq/DC=doegrids/OU=People/CN=Guilherme Lima 269451     /C=UK/O=eScience/OU=RoyalHollowayLondon/L=Physics/CN=pasquale-fabrizio salvatore     /C=UK/O=eScience/OU=RoyalHollowayLondon/L=Physics/CN=michele faucci giannelli     /D=GRID-FR/C=FR/O=CNRS/OU=LLR/CN=Goetz Gaycken     /DC=cz/DC=cesnet-ca/O=Institute of Physics of the Academy of Sciences of the CR/CN=Petr Mikes     /DC=cz/DC=cesnet-ca/O=Institute of Physics of the Academy of Sciences of the CR/CN=Jaroslav Zalesak     /D=GermanGrid/OU=DESY/CN=Vladislav Balagura     /C=UK/O=eScience/OU=Manchester/L=HEP/CN=david bailey     /D=GermanGrid/OU=DESY/CN=Erika Garutti     /D=GermanGrid/OU=DESY/CN=Erika Garutti     /D=GermanGrid/OU=DESY/CN=Erika Garutti     /D=GermanGrid/OU=DESY/CN=Erika Garutti     /D=GermanGrid/OU=DESY/CN=Erika Garutti     /D=GermanGrid/OU=DESY/CN=Erika Garutti	edit remove edit remove	42 Members and counting
	<u>/O=GRID-FR/C=FR/O=CNRS/OU=LAL/CN=Hengne Li</u> / <u>O=GRID-FR/C=FR/O=CNRS/OU=LAL/CN=Mangi Ruan</u>	edit remove edit remove	

#### VO Manager: R.P./LAL, Deputy: A. Gellrich/DESY

# The Grid in/for Calice

Supported by: DESY Hamburg LAL LLR DESY Zeuthen	Hosting, Computing and Storage Computing and Storage Computing and Storage Computing and Storage
Birmingham	Computing and Storage (not yet tested – at least by me)
cc in2p3 Lyon	Computing and Storage
Cambridge	Computing and Storage
Institute of Physics	Computing and Storage
Prague	(in preparation)
University College	Computing and Storage
KEK	Computing and Storage
Manchester	Computing and Storage
CIEMAT Madrid	Computing and Storage
Fermilab	Computing and Storage
	Exploit started between Fermilab and NIU Colleagues
Univ. Regina	Offer Received

- Sites in red are foreseen for a complete storage of calice data No mass replication started so far
- Most of the sites have been involved in recent data and MC processing Smaller Problems at Manchester and KEK (about to be solved)

#### Some Statistics – EGEE Accounting

CPU Consumption Germany/Switzerland between 01/07 and 05/07 GermanySwitzerland Normalised CPU time by SITE and VO ALL VOs. January 2007 - May 2007 1.0e+6-CMS 9.0e+5 Vormalised CPU time/ kSi2kh 8.0e+5 Normalised CPU time (in hours) 7.0e+5 CMS 10<sup>6</sup> kSi2kh wuppertalprod UNI-SIEGEN-HEP 6.0e+5 UNI-KARLSRUHE UNI-FREIBURG 10<sup>4</sup> kSi2kh UNI-DORTMUND LC 5.0e+5 SCAI RWTH-Aachen 4.0e+5 🔲 ITWM Calice 10<sup>4</sup> kSi2kh GSI-LCG2 FZK-LCG2 3.0e+5 DESY-ZN DESY-HH CSCS-LCG2 2.0e+5-1.0e+5 CALI alle and the ned alle cat cresser be and the art te be at the art the CESGA 'EGEE View': GermanySwitzerland / normcpu / 2007:1-2007:5 / SITE-VO / all / ACCBAR-LIN / 2007-05-01 18:42 UT(

1 Opteron hour ~ 1.4 kSi2kh, Example 8x10<sup>5</sup> kSi2kh means that an Opteron 2.4 Ghz calculates 580000 hours without interruption Source: http://www3.egee.cesga.es/gridsite/accounting

## Some Statistics – EGEE Accounting

#### CPU Consumption in France between 10/06 and 01/07



## Some Statistics – EGEE Accounting

#### CPU Consumption in UK between 01/07 and 05/07



### Outlook to 2007 (and beyond)

- CALICE will continue data taking with fully equipped detector in 2007 at CERN and Fermilab (and DESY) 20000 cells in r/o again w/o zero suppression
- Data Taking of ScEcal and DHCAL
- Mass Production of MC about start

Expect to have 25 – 30 Tbyte of data in stock by the end of 2007 raw, converted and reconstructed data MC files Will grow beyond 2007!!!!

#### (My) Vision of CALICE Data Management

- Every country participating in CALICE should identify one site to store replicas of CALICE data Avoids network traffic and provides faster access to data
- Use local ressources (i.e. Storage) at smaller sites to store e.g. analysis output
  If files are visible by the grid your bright ideas can be made available easily to your colleagues

# A view to the Monte Carlo Branch

DESY and CERN Testbeam setups are avaialable in Mokka latest release Mokka-06-03-p02 Frequent updates

Grid is used MC for production but sometimes looks difficult to handle - Experience by Nigel Watson

Testsamples are available for version Mokka-06-03-p01

/grid/calice/watson/prodsamples/lcio /grid/calice/drw/prodsamples/lcio

Simulation will be followed by a digitisation step Realized as Marlin Processors within Digisim Package – G.Lima A.M. Magnan

A.M Magnan – first proposal for a processor which allows for data and MC reco

# Users Feedback ...

Speaking more for the Ecal Part

- Analysis is performed at  $\sim$ 7 different institutes, mainly UK and France
- Analysis effort started late ~ December but has gained significant speed
  - Penalty since we strived to include many people in the analysis effort
  - Threshold to use the Grid !?
  - Other Technical diffculties Database
- What do people need to do their analysis?
  - I think only time will tell Can we define a coherent model now?
  - Need clearly to distunguish between developers and users

## **CALICE** Dataprocessing



Launching the next steps ...

Need to get overview on ideas for data processing for 'next' generation testbeam projects

Dedicated Meeting at Orsay prior to the ILC Software Workshop

- Review on Calice experience
- Two projects present their ideas 'EUDET' Projects so maybe not fully representive for ILC
- Ideas from software developers

# EUDET/Next Generation DAQ

Dave Bailey for the UK DAQ Group

# This DAQ will be used for next generation Calice/EUDET Calo Prototypes

Coming close to the ILC – The EUDET Module(s) and a common Calo DAQ

EUDET module of Ecal is ~1<sup>st</sup> Modules of ILC Detector



Common DAQ for EUDET module (and other EUDET Calos) may be ~ (Calo) DAQ Concept for ILC Detector

Ideal testing ground to qualify concepts for whole ILC Dataprocessing

Develop and optimize ILC Software e.g. LCIO for 'Real Data'

Event Assembly



Database



# Building EVENTS from the bunch train

- Almost certainly non-trivial at the beginning
- This is the first place in the data chain where the concept of an event starts to make sense
- This is the first time that "real consumers" of the data get their hands on it

If you want LCIO then this is where it appears...

Decision to be taken: Event Building integrative part of DAQ chain or separate entity Interface Definition !!!!

## Conclusions ...

- Results for LCWS07 based on Calice Software Chain are coming in
- Grid is a regular tool for our data processing
- Need to prepare Software for coming (not only) Cern testbeams
- Efforts to to setup data processing chain for upcoming prototypes Will be close to ILC