

AIDA DAQ needs (and other issues)

Vincent Boudry
École polytechnique



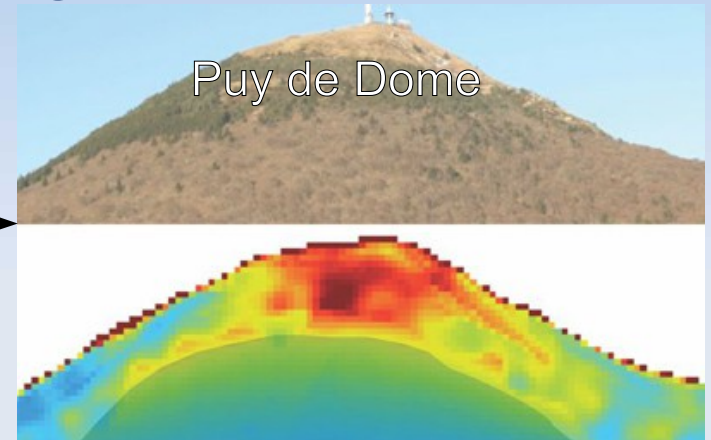
eDAQ Meeting
10/12/2012

Title:IN2P3Filaire-Q_SignV
Creator:Adobe Illustrator(R)
CreationDate:1/28/2009
LanguageLevel:2

(Call for) 3rd DCC production

- 1st prod: 20 cards all used on SDHCAL m³ set-up
- 2nd Production of DCC (15 cartes received in August)
 - ▶ 6-9 → IPNL
 - ▶ 5-2 → LLR (was 1)
 - ▶ 3 → LAPP
 - ▶ 2 → DESY + Mainz
 - ▶ 0 → LPC (was 4)
- Second production (by LPC for TOMUVOL) **to be launched NOW.**
 - ▶ **Mods wrt 1st batch:**
 - ◆ 8 HDMI outputs
 - ◆ 2 LEMO + 1 USB on front face
 - ◆ new 1.8V regulator
 - ▶ **Needs**
 - ◆ 5 for LPC
 - ◆ 5 for LLR

Dec. issue of
Physics Today



} Any other need ?

AIDA «common DAQ»

■ FP7 EU funding

- ▶ Common DAQ for all ILC R&D common TB (2014-15): VTX+TPC+SiTR+(F/e/H)CALs
- ▶ Admin:
 - ◆ WP8, task 8.6.2 «common DAQ», *supervised by WP9.*
 - ◆ Coord.: D. Cussans (Uni. Bristol).

■ Deliverables:

- ▶ D8.2 (M20 → M24 = **01/2013!!**) :
 - ◆ Publication of specification documents for the DAQ and for the central documentation facilities
- ▶ D8.8 (M46 = 11/2014):
 - ◆ DAQ performance and test beam utilization

■ Related:

- ▶ *D8.5 (M40) Installation of tracking telescope*
- ▶ *D8.6 (M44) Detector and detector control system operational*

Common DAQ SW

- Basis:
 - ▶ Interoperation EUDAQ ↔ CALICE (Geneva ⊕ LLR).
- Long Lagging... now efforts ↗
 - ▶ EUDAQ SW: changes of personal @ UNIGE (D. Haas → E. Corrin → ???)
 - ◆ Activity being relaunched by Dave
 - Online monitoring : DESY (Igor Rubinsky, Marcel Stanisky)
 - TimePix Producer & // writing
 - LPNHE (Paris) joined the activity (from SiTr)
 - Run Control Interface: UNIGE... Missing!
 - ▶ Calice: libLDA + deploy^t of XDAQ...
 - ◆ Huge progress with CALICOES... (and † of libLDA).
- Adaptation of other SW (TPC, SiTR, ...):
 - ▶ Mostly writing of a EUDAQ producer
 - ◆ SiTr DAQ adapted
 - ◆ TPC → SRS (RD51 system) : adaptation to be done
 - ▶ FCAL... ??? (last news: DIF FW writing)

Common DAQ SW: Open Q?

- Output format & needs:
 - ▶ Better perfs \Rightarrow Distributed output \Rightarrow easy offline re-synchronisation
 - ▶ If LCIO format \Rightarrow readout of multiple LCIO files (in MARLIN).
 - ◆ Or is simple «flat files» enough (zipped ascii \leftrightarrow binary).
+ LCIO use for reconstructed data...
- Trains vs Events: train like reconstruction needed (in TB) for CALOs ?
 - ▶ Online Event building (1 evt = all hits at $BC0 \pm 0 \dots 10$)
 - ◆ All hits kept... (or drop of noise ?)
 - ◆ Online monitoring (\leftrightarrow // writing of data, in sync.)
 - ▶ Aka : is the long timing important ?
 - ◆ Delayed Neutrons in Scintillators
 - ◆ RPC dead-time handling
- Online decapsulation ✓ Option to keep RAW data ?
 - ▶ Any cons ? None found. Yet...
- Adopt EUDAQ interface ASAP ?

Common DAQ FW & HW

Bristol, LAPP, Mainz, LLR, RHUL...

- TLU2 (Trigger Logical Unit) : Adapt to sLHC TB, Timepix, etc readout

- ▶ HW Progressing well. FW ?

- ◆ First production very soon...

- CCC2 (Mainz)

- ▶ Prototype ✓

- ◆ Plans for Full Card ? How many needed ?

- ▶ comm. CCC2 ↔ TLU2. Still To be precised...

- ◆ Clock, Trigger, Busy ✓

- ◆ Passing of trigger # information ? Through the BIF ?

- BIF (Beam InterFace) mezzanine on TLU2

- ▶ Recording of beam parameters (Č, triggers, Delay Line chambers, ...)

- ◆ + trigger information, Busy, etc... ⇒ full overview of DAQ state.

- ◆ LAPP → RHUL ? for FW.

- ▶ Card design ?? To be reviewed....

- ◆ "BIF0" tested in SDHCAL TB (Oct'12); data still to be analysed.

- 24 HR2 equipped PCB + adapt for NIM signal. (BC timing).

- Re-use of ODR card (RHUL)

- ▶ Not so stringent now...

- ▶ Status unsure

Next steps / needs

- Precision on the implementation.
 - ▶ Document → end of January
 - ◆ Preliminary version exists (D. Cussans, F. Magniette, VB.)
 - ◆ Plan meeting for mid-January to X-check of all needs
 - @ DESY / CERN...
 - ◆ Next to Next step: AIDA annual meeting in Frascati (April 8-15)
 - ▶ Specify needs for combined TB (Modes, Data flux) and Combined rec.
- Manpower on SW & FW
 - ▶ EUDAQ: main interface for Run & Control ?
 - ◆ And long term maintenance...
 - ▶ Adaptation to CALICE (LLR ? LPNHE ? DESY ?)
- Doc & SW repository... DESY (Hist.) || CERN (AIDA barycenter)
 - ▶ TRAC site (Wiki + Docs + SVN + tickets) to be set-up...

Back up

Deliveries for WP8.6.2

01/02/2011 + #m

Deliverable Number ⁶¹	Deliverable Title	WP number ⁵³	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D8.2	Publication of specification documents for the DAQ and for the central documentation facilities	8	9	38.00	R	PU	20
D8.5	Installation of tracking telescope	8	9	16.00	R	PU	40
D8.6	Detector and detector control system operational	8	18	88.00	R	PU	44
D8.8	DAQ performance and test beam utilization	8	8	127.00	R	PU	46

Subtask 8.6.2 – Common DAQ

An important aspect of the infrastructure is to provide a powerful and unified control and acquisition system. The AIDA partners concerned propose to develop such a system applicable to a wide range of users, among which most of the detector ILC R&D Groups: CALICE, Silicon Trackers, TPC and Forward calorimeters, and compatible with the EUDET telescope. An interface with the remote control facilities developed by DESY is also foreseen in coordination with subtask 8.6.1. Close links to the SLHC community are to be established to profit from existing developments (e.g. RD51 collaboration).

The new system is to have well defined interfaces, making it easy to integrate new hardware. It is to be simple and lightweight, so that it is easy to use at a number of different facilities. It is to be scalable so that small and large installations profit equally from using it. The proposed system is to be based on existing systems developed within the EUDET program over the past few years: the EUDET telescope DAQ (EUDAQ) and the CALICE DAQ2.

The main stages of work of this subtask are :

- The coordination by having regular meetings between partners to define the needs and organise the developments;
- The definition of the technical characteristics for a common DAQ infrastructure;
- Merge the EUDAQ and CALICE DAQ software framework providing the base for a common DAQ, including access to the test beam facility information (CNRS-LLR, CNRS-LAPP, UNIGE, UNIBRIS);
- Develop the hardware part of the common DAQ to allow the synchronisation of all the systems and to permit the work in ILC like mode (post-readout of bunch trains) (CNRS-LLR, CNRS-LAPP, UNIGE, RHUL, UNIBRIS);
- Develop System Interfaces to existing LC detector subsystems (ULund, ULB, CNRS-LPNHE);
- Extend the readout for high fluxes (ULund, ULB, RHUL).
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Note