The 2nd ATLAS ROD Workshop

4-6th October 2000
University of Geneva

Program (*organised by Ilias.Efthymiopoulos*)

Day/time	Topic	Session chair	Speaker
October 4			
13:30	Aims of the workshop)	I. Efthymiopoulos	P. Farthouat
14:00	ROD and DIG working groups		C. Bee
14:30	PIXEL and SCT ROD		D. Fasching, R. Jared
15:15	*Tea*		
15:45	TRT ROD	P. Farthouat	P. Lichard
16:30	Liquid Argon Calorimeters ROD		S. Simion
17:15	Tile Calorimeter ROD		V. Gonzalez, J. Schlereth
18:00	*End of first day*		
October 5			
9:30	*Coffee and croissants*		
10:00	Precision Chamber (CSC) ROD	J. Vermeulen	M. Schernau
10:30	Precision Chambers (MDT) ROD		A. Konig
11:00	Trigger Chambers (RPC) ROD		E. Petrolo
11:30	End-cap Trigger Chambers (TGC) ROD		L. Levinson
12:00	Level 1 Trigger RODs		N. Gee
12:30	*Lunch*		
14:00	VMEbus: crates and other issues	R. McLaren	C. Parkman
14:30	The TTC, status and plans		P. Farthouat
15:00	Readout Links		E. van der Bij
15:30	ROB and ROBins		D. Francis
15:50	*Tea*		
16:20	Discussion of previous topics	B. Cleland	
	Including Reset, Initialisation, Error handling		
18:20	*End of second day*		
18:20	*Wine and cheese (until 20:00)*		
October 6			
9:30	*Coffee and croissants*		
10:00	DCS user requirements for the ROD crate	L. Levinson	J. Hill
10:45	DCS development and support		H. Burckhart
11:30	DetDAQ development and support	C. Bee	I. Efthymiopoulos
12:00	The TileCal test beam 2000 DAQ		B. DiGirolamo
12:30	*Lunch*		
13:45	Online software for ROD crates and test beam DAQ	A. Lankford	M. Caprini
14:30	Dataflow functionality in the ROD crates		J. Petersen
15:00	*Tea*		
15:30	Discussion on DetDAQ and TestBeamDAQ	A. Lankford	
17:00	Further discussion and conclusions	A. Lankford	

Review of Previous Workshop

- **P. Farthouat - Previous Workshop: Done:**
  - Agree common backplane and crate
  - Common timing distribution system impossible - SCT, TRT, Lar requirements too different.
  - Busy module proposed, spec agreed.
  - Error Recovery: BC Reset, EV Counter Reset, FE Reset proposed.
- **Not Done:**
  - Minimal VME interface definition
  - Shared VME64x design
  - Readout Link - freeze design
  - Should DCS be used to load Parameters?

- **C. Bee - ROD & DIG working Groups**
  - "Identify Common Issues and point DAQ-1 group at them"

- **Fasching, Jared- SCT/Pixel RODs**
  - 202 RODs. Need 8 crates by July 2001, have already ordered 6.
  - RODs have space for 4 DSPs, 2 loaded.
  - Timing Interface Module
  - VME module but no VME64 CSR space.
  - Calibration under ROD control
  - ROD must assert BUSY on power-on.

- **Lichard- TRT RODs**
  - **256 RODs in 22 crates.**
  - **Monitor 1% of events - 80 Mbytes/sec.**
  - **Optical connector enters through backplane.**
  - **Timing set up by CTP/Prepulse and random triggers.**
  - **All RODs by 2004.**
- **Simion - Lar RODs**
  - **762 RODs in 60 crates. Input data is G-Link so can put RODS upstairs, using electrical S-Link. Output data 160 Mbytes/sec/ROD at 100KHz.**
  - **RODs compute energy and time from pulse shape, monitor, preprocess during calibration**
  - **Calibration: sequence of 100 triggers of same pulse height at 1-10kHz, run = 300 sequences taking 5-10 minutes.**
  - **HEC testbeam mid-2001 with demo ROD, all RODS delivered partway through 2004.**
- **Gonzales, Schlereth - Tilecal RODs**
  - **Prototype tested in beam to read TDCs, ADCs and front end.**
  - **Trigger computer using TTCsr = PMC with TTCrx, FPGA, FIFOs & PCI Bridge. Stores trigger details and writes to host after 1-4095 L1As. Runs up to 3KHz.**
  - **Preferred solution is to copy LAr ROD with modified transition module at rear.**

- **Schernau Muon CSC RODs**
  - **Self-test capability**
- **Konig - Muon MDT RODs**
  - **16 Crates. Uses TTCrx module built by UCL.**
- **Petrolo - Muon RPC RODs**
  - **32 RODS in 16 6U crates.**
- **Levinson - Endcap TGC RODs**
  - **Calibration controlled by ROD**
  - **ATLAS needs a standard event time-stamp mechanism.**

- **Gee - Level-1 RODs.**
  - **Muon Trigger ROD is made and is passing tests**
  - **Link from Sector Logic to Octant Boards has no parity detection but this will be added.**
  - **Only the links to CTP now have no parity detection.**

- **Parkman - VME Crates and VME Bus**
  - **Outline spec for a 21 slot 9U * 400mm crate.**
  - **Power > 2.5 kW. Std J1/J0/J2 + custom J5/J6.**
  - **Intended availibility Q3 2001. Too late.**
  - **Racks will be 1M deep.**
  - **Wiener have a 6U CPU mount, takes > 1 slot.**
  - **Draft spec for VMEBus is on web.**
  - **Probably not now 2eSST (only CES doing it), so speed limited to 40-50 Mbyte/sec.**

- **Farthouat – TTC**
  - **ROD Busy Modules –16 input, 1 per partition. Prototype for evaluation in Q1 2001.**
  - **Minimum busy assertion is 100 nSec.**
  - **TTCvi mk II made – manual on RD12 web.**
  - **TTCcx encoder/transmitter drives 2 5-output fibres (or 1*10)**
  - **TTCtx transmitter (not encoder) to 2*7 or 1*14 destinations.**
  - **TTCrx DMILL: prototype loses lock in PLL. Revised version due 4 Dec 2000. But special BGA package no longer available. Package change needed, probably to 121-pin 15*15mm BGA package.**

- **van der Bij – Readout Links**
  - **New "ODIN" link at 128 or 160 Mbyte/sec over 300m, using low-power G-Link over 2 or 3 fibres.**
  - **Needs 3.3V (5V possible).**
  - **Prices 1090 CHF (128) or 1360CHF (160).**
  - **S-Link VHDL code available to incorporate into RODs.**
  - **Prototypes Oct 2000 from CERNTECH. Mini-production run of 200 cards in 2001.**

- **Francis - ROB/ROBIN**
  - ROB (now called ROS) is implemented as an SBC.
  - ROBIN is the input data interface. 5 different versions exist. They will concentrate now on 2.
  - The L1ID is used for event fragment indexing in ROS. Can't have two events in system with same L1ID – problems for resets.
- **Cleland – Resets**
  - A few detectors want to fire calibration or test pulses in the long gap.
  - Table of initialisation data volumes.
  - Who needs which resets? How long a delay before and afterwards before resuming data-taking?
  - I hope this will be followed up.
- **Hill – DCS requirements in ROD crate.**
  - Draft URD at ..../GROUPS/ATLAS/DCS/dcs_daq_0.6.pdf
- **Burckhart – DCS**
  - PVSS licenses available at no cost to institutes, needs both Linux AND NT.
  - Has its own database + interfaces to others.
  - Set & examine parameters via IS, alarms via MRS, uses Atlas-wide naming scheme.
  - Software interface to DAQ starting 2001.
  - ELMB includes software.

- **Bee – ROD Crate DAQ Requirements**
  - Expect ROD crates to be networked.
  - TTCvi, Busy and DCS must have same partition structure.
- **DiGirolamo - Tilecal Test Beam**
  - Success. Calibrate & Store results for tile production modules, with 12 detector channels read out.
  - DCS control of laser, cooling, HV, table position.
  - Data written to Zebra banks then moved to Objectivity database.
  - Staff: 1 (ROD), 1 (run Control), 3+student (online/offline transition & recording) from detector group, + 10 DAQ-1 people full-time.
- **Caprini – Online Software**
  - The software we are starting to use. 24 authors.
  - New: Event Distributor – forwards event requests from monitoring programs to event samplers in different crates.
- **Petersen – Dataflow in the ROD Crate**
  - LDAQ, TRG, EBIF and ROB are Input-Output-Modules – IOM libraries.
  - RODs are all different and cant be IOMs.
  - Maybe we can build IOM jackets round RODS and use the DAQ-1 dataflow software?
- **Lankford – Conclusion**
  - Tell DSC & DAQ when you plan to integrate what.