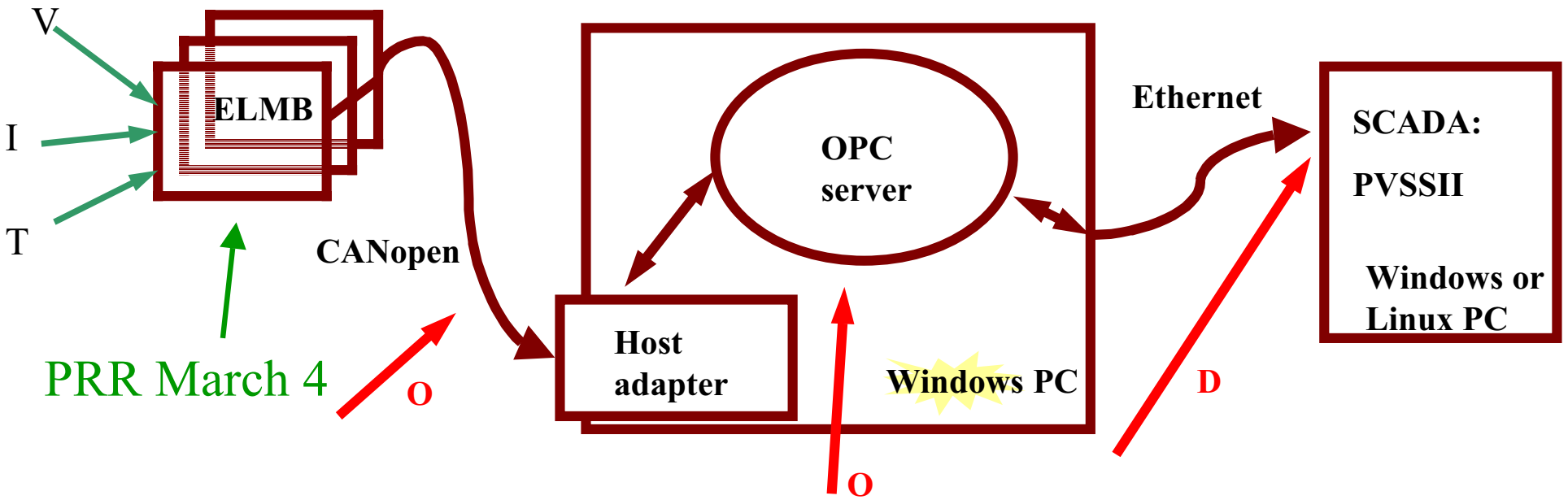
DCS / standard path

FDR March 5



Software and firmware for standard components available from ATLAS DCS group.To feed non-standard user data into the chain we need our own OPC server (O) or PVSS drivers or API (D)

OPC : OLE for Process Control

OLE : Object Linking and Embedding (Microsoft)

SCADA:Supervisory Control And Data Acquisition

PVSS is a SCADA product by ETM AG, Austria

Final Design Review ATLAS DCS

Reviewers:

Philippe Farthouat (ATLAS Electronics Coordinator)
Clara Gaspar (LHCb Controls Coordinator)
Lennart Jirden (ALICE Controls Coordinator)
Raymond Rausch (SL/CO)
Chris Parkman (Chair - ATLAS Technical Coordination)

Ex-officio/for information:

Gianpaolo Benincasa (ATLAS GLIMOS)
Andy Lankford (ATLAS DAQ Project Leader)
Marzio Nessi (ATLAS Technical Coordinator)
Balazs Szeless (ATLAS Technical Coordination)

Agenda Final Design Review ATLAS DCS on March 5th 2002

a) ATLAS Central DCS		
Subject	**Speaker**	**Time**
Introduction & procedures	C.Parkman	5 min
Overview	H.Burckhart	40 min
Front-End: ELMB HW	B.Hallgren	20 min
Front-End: ELMB SW	H.Boterenbrood	15 min
SCADA	J.Cook	15 min
Prototypes and system tests	F.Varela	20 min
Radiation tests	B.Hallgren	15 min

b) Joints Controls Project		
Subject	**Speaker**	**Time**
JCOP	W.Salter	45 min

c) ATLAS Subdetector DCS		
Subject	**Speaker**	**Time**
Pixel	S.Kersten	15 min
SCT	R.Brenner	15 min
TRT	Z.Hajduk	15 min
LAr	C.Zeitnitz	15 min
TileCAL	G.Montarou	15 min
RPC	S.Veneziano	15 min
TGC	S.Tarem	15 min
MDT	H.Boterenbrood	15 min
Cal. Trigger	*U.Schäfer*	*15 min*
Infrastructure and safety	H.Burckhart	15 min

d) Reviewers Questions and Clarifications

Cal.Trigger : Data and control channels into DCS

The L1 Calorimeter Trigger comprises a total of ~250 modules. Each of them needs to be monitored by DCS. Due to limited backplane connectivity only 2 pins per module are available for readout of environmental data. Therefore a local CAN node is required on each processor module.

- < 8 supply voltages/processor board, either low resolution ADC or digital OV/UV detection only
- < 8 temperatures/processor board, low resolution ADC (accurate to a couple of deg. Centigrade only)
- Standard crate monitoring / control (1 CAN node per crate: voltages, temperatures, PWR on/off)

Total amount of data into DCS: < 250 x 16 words = 4K words

Cal.Trigger : HW + SW components

Current baseline:

- Single-chip CAN controller with on-chip ADC on each module
- CAN/CAN bridge on “Timing / Control Module” (1 per crate)
- Small number of CAN branches into DCS via standard CAN interface and OPC server into PVSS
- Status display, crate shutdown on over-temperature, ….

Cal.Trigger : Hardware / firmware status

- TCM prototype was built at RAL, based on Fujitsu MB90595 dual-CAN chip
- Some work on firmware has been done at Queen Mary, U. London
- Considering alternative solutions :
  - CANDIP
  - Atmel
  - Microchip
- Considering the use of ELMB with 2nd CAN chip as crate-level bridge so as to benefit from existent firmware
- Modules using Fujitsu chip as well as modules carrying ELMBs will be used in 'slice test' in 2002. Final decision on CAN chip to be used on ATLAS will be taken after completion of prototype tests

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- Only comment on our presentation by C.P. : why don't we use the two temperature sensors per crate that everybody else is happy with

FDR: General impression

- Most subsystems look still relatively non-final
- ~ 5000 ELMBs on ATLAS
- Most presentations focused on standard and non-standard application of ELMBs
- Some people were concerned about databases in PVSS
- Data rates / reaction time seems to be an issue.
- Importing & configuring large numbers of channels into PVSS seems still difficult (it's all point & click panels)
- Some people criticise the PVSS script language (C-like)

Points of interest (in order of appearance)

- Configuration and conditions databases are held outside PVSS (shared with DAQ) and data are regularly synchronised to PVSS data bases. Access to databases via DDC.
- (Point of non-interest: radiation hardness…)
- Henk Boterenbrood: willing to provide help to anyone trying to customise ELMB software. Binaries, sources, documentation on the web. CANopen protocol is mandatory
- Jim Cook: inquiring about additional frontend connection methods required by us
- Fernando Varela: branch test with 16 ELMBs, ADC conversion rate ~32Hz, all modules read out in 4 seconds. Limiting factors: NICAN interface and PVSS archiving (need high performance CPU or distributed system) -> do as much of the data processing as possible (thresholding / event driven messages) on microcontroller level rather than leaving all the processing to PVSS.

Points of interest

- Wayne Salter: Joint COntrols Project explaining management structure, services, common framework, available components and libraries… → read it on the web
- New software version mid 2002
- JCOP workshop June 5-6

(what can IT-CO do for us, at which timescale?)

- SCT : Richard Brenner wants to be able to start up in ~10s a system comprised of 148 ELMBs at start of run
- Christian Zeitnitz : Lar-purity: bypassing CANopen by sending CAN packets into a PC running Labview with NI OPC server
- TGC Shlomit Tarem : require CAN repeater, hardware not yet decided on
- Helfried Burckhart : Detector Safety System to detect critical situations and allow for controlled shutdown before CERN Safety System is triggerd