DCS-COMPASS requirements for the Experiment's 2nd phase

C. Quintans

Outline

- Present status
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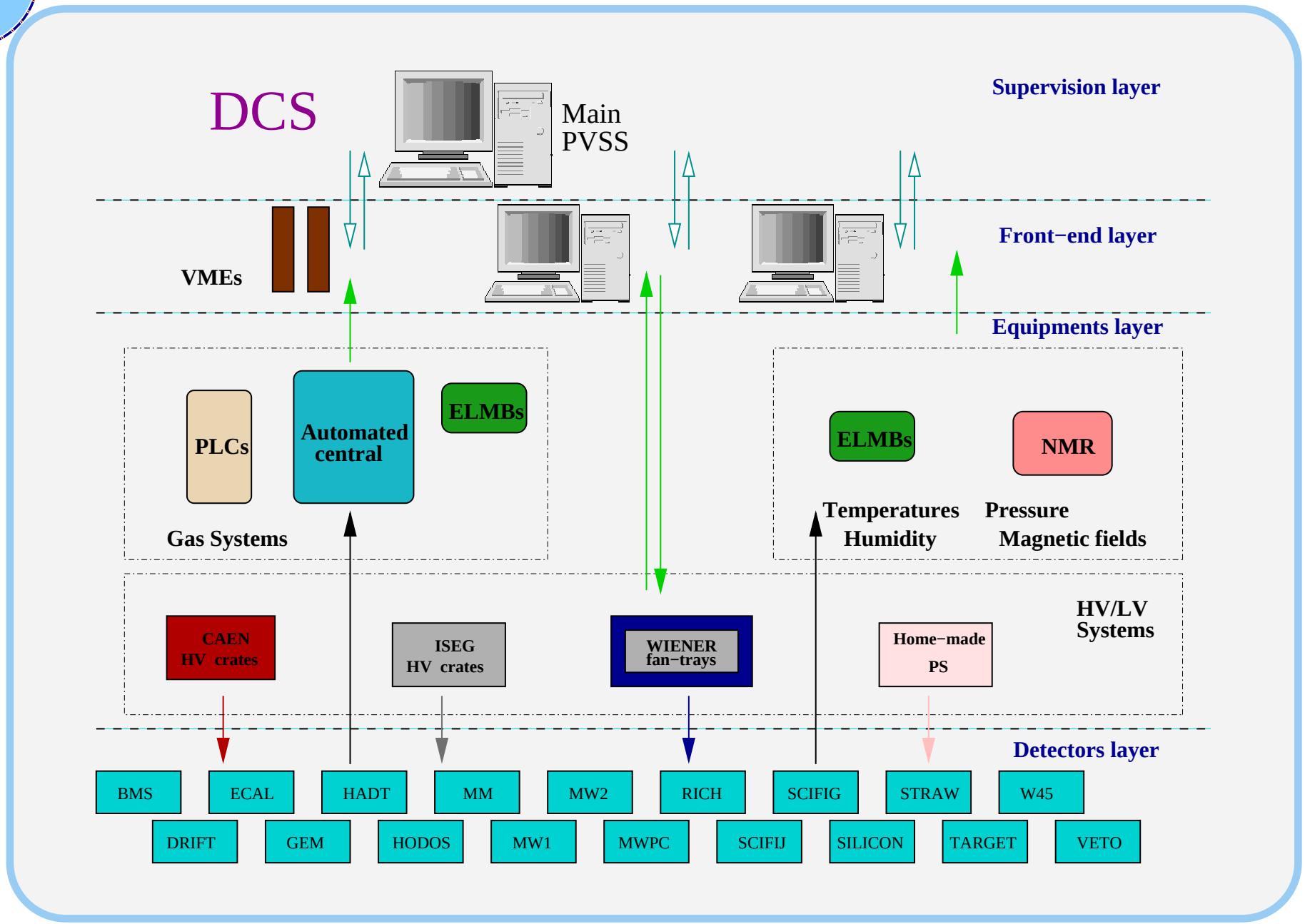
- New solutions for control/monitoring
- New programs/packages/features
- Requests to IT/CO
- How to proceed


DCS
Main
PVSS
Supervision layer
Front−end layer
VMEs
Equipments layer
PLCs
Automated
central
ELMBs
Gas Systems
ELMBs
NMR
Temperatures
Humidity
Pressure
Magnetic fields
HV/LV
Systems
CAEN
HV crates
ISEG
HV crates
WIENER
fan−trays
Home−made
PS
Detectors layer
BMS
ECAL
HADT
MM
MW2
RICH
SCIFIG
STRAW
W45
DRIFT
GEM
HODOS
MW1
MWPC
SCIFIJ
SILICON
TARGET
VETO

Present Status

- 22 **CAEN** crates SY127, SY403, SY527 and SY1527 – total of **104 modules**, powering **1300 HV/LV channels**.
- 2 ISEG crates ECH 228 – total of **12 modules**, powering **340 HV channels**.
- 17 Wiener fan-trays for VME 9U crates.
- 3 PLCs.
- 25 ELMBs (old type, version 103) + 3 ELMBs (new type, version 128).
- 1 NMRmeter sending values into file.
- Several CAEN SY127 sending trip state info into file.

What has to be changed

Several solutions used up to now are going to be discontinued at CERN.

- PVSS has a new version
- Framework package has a new version
- Projects created with old versions are not compatible with the new versions
- SLiC is no longer supported
- Strong recommendation to move to commercial OPC Servers (that can only run in Windows OS)

CAEN HV/LV

Until now, SLiC + DIM, 2 packages developed at CERN, were used to control the CAEN channels, via VME. SLiC is compiled as DIM Server, running in Linux, and is connected to a DIM API manager on the PVSS side, to allow for fast control (monitored values Imon and Vmon) and slow control (set values V0 and I0).

Performance: **1 to 5 seconds** in the **fast cycle**; **3 minutes** in the **slow cycle**.

But none of the LHC Experiments is going to use SLiC, the package will no longer be supported by IT/CO!

↪ Strong recommendation to move to **CAEN OPC Server** (which we are already using for 1 crate SY1527).

subject continued in David and my next talks

ISEG HV

340 HV channels controlled in PVSS during 2004 Run. SLiC compiled as OPC Server was developed by DCS/COMPASS.

- Uses **SLiC core** code – the support from IT/CO **is not** guaranteed!
- an ISEG OPC Server exists but is not recommended. Not much hope that this product will be in usable conditions in 2006...
- Problems experienced also with the hardware, for modules EHQ 20 025p
- If you plan to buy new HV modules, ISEG is probably not the best solution.

Wiener fan-trays and LV

Fan-trays controlled using a SLiC developed by IT/CO, compiled as DIM Server. LV crates not yet included in our PVSS project.

There is now available a **Wiener OPC Server**, which was tested at IT/CO and is recommended. We plan to implement this solution, for both fan-trays and LVs.

↪ Uses **CANbus** connection, cabling is practically done. Requires a **PCI-CAN** interface – we use Kvaser Card PCI-CAN Q with 4 independent ports.

↪ Plan to use 1 single Wiener OPC Server running in Windows XP (or higher), with 2 CANbus branches, 1 for fan-trays and 1 for LVs.

PLCs

We use 3 **Schneider PLCs** for detectors gas systems control. PVSS is **passive** – DCS only provides monitoring. Connection via 3 serial ports of a Windows computer, where one single **OFS OPC Server** provides the monitorings to PVSS client.

This part of the DCS project will not be modified. More detectors gas systems may be included in the future, using the same scheme.

ELMBs

There are 2 types of ELMBs, depending on the microprocessor used (ATMega 103 or ATMega 128L). Their programming is different.

At COMPASS we use both old and new type ELMBs.

3 CANbus branches are used (2 with old ELMBs, 1 with new ones). Kvaser PCI-CAN Q card provides the interface to the Windows computer where an **ATLAS developed OPC Server** runs.

ELMBs

- IT/CO **does not** support the ELMB solution (nor an alternative)
- ATLAS is responsible for the ELMBs hardware and software, but it is not clear what support they provide (may be problematic specially for the old type ELMBs, that ATLAS will not use).
- ATLAS will order once more an ELMB production (new type). If we want more ELMBs for the future, we should **order together** with them – price contrains.
- Up to now, we use ELMBs mostly for **monitoring** of parameters, from the 64 multiplexed ADC channels they provide. But digital IO offers possibility of control – we plan to explore this option much more in the future (it will be used for the Cold Silicons cryogenic system, for example).

Monitorings from stand-alone detector controls

- Control of 60 **CAEN HV** channels for **MM** and **DC** detectors will be added to the DCS in the standard way, replacing the channels' status monitoring (from stand-alone control) used in 2004.
- Monitoring of **SM1 field** from NMRmeter is **open issue**. SM2 and B6 magnetic fields monitoring via Hall probe and ELMB reading will be kept (?)
- Monitoring of the new COMPASS **target solenoid** still **to be defined**. The control will be from a stand-alone developed at Saclay.
- Connection to **DAQ** will be developed, using **DIM** services.
- Monitoring of **SPS** parameters, using **DIM** to connect to the central accelerator data server, will be developed.

New programs/packages/features

- The new PVSS User interface for Linux offers an easy visualization of the running PVSS managers – easier to identify problems.
- Claims that the new version consumes less memory.
- Possibility to use a remote Oracle database to archive history values – archives stored at CDR; easy access without PVSS.
- New Framework is more user-friendly – detectors view/hardware view
- FW includes packages specific for Accelerator data, ELMBs, Wiener, FSM (in addition to the already existing CAEN and Analog/Digital)

Requests to IT/CO

- Support needed to translate and improve the DCS project into the new versions of PVSS and Framework.
- CAEN and Wiener OPC Servers must be tested extensively by the IT/CO.
- Ask for some kind of IT/CO support of the ELMBs – since no other solution is recommended by IT for analog measurements.
- Ask for help developing COMPASS specific tools to extract data, alarm in case of connection lost and of non-update of values, customize refresh rates for selected parameters/datapoints,...

More modifications

To protect the DCS from afs problems, Windows updates from NICE, etc, we plan to isolate the DCS from the outside:

↪ Use bridge/firewall between DCS and the exterior network;

↪ DAQ is going to do the same – we must interact more with the DAQ group.

How to proceed

- A meeting with DCS/COMPASS - IT/CO will take place this afternoon, to discuss our requests.
- We are working in close contact with CAEN engineers to help identify problems with their OPC Server.
- We are preparing **CAEN performance tests** using the CAEN OPC Server – for this, **we need to use some CAEN crates** (BMS, trigger, others?), and be able to safely put them on, ramp voltages, etc
- Installation of the new programs versions is ongoing.
- The DCS group has now 2 computer science collaborators working full time on the new DCS project (David Sora and Francisco Mota).

Call for requests and collaboration

If you want new equipments to be integrated in the DCS for the 2006 Run, contact us well in advance.

Your expertise in some topics may be extremely useful for us. We would like to interact more with detector groups and DAQ.