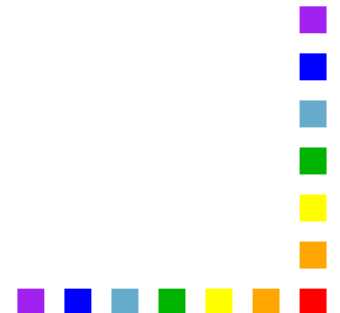


The DCS for the 2006 Run

C. Quintans, for the DCS group

Outline:

- Reasons to build a new DCS project
- New packages used
- Equipments/parameters to control/monitor
- The archived DCS data 2002 – 2004
- What is new in the new DCS
- Graphical User Interface
- Alerts scheme
- Options for CAEN HV controls
- New requests for integration of detectors/equipments



Motivation

- DCS is "transversal" w.r.t. the COMPASS detectors, DAQ, PT and SPS info
- Important to ensure good running conditions of the experiment, and the good stability and quality of data taking
- Must provide clear indication of alarms, in such way that the shift crew will react at the shortest delay
- Must provide settings and On/Off capabilities for equipments like HV, LV, etc
 - ↳ guarantee easy but **protected** access
- Must provide monitoring tools (e.g. trendings) easy to use by non-experts
- Must provide archiving capabilities for the relevant monitored parameters



Why a new DCS for COMPASS

- The old version of PVSS suffered from several problems of performance, reliability, graphical interface limitations, etc.
 - The new version of **PVSS II**, v.3.0, was released in August 2004, including new features and offering more reliability.
- We would like to profit from these!

The 2005 SPS shutdown provided the opportunity to redesign the system, at the same time as we update the packages used, and some of the front-end hard and software.

The knowledge of PVSS at CERN and inside the group is increasing
The tools developed at CERN to work with PVSS are also improving
(**JCOP-Framework**, **DIM**, **SLiC**, and the evolution of **OPC Servers**)

We are learning together (DCS-COMPASS, IT-CO and the JCOP group, ETM Company, and companies like CAEN and Wiener)

Past DCS data (2002 – 2004) I

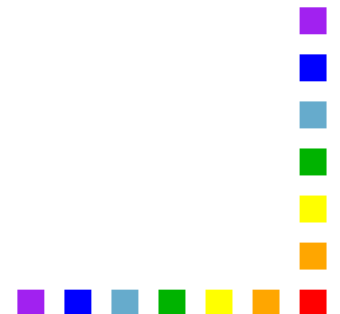
Some monitored values (V, I, temps, ...) are archived – may be of interest for offline studies on the stability of the detectors, and even for physics analysis.

Past data can be accessed **outside PVSS** in the form of **Root tree files**.

Will **soon** be stored in the CASTOR file system, under **onl** account:

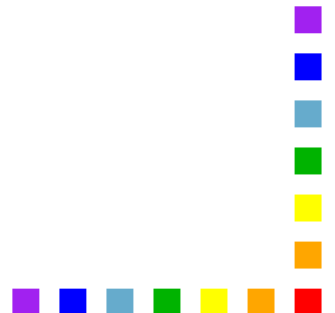
</castor/cern.ch/user/o/onl/dcs/...>

- 2003
- 2004
 - ↳ BMS
 - ↳ GEM
 - HV
 - Central
 - LV
 - Gas
 - ↳ ...



Past DCS data (2002 – 2004) II

- For each archived parameter, **value + timestamp** are given
- Time is stored in seconds, using **TDatetime** function
- An example for histogramming in Root will be included



New packages used I

PVSS II v.2.12 → PVSS II v.3.0

Advantages:

- Lighter and faster at start-up
- New Linux graphical user interface (including a console panel allowing to see the state of PVSS related processes)
- More capabilities to work with external databases (Oracle, MySQL,...)
- Filtering of repeated alerts, to prevent PVSS overload

Disadvantages:

- Not yet fully debugged
- Discard alerts if too many of the same. Needs intelligent filtering – this is being checked



New packages used II

New JCOP-Framework – incompatible with previously used version

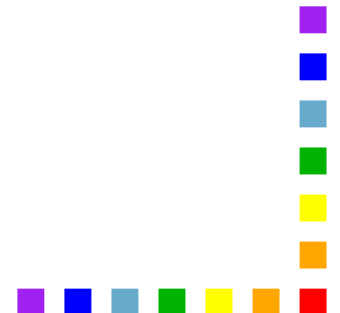
→ strongest reason to rebuild the DCS project

JCOP-Framework is a CERN software designed for the LHC experiments

→ COMPASS has no influence in the decisions, and cannot prevent future backward-incompatible modifications

It provides:

- datapoint types (i.e. a kind of templates) ready to use for CAEN HV, ELMB analog channels, etc – simplifies a lot our work!
- default panels for standard equipment – we can use them by just introducing slight modifications.
- tool for trendings – more user-friendly than the PVSS embedded one
- coherent scheme for alarms treatment



New packages used III

- new SLiC for CAEN HV

↪ is being adapted by IT/CO, to work with the new JCOP-Framework – official (but limited) support from IT

- new OPC Servers for Wiener LV and Fan-trays, for ISEG HV, and for ELMBs

↪ Wiener and ISEG OPCs are standard commercial solutions now available (IT/CO and the equip.s companies provide support) – need to be tested.

↪ ELMBs and their software developed by ATLAS. We will use new version (ELMB v.128) – support given by ATLAS

- SMI++ – Final State Machine Server + Client

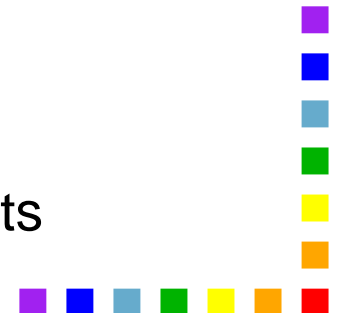


Equipments/parameters to control/monitor

These are basically the same as in 2004, with some improvements:

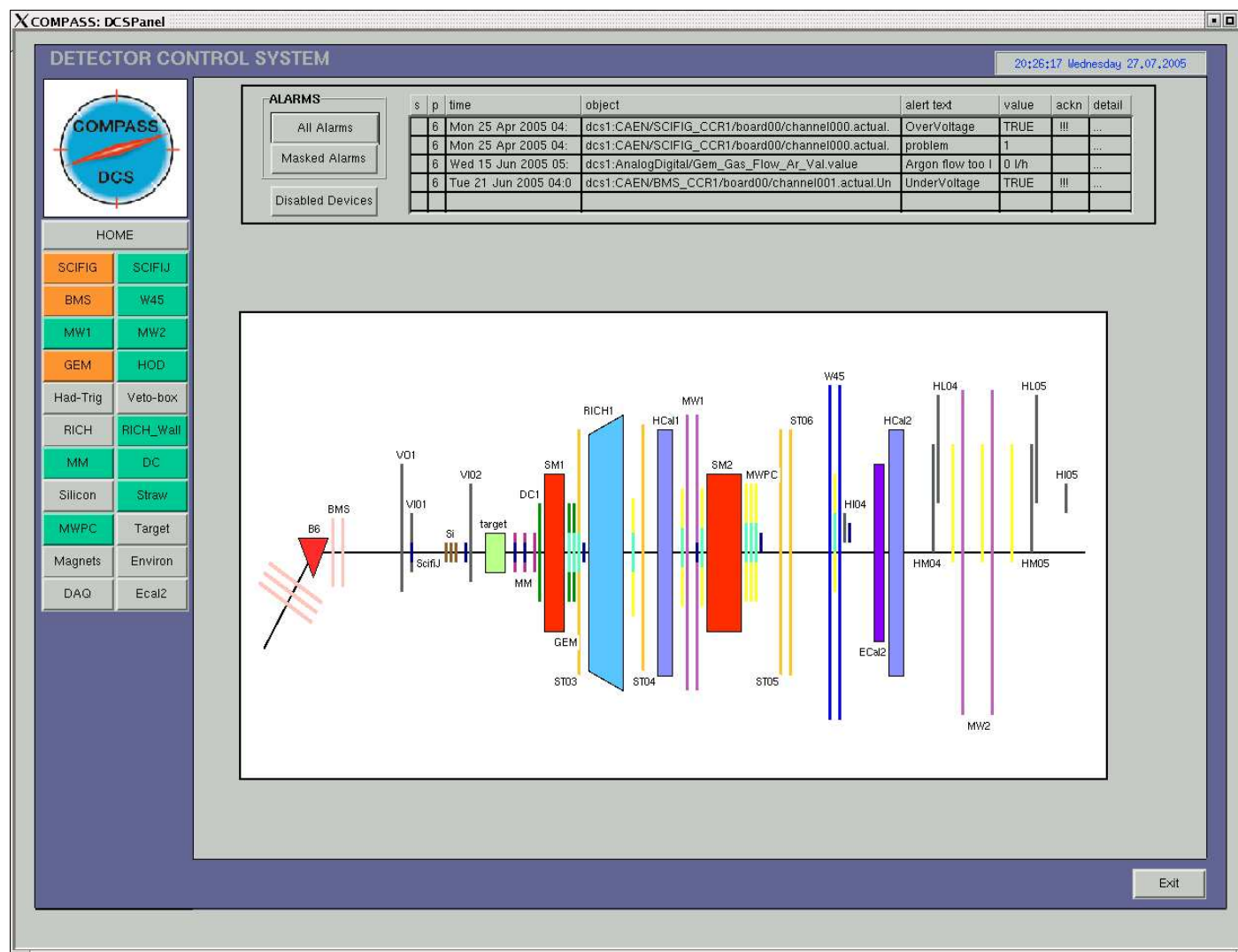
- CAEN crates SY127, SY403, SY527 and SY1527
 - ↪ \approx 1200 HV channels, some LV channels
- ISEG HV crates/boards
 - ↪ \approx 360 HV channels
- Wiener LV PS and \approx 20 Wiener fan-trays for VME crates
- \approx 200 analog channels (read using ELMBs)
 - ↪ temperatures, magnet currents, humidities, LV, atmospheric pressure, and few alarms
- Gas mixtures of \approx 10 detectors
 - ↪ reading information from 3 PLCs

→ Up to now there were **no requests** to integrate new equipments (except for the new SciFi-Poland)



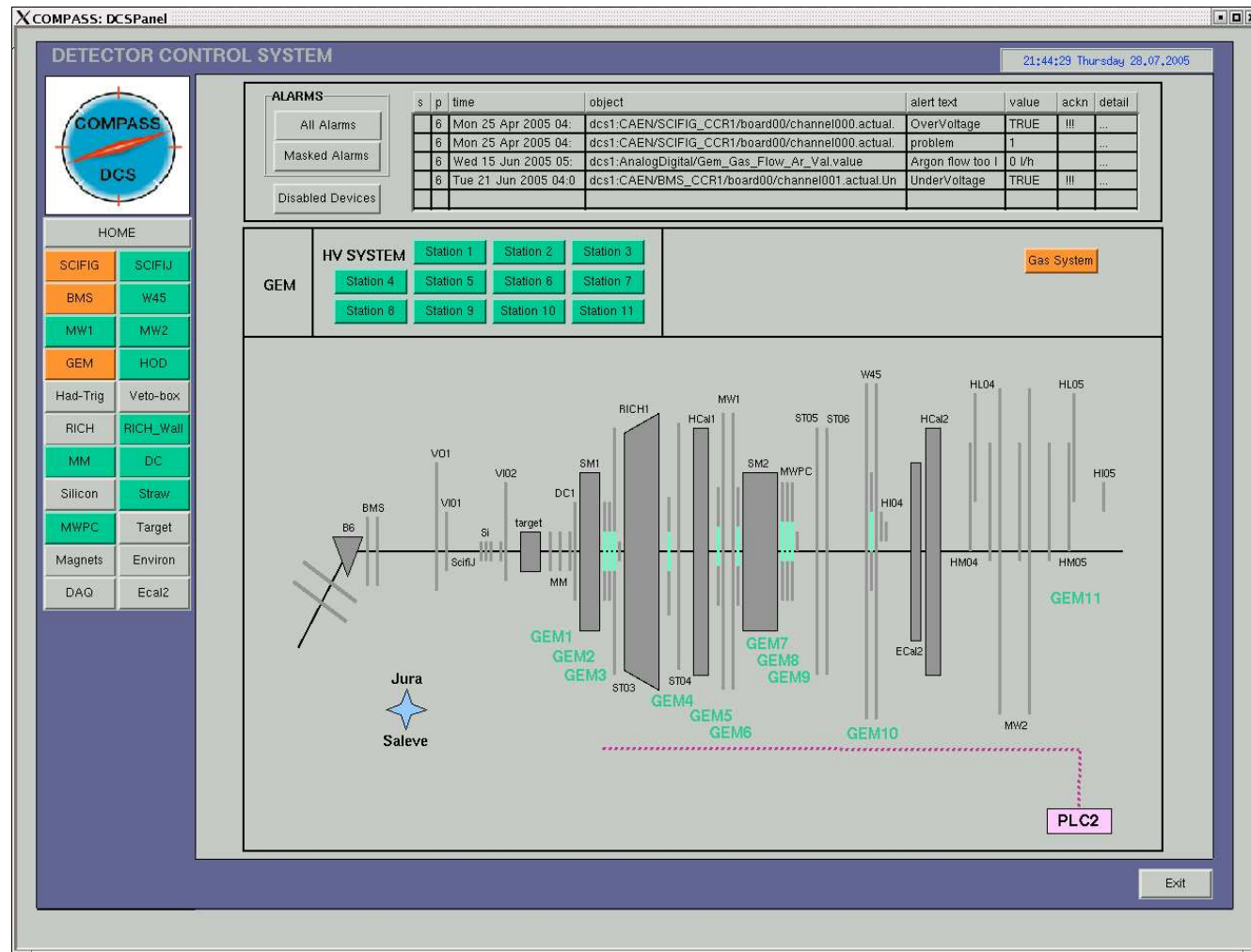
What is new I

→ New "operator" and "detector-expert" panels



What is new II

→ Detector oriented – as opposed to hardware (or front-end) oriented



What is new III

→ "Settings" require a "detector-expert" login.

DETECTOR CONTROL SYSTEM 20:34:09 Wednesday 27.07.2005

ALARMS

s	p	time	object	alert text	value	ackn	detail
6		Mon 25 Apr 2005 04:	dcs1:CAEN/SCIFIG_CCR1/board00/channel000.actual.	OverVoltage	TRUE	!!!	...
6		Mon 25 Apr 2005 04:	dcs1:CAEN/SCIFIG_CCR1/board00/channel000.actual.	problem	1		...
6		Wed 15 Jun 2005 05:	dcs1:AnalogDigital/Gem_Gas_Flow_Ar_Val.value	Argon flow too l	0 l/h		...
6		Tue 21 Jun 2005 04:0	dcs1:CAEN/BMS_CCR1/board00/channel001.actual Un	UnderVoltage	TRUE	!!!	...

HOME

SCIFIG	SCIFIJ
BMS	W45
MW1	MW2
GEM	HOD
Had-Trig	Veto-box
RICH	RICH_Wall
MM	DC
Silicon	Straw
MWPC	Target
Magnets	Environ
DAQ	Ecal2

GEM HV SYSTEM

Station 1	Station 2	Station 3
Station 4	Station 5	Station 6
Station 7	Station 8	Station 9
Station 10	Station 11	

GEM Station 1 channels:

Channel Name	v0 ()	vMon ()	iMon ()	isOn	Alarms
Gem_Hv_1_U_Ch001	0	0	0	FALSE	
Gem_Hv_1_X_Ch001	0	0	0	FALSE	

Group operation: On Off Settings

Print 10 Close

Exit

What is new IV

→ All details about a specific channel visible in a pop-up window

CAEN channel: CAENchannel

CAEN Channel: Scifg_Hv_6_Booster_X_Ch001

Channel: dcs1:CAEN/SCIFIG_CCR1/board00/channel000 Number: 0

Board: CAEN/SCIFIG_CCR1/board00 Slot: 0

Crate: CAEN/SCIFIG_CCR1

Parameter	Setting	ReadBack	Units
v0	0	0	
v1	0	0	
i0	0	0	
i1	0	0	
Ramp down	0	0	
Ramp up	0	0	
Trip time	0	0	
v soft limit	0	0	

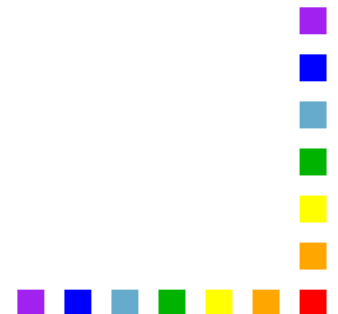
Parameter	Value	Units
v mon	0	
i mon	0	
Trip	FALSE	
Over current	FALSE	
Over voltage	TRUE	
Under voltage	FALSE	

Load settings from hardware

Commands: On Off

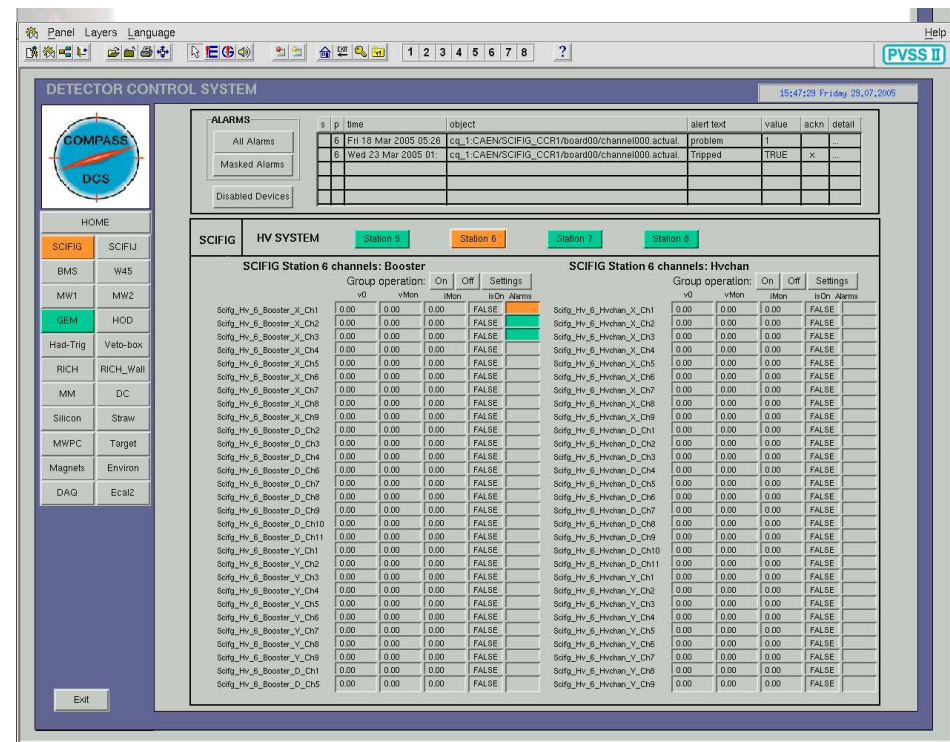
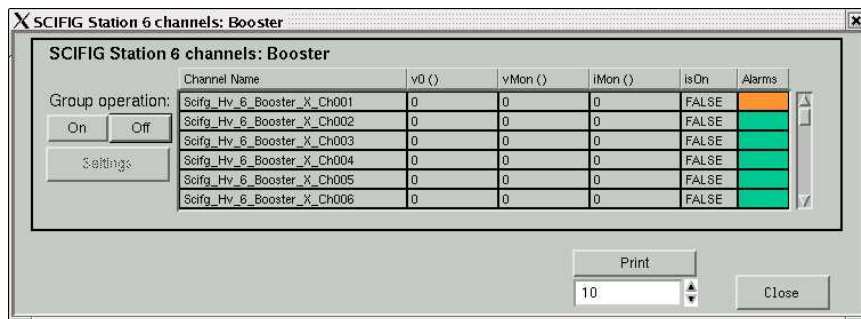
vMon Last Modified: 1970.01.01 01:00:00.000

Close



Graphical User Interface

The Linux GUI is improved. But some **bugs** are still present. One of these delayed seriously the redesign of the project.

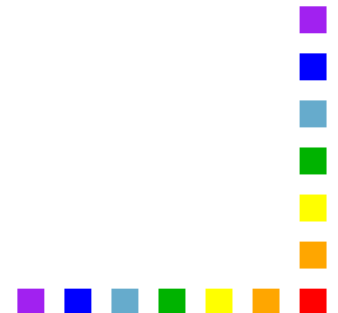


Alerts scheme

Alerts are shown through the **background color** of "values cells".

The JCOP-Framework code of alert colors is used, with a few modifications:

- error in the programming
- no "alert handling" defined
- masked alarm
- OK, No alarm
- warning alarm
- fatal alarm
- no connection to hardware. Unknown state.



CAEN HV options I

3 main options for CAEN HV controls:

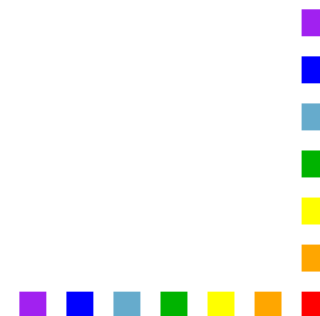
- SLiC + DIM
 - ↳ Can run either in Linux or Windows. We choose **SCL3** Linux.
 - ↳ Is similar to what we were using in the past.
 - ↳ SLiC requires some modifications to be compatible with the new supervisory packages.
- SLiC compiled as OPC Server
 - ↳ Must run in Windows PCs.
 - ↳ Never tested.
 - ↳ SLiC requires some modifications.
 - ↳ SLiC package concerning OPC protocol is not optimized, thus expected performance is lower. An optimization would be very time consuming (cf. IT/CO)



CAEN HV options II

- CAEN OPC Server
 - ↪ Must run in Windows PCs.
 - ↪ Not debugged for crate types other than SY1527/2527.
 - ↪ Preliminary tests done at COMPASS (with SY527 crates) show poor performance (\approx 30 seconds needed to read 24 channels)

Even if we don't have the results of all tests, we decided we will proceed with the first option – **SLiC + DIM**.



New requests

Requests to integrate new equipments in the DCS for the 2006 Run should be made **as soon as possible**.

Requests can be submitted via the web:

<http://compass-dcs.web.cern.ch>

Detectors Control System COMPASS

Welcome!
Friday, 29 July 2005

Logged User: compass

User:
Password:
OK

Home
Introduction
2006 run **NEW**
Requests Form **NEW**
Past runs
2004 run
Hardware
Generic on ELMs
ELMs in 2004
Documentation
Presentations
FAQ
Links

Request Form

Request Message:

Name:
Email:
Detector:

Reset Submit

DCS e-mail: dcs-group@lip.pt
DCS on-call: 164872