DT HV Slow Control

Marina Giunta, S. Braibant, P.Giacomelli

MU DT Meeting

CMS WEEK 15th March 2005

Outlook

GOAL: Integrate DT HV system in the Central DCS (ready for Magnet Test!)

(1 month of close collaboration with JCOP/Central DCS people)

- Why HV first?
  - HV (and LV) Systems completely controlled via PVSS
  - a working PVSS project for HV already existing and used for chamber test at the ISR
- Respect naming, color,….conventions
- Finite State Machine mechanism
  - propagate commands / states
- Configuration Db (Oracle)
- Condition Db (Oracle)

Hardware Setup

SY1527

ethernet

PC Windows XP

PVSS
JCOP Framework
CAEN OPC Server

Global HV+

Global HV-

LV

HV
PHI1

HV
THETA

HV
PHI2

HV
LAYER1

Wires0
Wires1
Strips
Cathodes

OutputChannels

(Set V0, i0…)

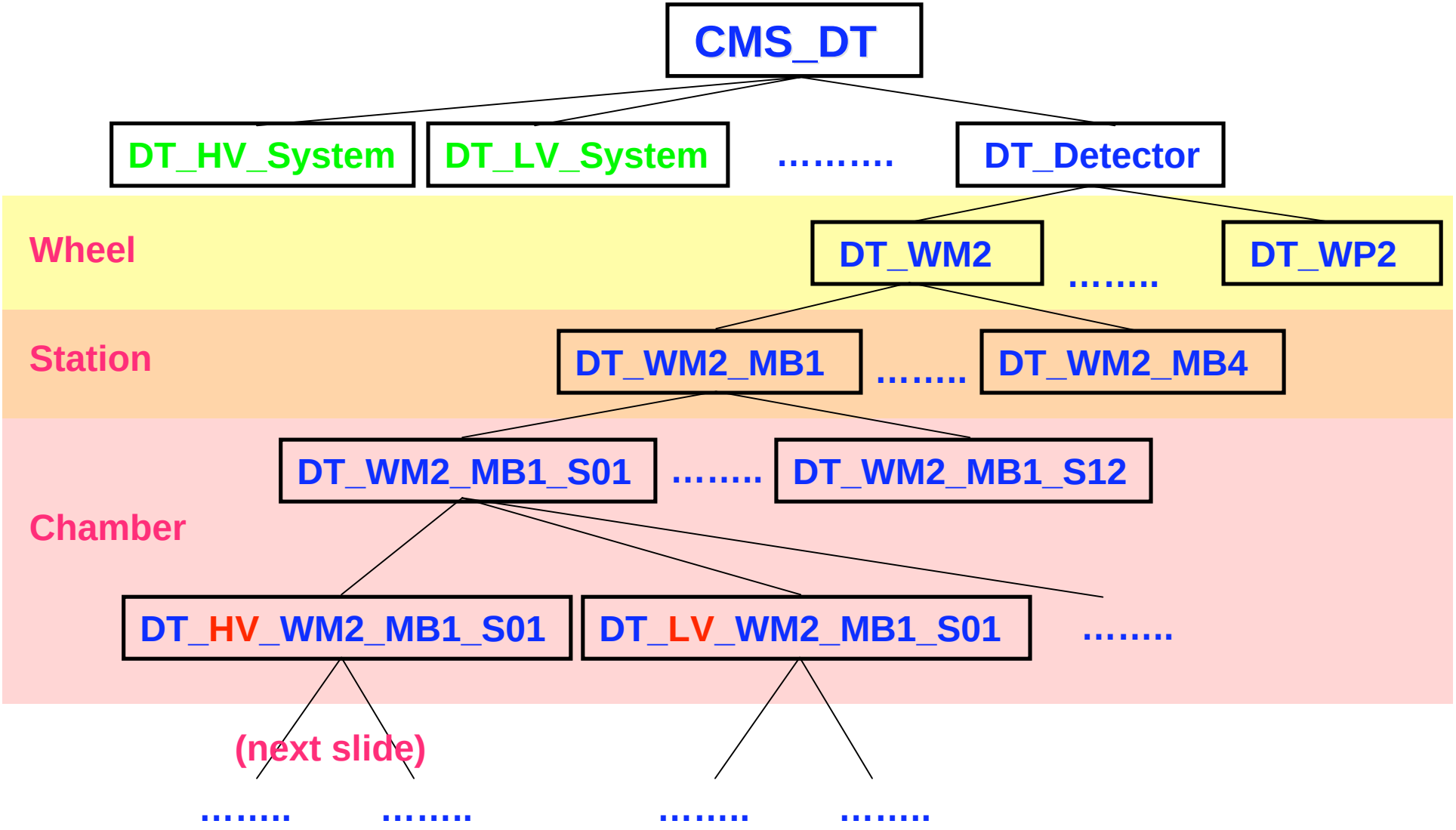
MacroChannels

(Set ON/OFF, RuP,…)

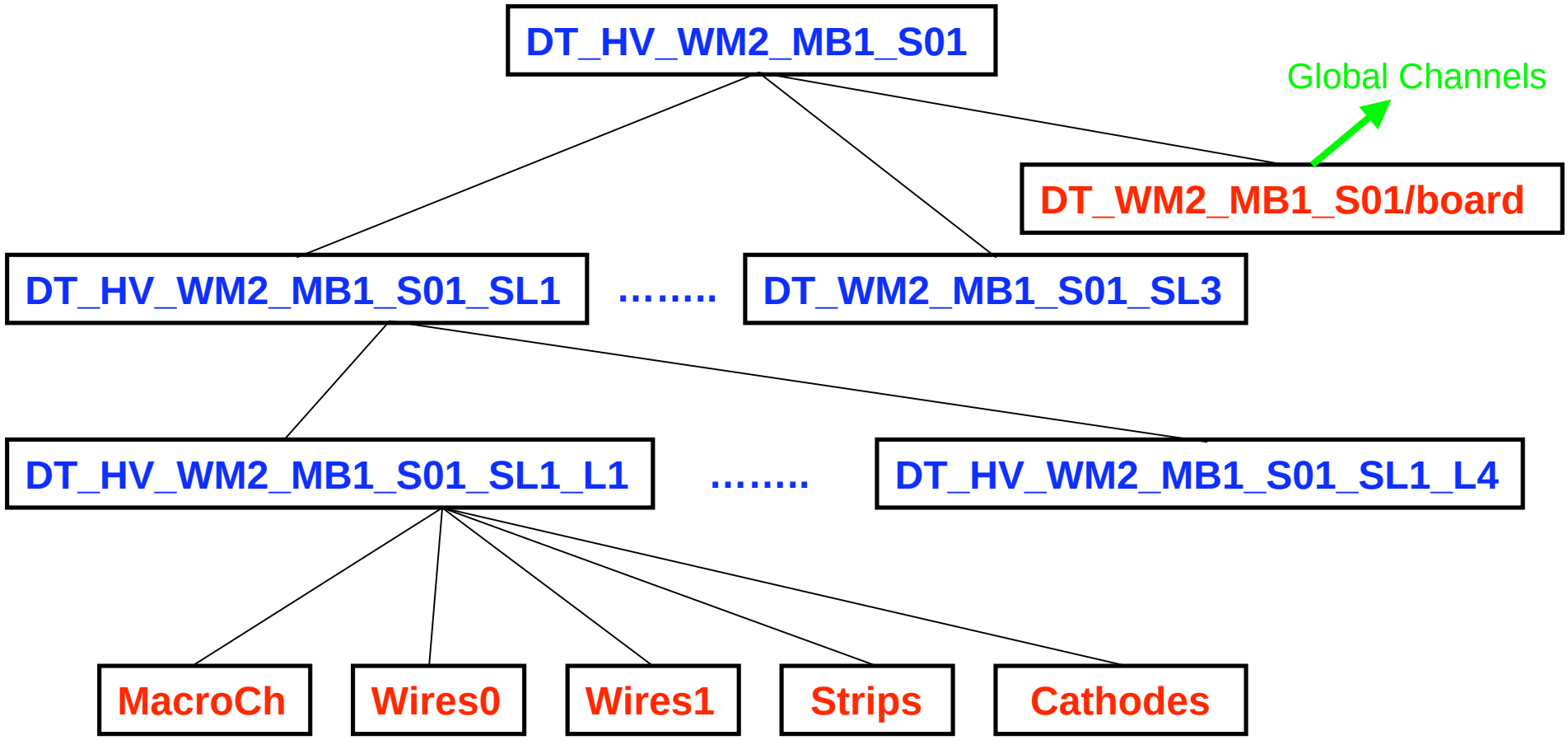
A876

A877 ⇒ powers 1 DT

DT System: FsM View



DT FsM View (continue….)



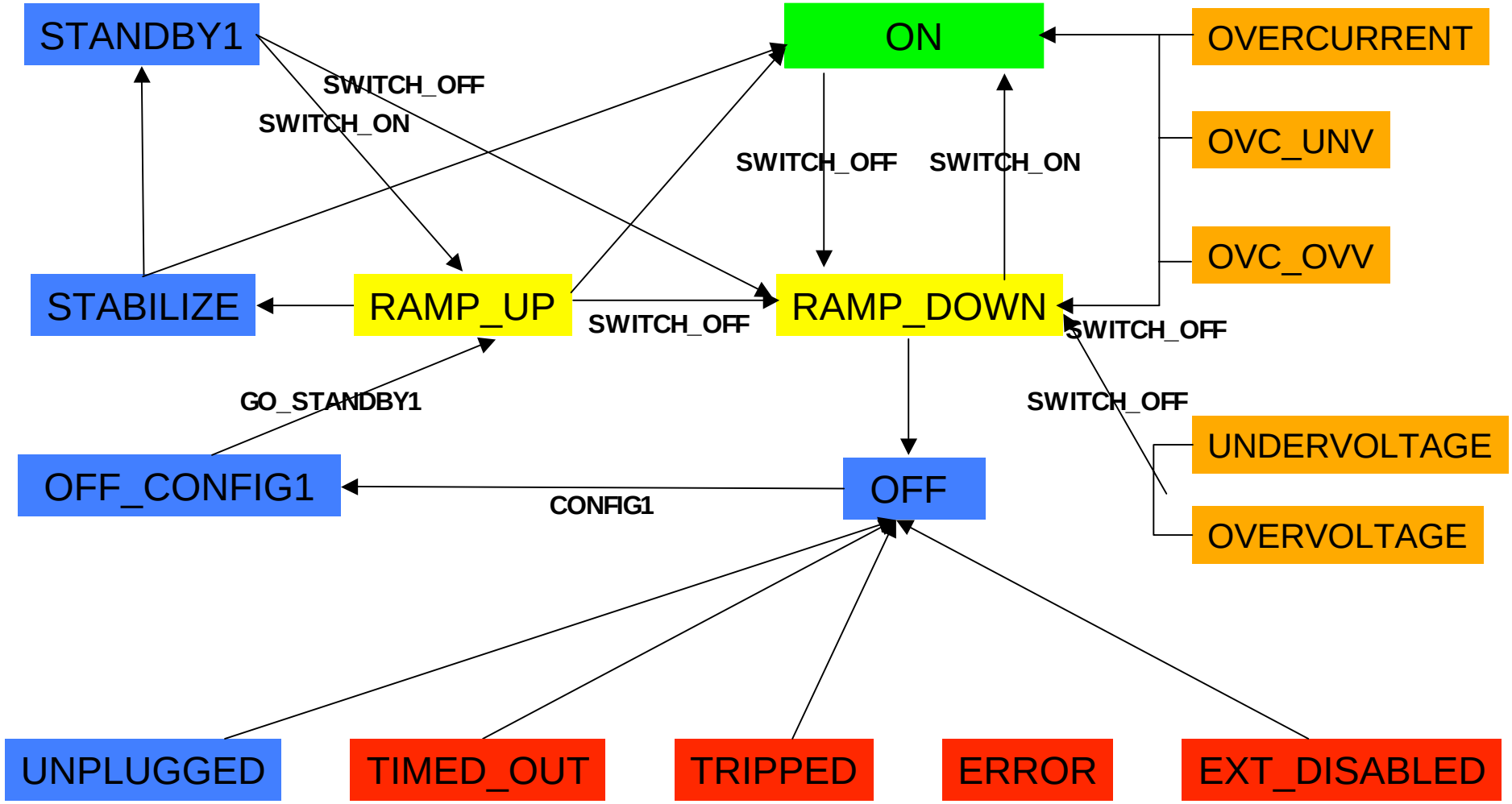
Red: Hardware Nodes

Blue: Logical Nodes

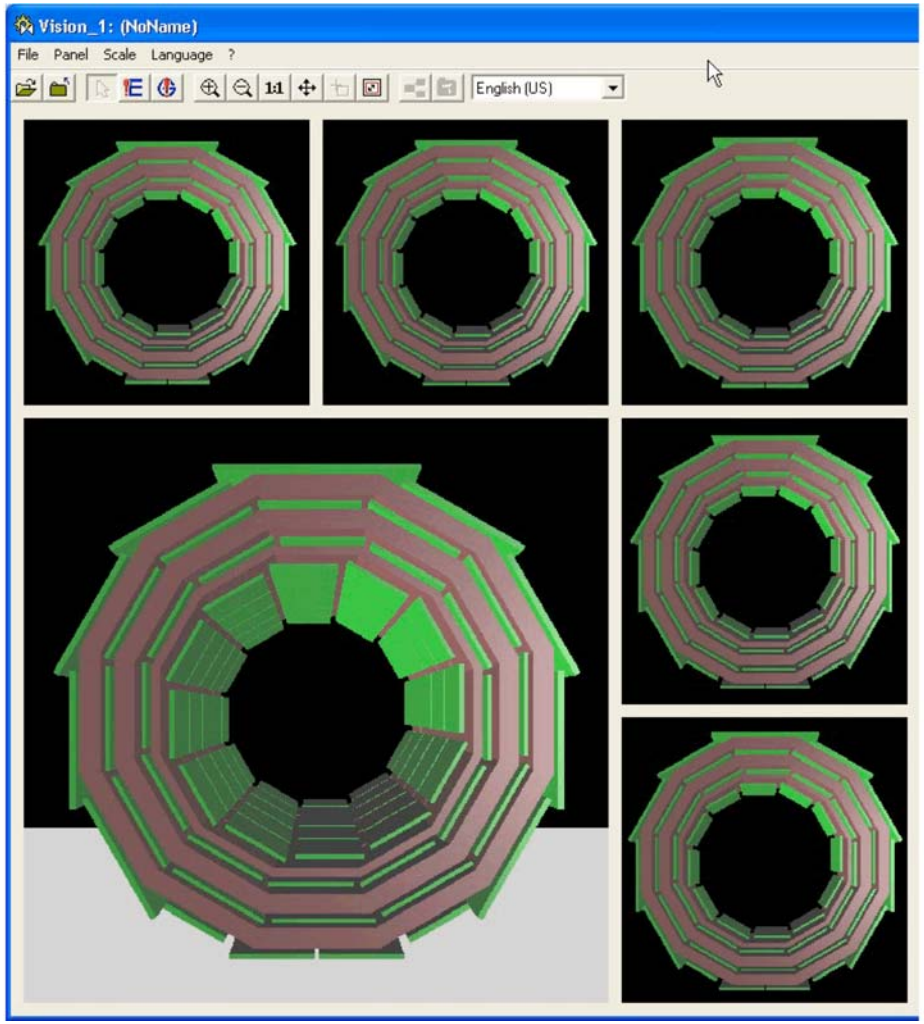
FsM Procedures Implemented

- Ramp up (single layer) in 4 steps:
  - 3(1) intermediate state for Wires(Strips and Cathodes)
- Ramp down in 2 steps
  - 1 intermediate state for Wires
- Recover from Trip:
  - Switch off the whole layer; after a delay switch on the layer using the ramp up procedure (check trip frequency, currents,…)
- OvC handling:
  - If OvC on Strips or Cathodes lower Wires voltage of 200 V
- Voltage difference check:
  - check of voltage difference btw Strips and Wires; if bigger than 1850 V (i.e. discharge regime), Wires voltage lowered of 200 V (also implemented in hardware)
- Check communication with power supplies

Ex. Cathodes Channel States & Actions



DT Interactive UI



FEATURES:

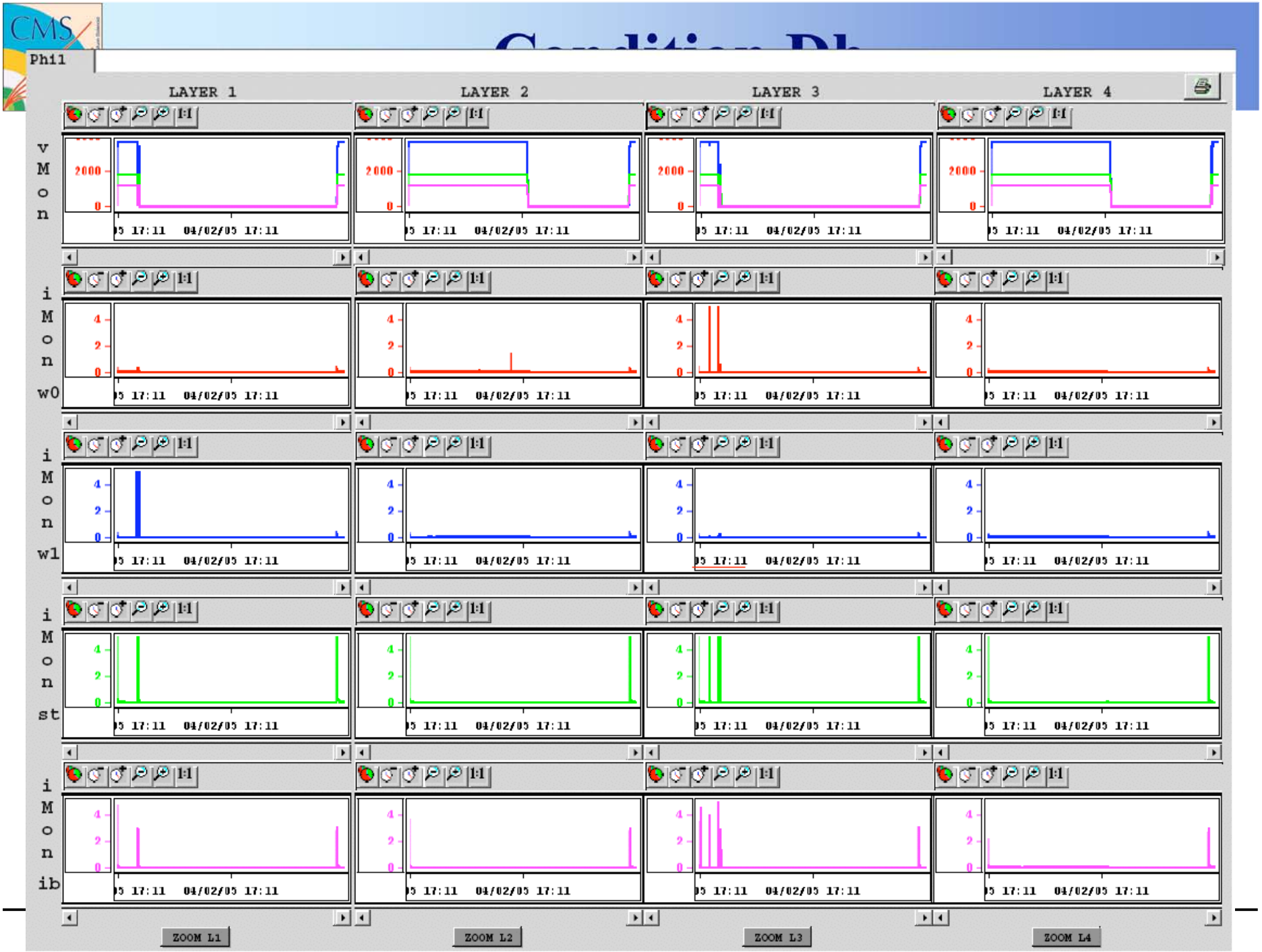
- Java ActiveX based User Interface
- Completely interactive
- Good for error tracking and correlation
- Functions providing full control of the detector 3D panels.
- Automatically move the view and rotation points.

Work in progress……

(by R. Gomez-Reino Garrido)

Configuration Db

- Connection to the Oracle Configuration Db done automatically when program starts
- Possibility of storing different configurations for the same hardware (tags & versions)
- Storing of logical/hardware unit links
  - Ex. ChamberX_SLY_LZ_Cathodes↔PSX_boardY_MCZ_ChK
- Use of common variables to reduce access to the db
  - Configuration parameters for HV Channels stored in “cache” variables
  - During operation values taken from the cache variables instead of connecting to the db

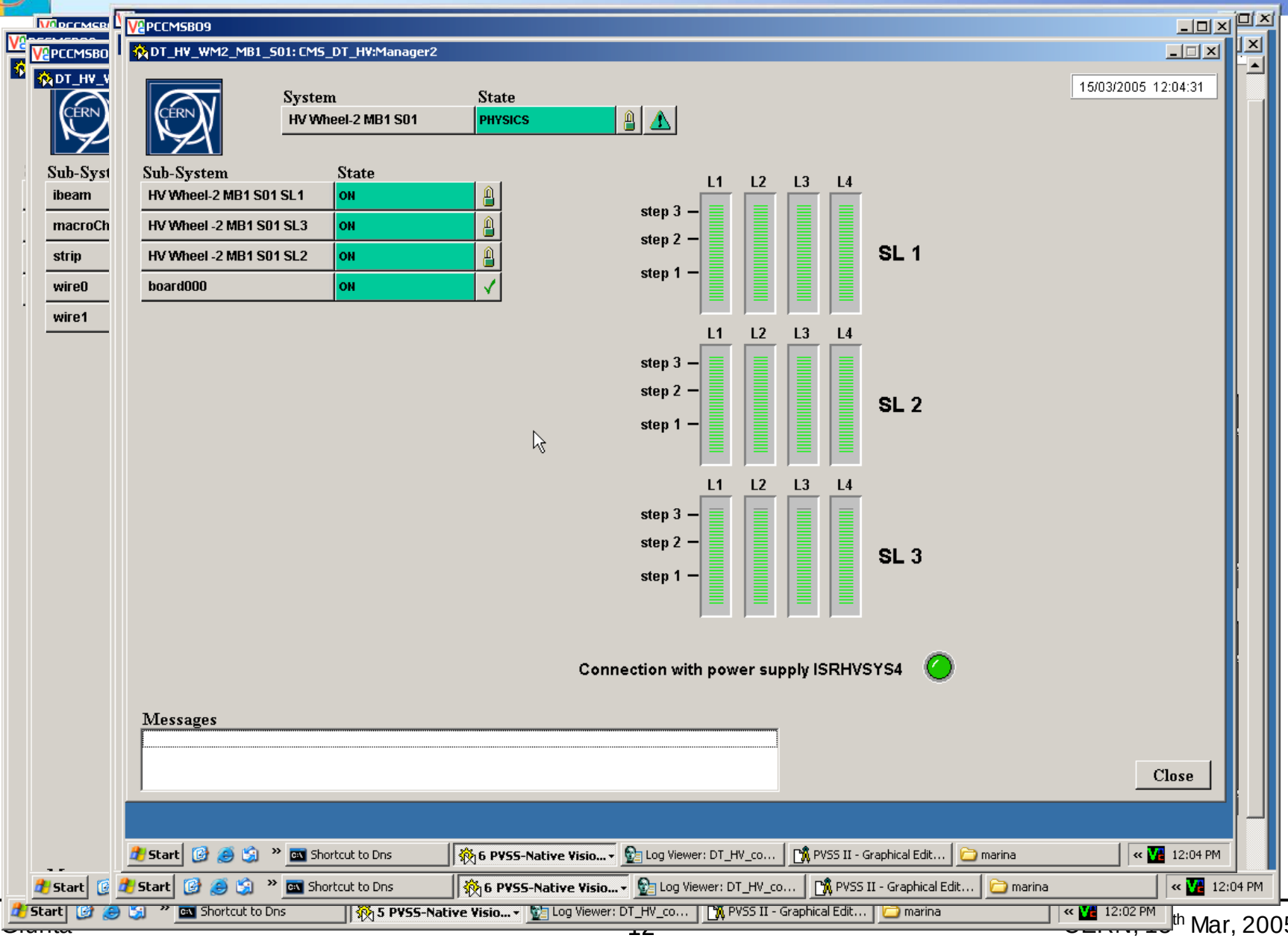

Phi1
LAYER 1
LAYER 2
LAYER 3
LAYER 4
vMon
iMon w0
iMon w1
iMon st
iMon ib
2000
0
4
2
0
04/02/05 17:11
ZOOM L1
ZOOM L2
ZOOM L3
ZOOM L4

Conclusions

DT HV Slow Control System integrated in CMS DCS and ready for Magnet Test

PVSS-Oracle communication tested and working

Example


PCCMSB09
DT_HV_WM2_MB1_S01: CMS_DT_HV:Manager2
15/03/2005 12:04:31
System
State
HV Wheel-2 MB1 S01
PHYSICS
Sub-System
State
HV Wheel-2 MB1 S01 SL1
ON
HV Wheel -2 MB1 S01 SL3
ON
HV Wheel -2 MB1 S01 SL2
ON
board000
ON
L1
L2
L3
L4
step 3
step 2
step 1
SL 1
SL 2
SL 3
Connection with power supply ISRHVSYS4
Messages
Close
Start
Shortcut to Dns
6 PVSS-Native Visio...
Log Viewer: DT_HV_co...
PVSS II - Graphical Edit...
marina
12:04 PM
5 PVSS-Native Visio...
12:02 PM