# Guidelines for the PVSS II v3.0 new project

C.Q., 18/02/2005

## 1 Introduction

The need to build a new DCS project, to be used in the COMPASS 2nd phase, comes from the fact that the new versions of PVSS (PVSS II v.3.0) and JCOP Framework are not compatible with the old project. This is also an opportunity to improve the architecture of the project, trying to standartise solutions, and make the project more uniform. In this sense, and since there will be several members of the DCS team responsible for the building of the new project, a few guidelines have to be agreed upon. This document is meant to provide these common choices, to be used in the datapoints trees, design of panels, propagation and severity of alarms, etc. It is based in the JCOP Framework guidelines document (CERN-JCOP-2000-008, at http://itcobe.web.cern.ch/itcobe/Projects/Framework/Documentation/guidelinesDocument.pdf), but diverges from it in several aspects that will be mentioned here.

When defining the new project, the language should be US English (en_US.iso88591). The last version of Framework, together with the most updated cumulative patches, should be installed, with all the fw components proposed. Development can be done either in Windows or Linux based PVSS, but having in mind that later on the main project will be running in a Linux mahine (RedHat SLC3).

Whenever possible (i.e. CAEN devices, Wiener devices, Analog I/O) the integrations should be done from the JCOP Framework Device Editor and Navigator panels. Only non-standard integrations (like ISEG devices) are to be done from the Para module directly. When creating the datapoints, their datapoint types should be chosen from the list of Framework datapoint types proposed, whenever adequate ones exist. New datapoint types should only be created in exceptional cases, their structure and name must be discussed within the group prior to the implementation, and a short description of it must be put in a file /dcs/home/log/newDpTypes.txt (including date of creation, author, purpose and structure of elements) in the pccompass07 Linux PC.

For each detector, hardware view and logical view are to be created. FSM view will be created only at a later stage. In the hardware view, the default

names for each device type should be accepted (dpName). Customizing of names is to be done only in the logical view (dpAlias). The naming scheme convention given in this document should be followed.

Whenever relevant, alarms should be implemented, following the color and severity rules given in this document. Archiving of datapoint elements will only be done at a later stage.

Hardware addresses are to be defined for each device implemented, at the moment of merging the detector into the main project, which should be located in pccompass07, the new Linux main computer.

Associated with the logical view, panels for operation and for configuration should be defined. The entrance panel of the project will include one button per detector, changing color depending on its state, and clickable, to open a new window with a more detailed view. It will also include an alarms table, some information about the PVSS user authorization (observer, operator, [some] expert, root), the actual run status (Muon Run, Hadron Run, Shutdown) and sub-status when applicable (physics, access, alignment, field rotation). The entrance panel can be minimized, but closing it (from a proper "exit" button) will cause the killing of the User Interface. It should not be possible to close any panel using the cross in the up-right corner. Instead, all panels should have a close button in the bottom-right of the panel (except for the entrance panel, that will have a "exit" button).

Clicking an active button should always cause the opening of a new panel in a different window. All the panels to use in the logical navigation view (the ones accessible to users) must be COMPASS specific, and kept in the /dcs/home/panels directory (or sub-directories of this one). Even when reusing one of the Framework panels as starting point to develop one navigation COMPASS panel, its name should be modified to indicate that it is COMPASS specific. Any panels resulting from tests, but finally not used in the project should be moved into a /dcs/home/panels/0ld directory, as well as old versions of panels we decide to improve. In what concerns location of the panels, the JCOP Framework rule is not followed here, since we don't propose the splitting in so many sub-directories of /panels, but only to create eventually, if considered necessary, the /0ld (for old panels not used anymore, or those just used for tests), /references (panels of reference like "Caen_Group.pnl", "Iseg_Group.pnl", "Caen_Channel.pnl" and "Iseg_Channel.pnl") and /objects (common buttons, like "Detector_Button.pnl", "Trend_Button.pnl", "Close_Button.pnl" and "Print_Button.pnl") sub-directories.

The naming of the panels files should be uniform: all names starting with

a capital letter, followed by small letters or numbers. Underscore (_) symbol should be used to separate important parts of the naming, followed by a capital letter. All the panel files must have the extension ".pnl". As examples: "Caen_Channel.pnl", "Iseg_Channel.pnl", "Iseg_DoubleLayer.pnl", "Caen_Group.pnl", "Bms_Entrance.pnl", "Bms_Hv.pnl", "Gem_Gas.pnl", "Rich_Temperatures.pnl", "Env_Entrance.pnl", "Daq_Vmecrates.pnl", ...

When creating COMPASS specific panels, the author should include a comment in /dcs/home/log/Compass_Panels.txt, including name of the author, date, name of the panel, and short description of the panel purpose. The description of panels used as reference should go into the file /dcs/home/log/Reference_Panels.txt, and the panels used as buttons or symbols of generic use in /dcs/home/log/Object_Panels.txt.

# 2 Hardware View

The first step of each detector integration should be to create its hardware view, from the JCOP Framework Device Editor and Navigator panel, in editor mode. On the tree, add the necessary devices under the corresponding folder (for example, create the 3 Hodoscope crates of type CAEN SY527 under the folder CAEN). Accept the default names - for CAEN, this would be [customized name] for crate, Board## for the board, Channel## for the channel. Do the creation with alerts, without archiving, and without addresses at that moment. Add the addresses at the point when you move into the main merged project and have already available the corresponding hardware.

# 3 Logical View

The logical view will in principle be the structure accessible to the users (in case the FSM layer will be added at later stage, the FSM will be the structure for users). Panels for operation and configuration are to be defined. The logical view is to present the experiment devices from the point of view of the detectors (i.e. from the point of view of physics data taking). The tree should expand into branches, sub-branches and leafs, following the rule that "it is better to grow higher than larger". When adding devices to the logical view, choose "Add from hardware", establish the correspondence with

an already integrated hardware device, and give it a logical name (i.e. the dpAlias) according to the rules given in this document. The spare channels for HV or LV should not appear in the logical view (since these are only hardware).

# 4 Hardware Addresses

The hardware addresses should also be defined at some point of the integration. Confirm with the DCS group colleagues which server is to be used for each device. When adding the hardware addresses, do not forget to add to the project the corresponding PVSS manager, paying attention to the number to associate with the manager. These numbers should be agreed upon among the DCS team.

# 5 Alarms Conventions

Alarm colors to be used are the ones from the dpType _fwAlarms.

Only severe alarms should propagate downwards in the tree, from the children to parent, in order to be displayed in the entrance panel identifying the detector with some child in severe alert state. Severe alert state of a device unit should be marked with the color "Red", and is defined as an alert that requires human intervention (either via PVSS, or by some action in the detector itself) – this is the case for HV channels trips, ELMBs analogue values out of the tolerance limits, PLC flows or % mixtures out of the tolerance limits and magnetic fields out of the tolerance limits. In addition, those severe alerts that require human intervention not at the level of PVSS, but at the level of the hardware itself, should require acknowledgment in PVSS. State text associated with the color "Red" can be "TRIP", "ALARM", "DISCONNECTED", "UNDER-I", "OFF" (if it should be always "ON") and "ON" (if it should be always "OFF").

Non-severe alerts (i.e. warnings) should be marked with the color "Orange". These are defined as alerts that do not require human intervention (like HV channels under-current, under-voltage and over-voltage). These should not be propagated from child to parent, but only be displayed in the alerts panels. State text associated with the "Orange" color can be "OVER-V", "UNDER-V", "OVER-I" and "ALARM".

Informations are marked with the color "Yellow". These are not alerts, do not require human intervention, and thus should not be propagated from child to parent, but only be displayed in the alerts panel. Informations examples are HV channels ramp-up and ramp-down. The Associated text states should be "RAMP-UP", "RAMP-DOWN",...

The OK state will be marked with the color "Green". Text state associated with it can be "OK", "ON" (if it should be always "ON") and "OFF" (if it should be always "OFF").

The colors "Blue" and "Black", defined in the JCOP Framework, will not be used in COMPASS at this stage.

Transparency (i.e. changed to color of the background) should be used to indicate "disabled" and "masked".

# 6 Fonts, sizes and backgrounds

All text should use the font helvetica-adobe, in size 12. Titles should use size 20, and be bold. Italics should not be used. Background color for all panels should be the default grey. Panels should have a descriptive title, identifying namely the detector, the sub-system (if applicable), and any other necessary information, like "BMS Entrance", "BMS HV System", "BMS HV System: Station 1", etc.

# 7 Logical Naming Scheme

- For the detectors designation, the following names will be adopted:

  Beam Magnets: Mag
  BMS: Bms
  DAQ:Daq
  Drift Chambers: Drift
  ECal2: Ecal2
  Environment: Env
  GEMs: Gem
  Hadron Trigger: Hadt
  Hodoscopes: Hodo
  Micromegas: Mm

Muon Wall 1: Mw1
Muon Wall 2: Mw2
MWPCs: Mwpc
Polarized Target: Ptgt
RICH: Rich
RICH Wall: Rwall
Sci Fi G: Scifg
Sci Fi J: Scifj
Silicons: Sil
Straws: Straw
Target: Tgt
Veto Box: Vbox
W45: W45

- For the detector sub-system designation, the following names will be adopted:

  BMS: Bms_Hv
  DAQ: Daq_Vme, Daq_Temp
  Drift Chambers: Drift_Hv, Drift_Gas, Drift_Temp
  Ecal2: Ecal2_Hv
  Environment: Env_Temp, Env_Hum, Env_Press, Env_Gas
  GEMs: Gem_Hv, Gem_Lv, Gem_Ctr, Gem_Gas
  Hadron Trigger: Hadt_Hv
  Hodoscopes: Hodo_Hv
  Micromegas: Mm_Hv, Mm_Gas, Mm_Temp
  Muon Wall 1: Mw1_Hv, Mw1_Lv, Mw1_Gas
  Muon Wall 2: Mw2_Hv, Mw2_Lv, Mw2_Gas
  MWPCs: Mwpc_Hv, Mwpc_Lv, Mwpc_Gas
  Polarized Target: Ptgt_Mag, Ptgt_Temp
  RICH: Rich_Mapmt, Rich_Apv, Rich_Lv, Rich_Gas, Rich_Temp
  RICH Wall: Rwall_Hv, Rwall_Gas
  Sci Fi G: Scifg_Hv
  Sci Fi J: Scifj_Hv
  Silicons: Sil_Hv, Sil_Lv, Sil_Cryo
  Straws: Straw_Hv, Straw_Lv, Straw_Gas, Straw_Hum, Straw_Temp
  Veto Box: Vbox_Hv
  W45: W45_Hv, W45_Lv, W45_Gas, W45_Temp

- For the sub-detector designation per subsystem, the following names will be adopted:

  Beam Magnets: Mag_B6, Mag_Sm1, Mag_Sm2
  Bms_Hv: Bms_Hv_1, ..., Bms_Hv_6
  Daq: Daq_Vme, Daq_Rtemp
  Drift_Hv: Drift_Hv_1, ..., Drift_Hv_3
  Drift_Gas: Drift_Gas_Flow
  Drift_Temp: Drift_Temp_1, ..., Drift_Temp_3
  Env_Temp: Env_Temp_Hall
  Gem_Hv: Gem_Hv_1, ..., Gem_Hv_11
  Gem_Lv: Gem_Lv_1, ..., Gem_Lv_11
  Gem_Ctr: Gem_Ctr_1, ..., Gem_Ctr_11
  Hadt_Hv: Hadt_Hv_Prim, Hadt_Hv_Bkil, Hadt_Hv_Msci
  Hodoscopes: Hodo_Hv_V, Hodo_Hv_Vi, Hodo_Hv_Vo1, Hodo_Hv_H3, Hodo_Hv_H4, Hodo_Hv_Hi4, Hodo_Hv_Hi5, Hodo_Hv_Hm4, Hodo_Hv_Hm5
  Mm_Hv: Mm_Hv_1, ..., Mm_Hv_3
  Mm_Gas: Mm_Gas_Flow
  Mm_Temp: Mm_Temp_1, ..., Mm_Temp_3
  Mw1_Hv: Mw1_Hv_1, Mw1_Hv_2
  Mw1_Lv: Mw1_Lv_Jura, Mw1_Lv_Saleve
  Mw1_Gas: Mw1_Gas_Flow
  Mw2_Hv: Mw2_Hv_1, Mw2_Hv_2
  Mw2_Lv: Mw2_Lv_1, Mw2_Lv_2
  Mw2_Gas: Mw2_Gas_Flow
  Mwpc_Hv: Mwpc_Hv_1, ..., Mwpc_Hv_11
  Mwpc_Lv: Mwpc_Lv_1, ..., Mwpc_Lv_11
  Mwpc_Gas: Mwpc_Gas_Flow, Mwpc_Gas_Compressors
  Ptgt_Mag: Ptgt_Mag_Solenoid, Ptgt_Mag_Dipole
  Rich_Mapmt: Rich_Mapmt_0, ...
  Rich_Gas: Rich_Gas_Vessel, Rich_Gas_Pdet
  Rich_Temp: Rich_Temp_Water, Rich_Temp_Vup, Rich_Temp_Vmiddle, Rich_Temp_Vdown
  Rwall_Gas: Rwall_Gas_Flow
  Scifg_Hv: Scifg_Hv_5, ..., Scifg_Hv_8
  Scifj_Hv: Scifj_Hv_1, ..., Scifj_Hv_4
  Sil_Hv: Sil_Hv_1, ..., Sil_Hv_5

Sil_Lv: Sil_Lv_1,..., Sil_Lv_5
Sil_Cryo: Sil_Cryo_Temp, Sil_Cryo_Valves
Straw_Hv: Straw_Hv_Dl1, ..., Straw_Hv_Dl15
Straw_Gas: Straw_Gas_Flow, Straw_Gas_Compressors
Straw_Hum: Straw_Hum_3, ..., Straw_Hum_6
Straw_Temp: Straw_Temp_3, ..., Straw_Temp_6
Vbox_Hv: Vbox_Hv_Vb, Vbox_Hv_Sandwich
W45_Hv: W45_Hv_1, ..., W45_Hv_6
W45_Lv: W45_Lv_1, ..., W45_Lv_6
W45_Gas: W45_Gas_Flow, W45_Gas_Compressors
W45_Temp: W45_Temp_1, ..., W45_Temp_6

- For the device units (hardware) designation, the following names will be adopted:

  Beam Magnets:
  Mag_B6_I, Mag_B6_V, Mag_Sm1_I, Mag_Sm1_V, Mag_Sm2_I, Mag_Sm2_V

  BMS:
  Bms_Hv_1_Ch1, ..., Bms_Hv_1_Ch64, ..., Bms_Hv_6_Hvchan_1, ...,
  Bms_Hv_6_Hvchan_8, Bms_Hv_6_Booster_1, ..., Bms_Hv_6_Booster_8

  DAQ:
  Daq_Vme_Straw_State, Daq_Vme_Straw_Temp, Daq_Vme_Straw_Status,
  ..., Daq_Vme_Bms_State, Daq_Vme_Bms_Temp, Daq_Vme_Bms_Status
  Daq_Rtemp_S1, ..., Daq_Rtemp_S4

  Drift Chambers:
  Drift_Hv_1_Beam_Ch1, ..., Drift_Hv_1_Beam_Ch#, Drift_Hv_1_Plan_Ch1,
  ..., Drift_Hv_1_Plan_Ch#, Drift_Hv_1_Wire_Ch1, ..., Drift_Hv_1_Wire_Ch#...
  Drift_Gas_Flow_Cf4_Val, Drift_Gas_Flow_Cf4_Mix, ...
  Drift_Temp_1_S1, ..., Drift_Temp_3_S4

  ECal2:
  Ecal2_Hv_Alarm

  Environment:
  Env_Temp_Outside, Env_Temp_Hall_S1, ..., Env_Temp_Hall_S#
  Env_Hum_Hall
  Env_Press_Hall
  Env_Gas_Alarm1, ..., Env_Gas_Alarm3

GEMs:
Gem_Hv_1_Ch1, Gem_Hv_1_Ch2, ..., Gem_Hv_11_Ch1, Gem_Hv_11_Ch2
Gem_Lv_1_Ch1p, Gem_Lv_1_Ch1n, ..., Gem_Lv_11_Ch4p, Gem_Lv_11_Ch4n
Gem_Ctr_1_Ch1, Gem_Ctr_1_Ch2, ..., Gem_Ctr_11_Ch1, Gem_Ctr_11_Ch2
Gem_Gas_Flow_Cf4_Val, Gem_Gas_Flow_Cf4_Mix, ...

Hadron Trigger:
Hadt_Hv_Prim_Ch1, ..., Hadt_Hv_Prim_Ch3, Hadt_Hv_Bkil_Hvchan_1,
..., Hadt_Hv_Bkil_Hvchan_3, Hadt_Hv_Bkil_Booster_1, ...,
Hadt_Hv_Bkil_Booster_3, Hadt_Hv_Msci_Hvchan, Hadt_Hv_Msci_Booster

Hodoscopes:
Hodo_Hv_V_Up_Ch1, ..., Hodo_Hv_V_Up_Ch5, Hodo_Hv_V_Down_Ch1,
..., Hodo_Hv_V_Down_Ch5, Hodo_Hv_H4_Saleve_Ch1, ...,
Hodo_Hv_H4_Saleve_Ch32, Hodo_Hv_H4_Jura_Ch1, ..., Hodo_Hv_H4_Jura_Ch32,
Hodo_Hv_Vi_1_Ch1, ..., Hodo_Hv_Vi_1_Ch4, Hodo_Hv_Vi_2_Ch1, ...,
Hodo_Hv_Vi_2_Ch4, Hodo_Hv_Hi4_Ch1, ..., Hodo_Hv_Hi4_Ch64, ...

Micromegas:
Mm_Hv_1_Drift_Ch1, ..., Mm_Hv_1_Drift_Ch#, Mm_Hv_1_Mesh_Ch1,
..., Mm_Hv_1_Mesh_Ch#, ... Mm_Gas_Flow_Ar_Val, ...
Mm_Temp_1_S1, ..., Mm_Temp_1_S8, ..., Mm_Temp_3_S8

Muon Wall 1:
Mw1_Hv_1_Ch1, ..., Mw1_Hv_1_Ch8, ..., Mw1_Hv_2_Ch8
Mw1_Lv_Saleve_Lv1_I, Mw1_Lv_Saleve_Lv1_V, Mw1_Lv_Saleve_Lv2_I,
Mw1_Lv_Saleve_Lv2_V, Mw1_Lv_Saleve_Vme4_I, Mw1_Lv_Saleve_Vme4_V,
Mw1_Lv_Saleve_Vme4_I, Mw1_Lv_Saleve_Vme5_I, Mw1_Lv_Saleve_Vme5_V,
Mw1_Lv_Jura_Lv3_V, Mw1_Lv_Jura_Lv4_V, Mw1_Lv_Jura_Lv5_V,
Mw1_Lv_Jura_Vme1_V, Mw1_Lv_Jura_Vme2_V, ...
Mw1_Gas_Flow_Cf4_Val, Mw1_Gas_Flow_Cf4_Mix, ...

Muon Wall 2:
Mw2_Hv_1_X_Ch1, ..., Mw2_Hv_1_X_Ch3, Mw2_Hv_1_Y_Ch1, ...,
Mw2_Hv_1_Y_Ch3, Mw2_Hv_1_U_Ch1, ..., Mw2_Hv_1_U_Ch3,
Mw2_Hv_2_X_Ch1, ...
Mw2_Lv_1_Ampl_Ch1, ..., Mw2_Lv_1_Ampl_Ch#, Mw2_Lv_1_Tdc_Xy,
Mw2_Lv_1_Tdc_Y, Mw2_Lv_1_Thresh_X1v1, Mw2_Lv_1_Thresh_X2v2
Mw2_Gas_Alarm

MWPCs:
Mwpc_Hv_1_Ch1, Mwpc_Hv_1_Ch2, ..., Mwpc_Hv_11_Ch1, Mwpc_Hv_11_Ch2

Mwpc_Lv_1_X_Ch1, Mwpc_Lv_1_X_Ch2, Mwpc_Lv_1_Y_Ch1, Mwpc_Lv_1_Y_Ch2,
Mwpc_Lv_1_U_Ch1, Mwpc_Lv_1_U_Ch2, Mwpc_Lv_1_V_Ch1, Mwpc_Lv_1_V_Ch2
Mwpc_Gas_Flow_Cf4_Val, Mwpc_Gas_Flow_Cf4_Mix, ...,
Mwpc_Gas_Compressors_Alarm

Polarized Target:
Ptgt_Mag_Solenoid_V, Ptgt_Mag_Solenoid_I, Ptgt_Mag_Dipole_V, Ptgt_Mag_Dipole_I
Ptgt_Temp_S1, ..., Ptgt_Temp_S8

RICH:
Rich_Apv_Ch1, ..., Rich_Apv_Ch24
Rich_Gas_Vessel_Pressure, Rich_Gas_Vessel_Dewpoint, ...
Rich_Gas_Pdet_Flow_C4h10_Val, Rich_Gas_Pdet_Flow_C4f10_Mix, ...,
Rich_Gas_Pdet_Compressors_Alarm, ...
Rich_Temp_Water_Depart, Rich_Temp_Water_Return, Rich_Temp_Vup_S1,
..., Rich_Temp_Vup_S#,
Rich_Temp_Vmiddle_S1, ..., Rich_Temp_Vdown_S1, ...

RICH Wall:
Rwall_Hv_Chan
Rwall_Gas_Flow_Cf4_Val, Rwall_Gas_Flow_Cf4_Mix, ...

Sci Fi G:
Scifg_Hv_5_Hvchan_X_Ch1, ..., Scifg_Hv_5_Hvchan_X_Ch10,
Scifg_Hv_5_Hvchan_Y_Ch1, ...,
Scifg_Hv_5_Booster_X_Ch1, ..., Scifg_Hv_5_Booster_Y_Ch1, ...

Sci Fi J:
Scifj_Hv_1_Hvchan_1, Scifj_Hv_1_Hvchan_2, Scifj_Hv_1_Booster_1, ...,
Scifj_Hv_1_Booster_4, ...

Silicons:
Sil_Hv_1_Ch1, Sil_Hv_1_Ch2, ..., Sil_Hv_5_Ch2
Sil_Lv_1_Ch1, ..., Sil_Lv_1_Ch8, ..., Sil_Lv_5_Ch8
Sil_Cryo_Valves_state, Sil_Cryo_Temp_1_S1, ..., Sil_Cryo_Temp_1_S8, ...,
Sil_Cryo_Temp_5_S8

Straws:
Straw_Hv_Dl1_Ch1, ..., Straw_Hv_Dl1_Ch14, Straw_Hv_Dl2_Ch1, ...
Straw_Gas_Flow_Cf4_Val, Straw_Gas_Flow_Cf4_Mix,
Straw_Gas_Compressors_Alarm
Straw_Hum_3_S1, ..., Straw_Hum_3_S6, ..., Straw_Hum_6_S3
Straw_Temp_3_S1, ..., Straw_Temp_3_S24, ..., Straw_Temp_6_S24

Veto Box:
Vbox_Hv_Vb_Ps, Vbox_Hv_Vb_Ch1, Vbox_Hv_Vb_Ch2, Vbox_Hv_Sandwich_Ch1, ..., Vbox_Hv_Sandwich_Ch4

W45:
W45_Hv_1_Ch1, ..., W45_Hv_1_Ch8, ..., W45_Hv_6_Ch8
W45_Lv_1_Ch1, ..., W45_Lv_1_Ch4, ..., W45_Lv_6_Ch4
W45_Gas_Flow_Ar_Val, W45_Gas_Flow_Ar_Mix, ..., W45_Gas_Compressors_Alarm
W45_Temp_1_S1, ..., W45_Temp_1_S4, ..., W45_Temp_6_S4