

## Introduction

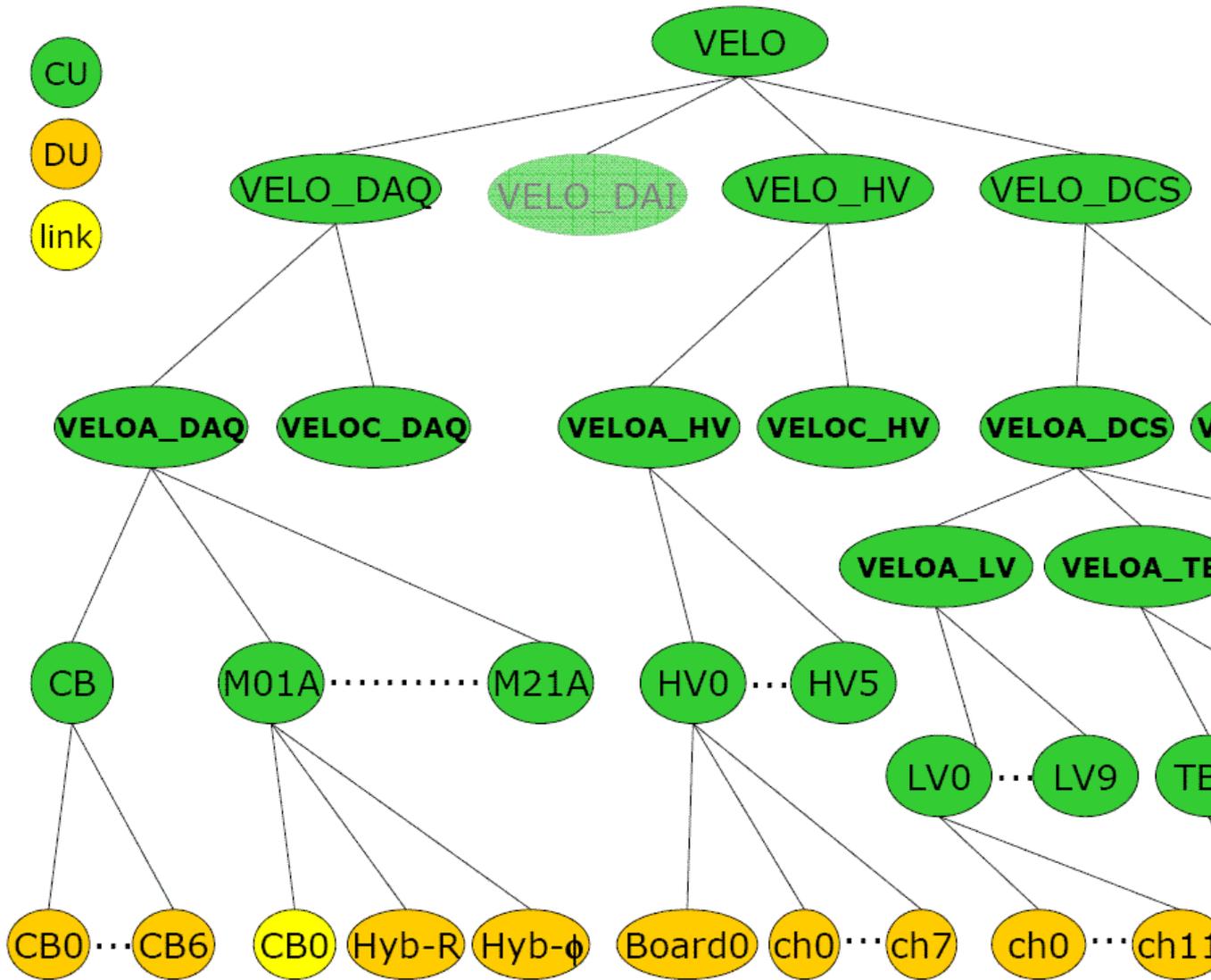
This guideline describes the VELO ECS (Experiment Control System) which is in charge of supervising and controlling all the detector's components.

*The ECS control system is a hierarchical, reactive system built as a tree of interconnected control nodes. At the higher levels we have control nodes called control units (CU), to which an operator can connect to take the control of the associated sub tree of the system, and at the very lower level we have the control nodes called devices units (DU) connected to real hardware components that they supervise. It is hierarchical because each control node has only one master node from which it receives commands to execute and a limited set of direct children to which it can send commands. A control node implements the entry point to supervise a sub-part of the detector. The root node controls the full detector. It is reactive because the control nodes behaviour is to react to events. Two types of events exist: a command reception coming from the parent node or a state change in one of the children controllers. Event occurrences trigger two types of control flows. The command flow which propagates along the tree from the operator (or control program) connected to a CU down to the lower level nodes DU acting on hardware to have some real action executed. The state change flow which propagates along the tree from the hardware component that changes its status, up to the control node CUs that can take the necessary action to cope with this state change. All control nodes publish a unique state representing the state of the sub-detector part they control. The way this state is computed is different for CU and DU. [Extract from the the LHCb ECS guideline]*

The VELO ECS is divided into 4 sub-domains:

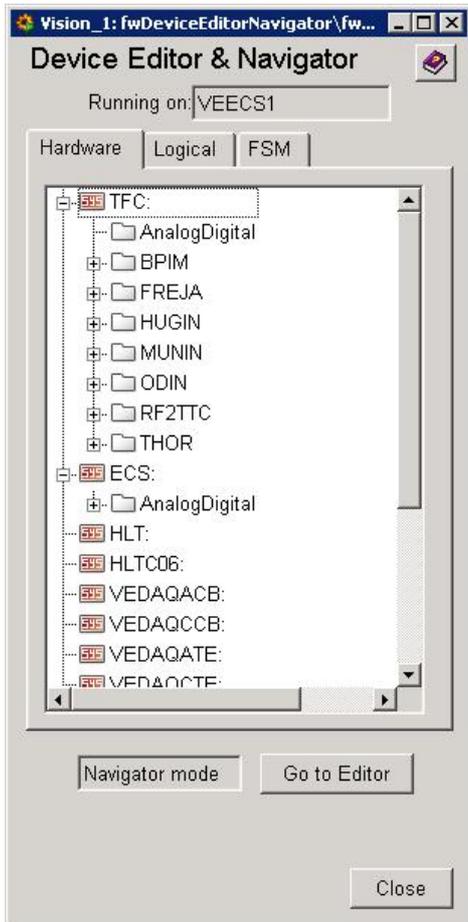
- 1) VELO\_DAQ (Data acquisition)
- 2) VELO\_DAI (DAQ Infrastructures)
- 3) VELO\_DCS (Detector Control System)
- 4) VELO\_HV (High Voltage)

You can view the general layout of the VELO ECS hierarchy here:



## How to start the Velo ECS FSM

1. Log on to a Windows console in the online network (LHCb domain).
2. Open the following directory: G:\online\ecs\Shortcuts\VELO
3. Double click on VEECS1\_UI\_DEN. The following panel will pop up:



4. Select the FSM tab.



5. Click on the STOP ALL button.
6. Click on Start/Restart ALL.

## Procedure to operate the VELO ECS

1. Operating the main VELO ECS control
2. Operating the VELO DAQ
3. Operating the VELO DCS
4. Operating the VELO HV

-- StefanoDeCapua - 06 Aug 2008

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