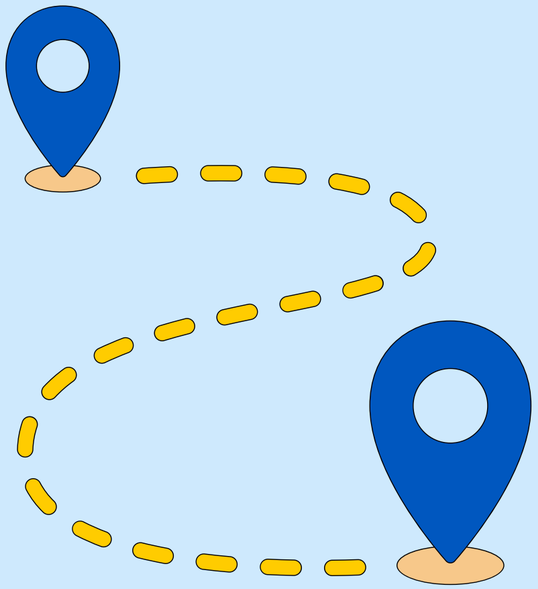
STUDENT SESSIONS 2023

VELO DCS summary panel:

THE VELO READINESS TO TAKE DATA AT A GLANCE

VICTORIA RAMOS DE OLIVEIRA
(victoria.oliveira@cern.ch)

OUTLINE



- The project
- The LHCb Experiment
- VELO
- VELO Module
- Electronics and readout chain
- The VELO Dashboard

SUMMER PROJECT

the VELO readiness to take data at a glance

What?

Create a summary panel for the electronics of the VELO detector.

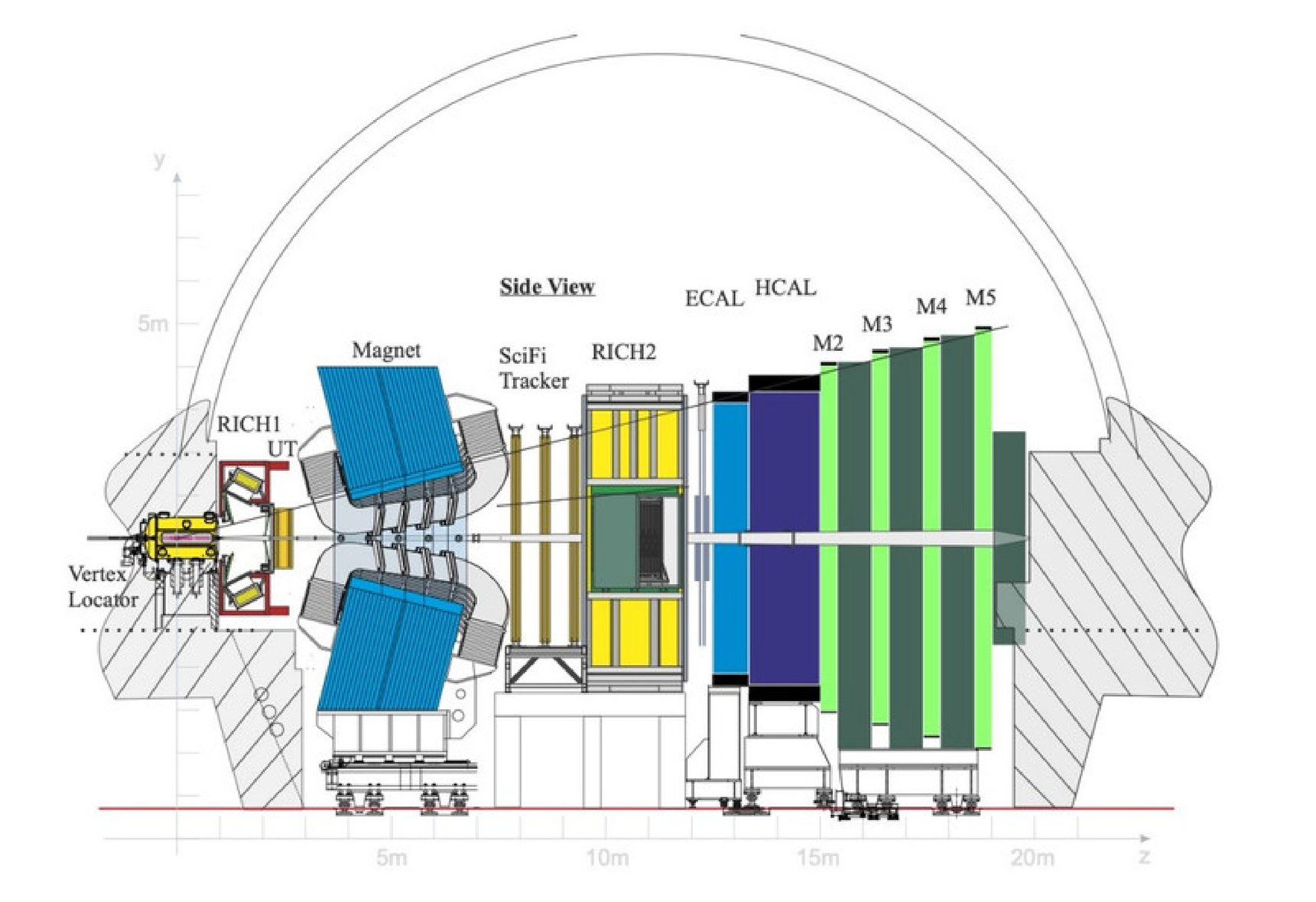
Why?

To be able to know the status of the electronics with just one look, from the low voltage to the data acquisition board.

How?

Using SIMATIC WinCC Open Architecture.

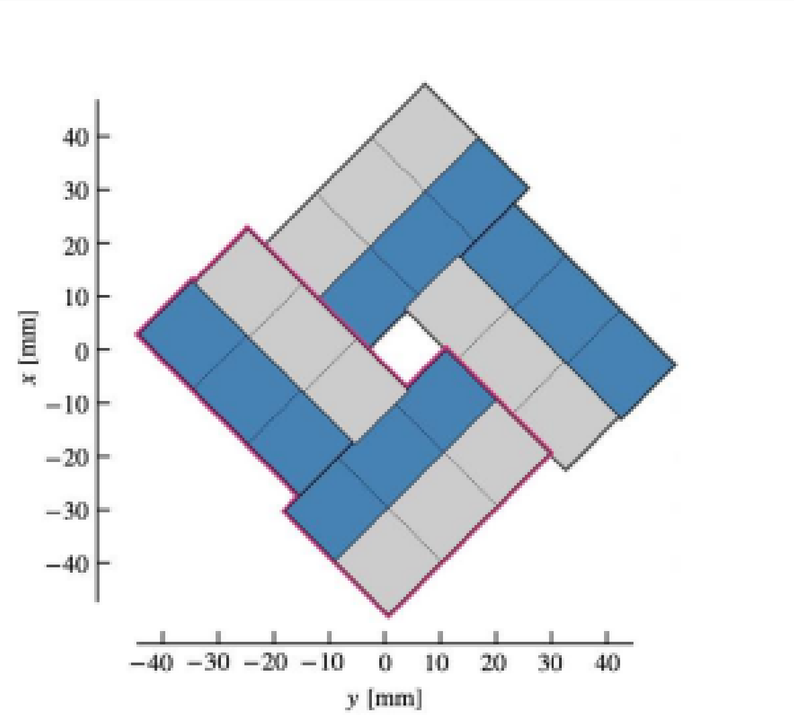
The LHCb Experiment

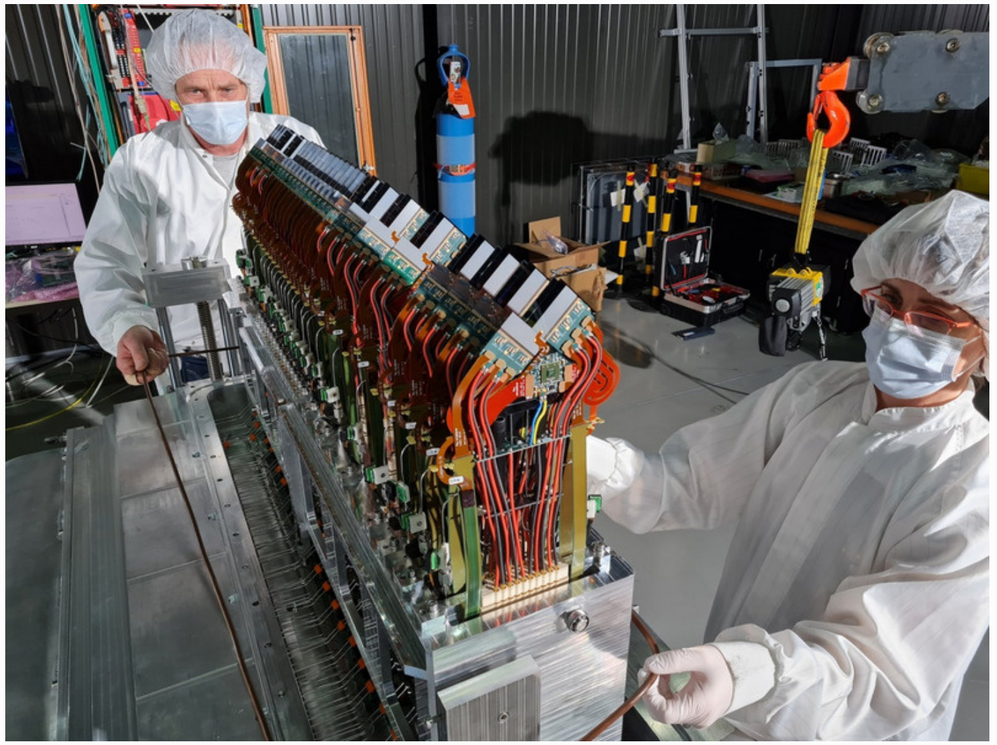


VELO

- consists of 26 tracking layers made from 55 X 55 μm² pixel technology

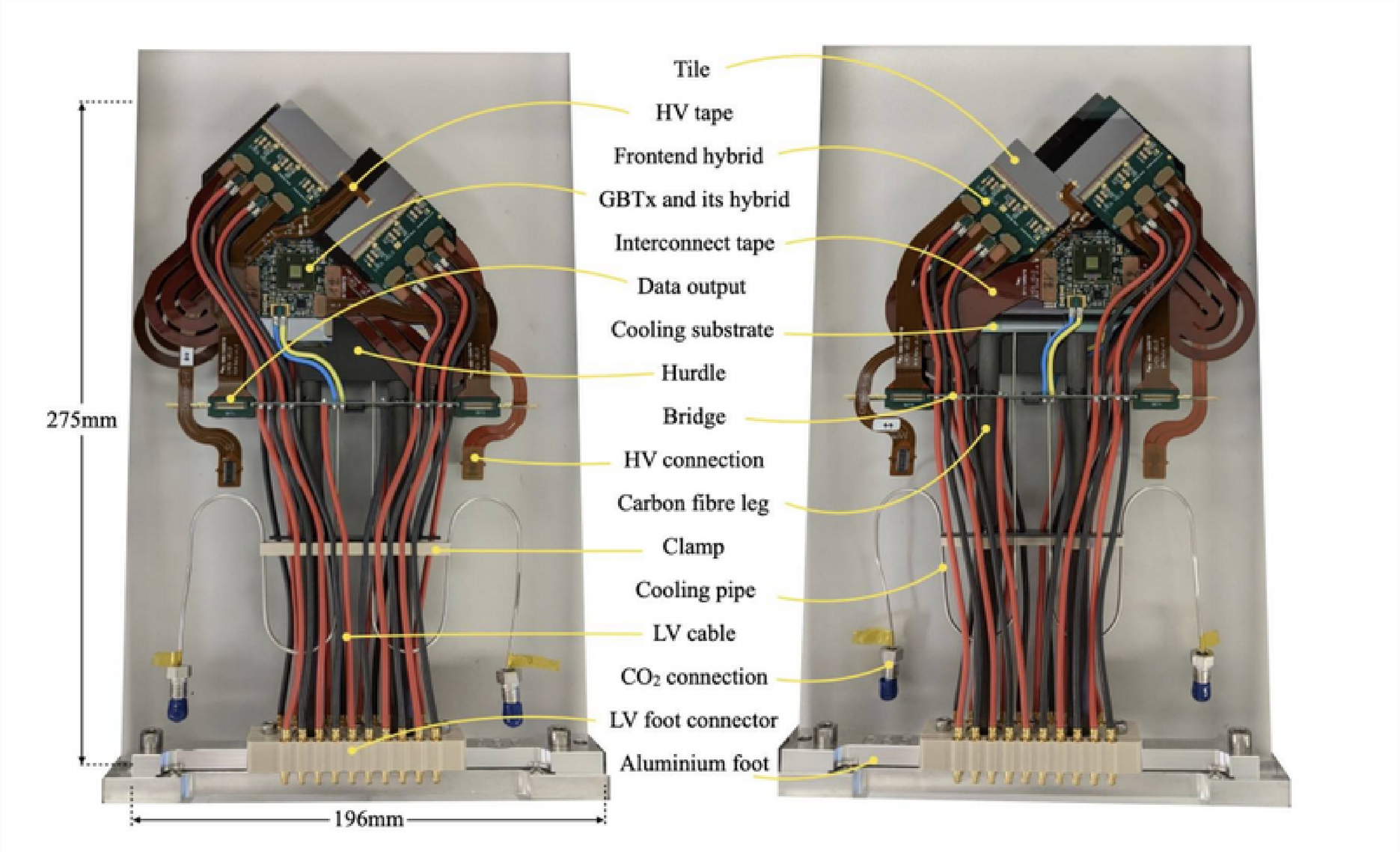
- closer to the beam axis: 5.1 mm





- the VELOPIX chip is capable of collecting signal hits from 256 × 256 pixels and sending data at a rate of up to 15 Gb/s

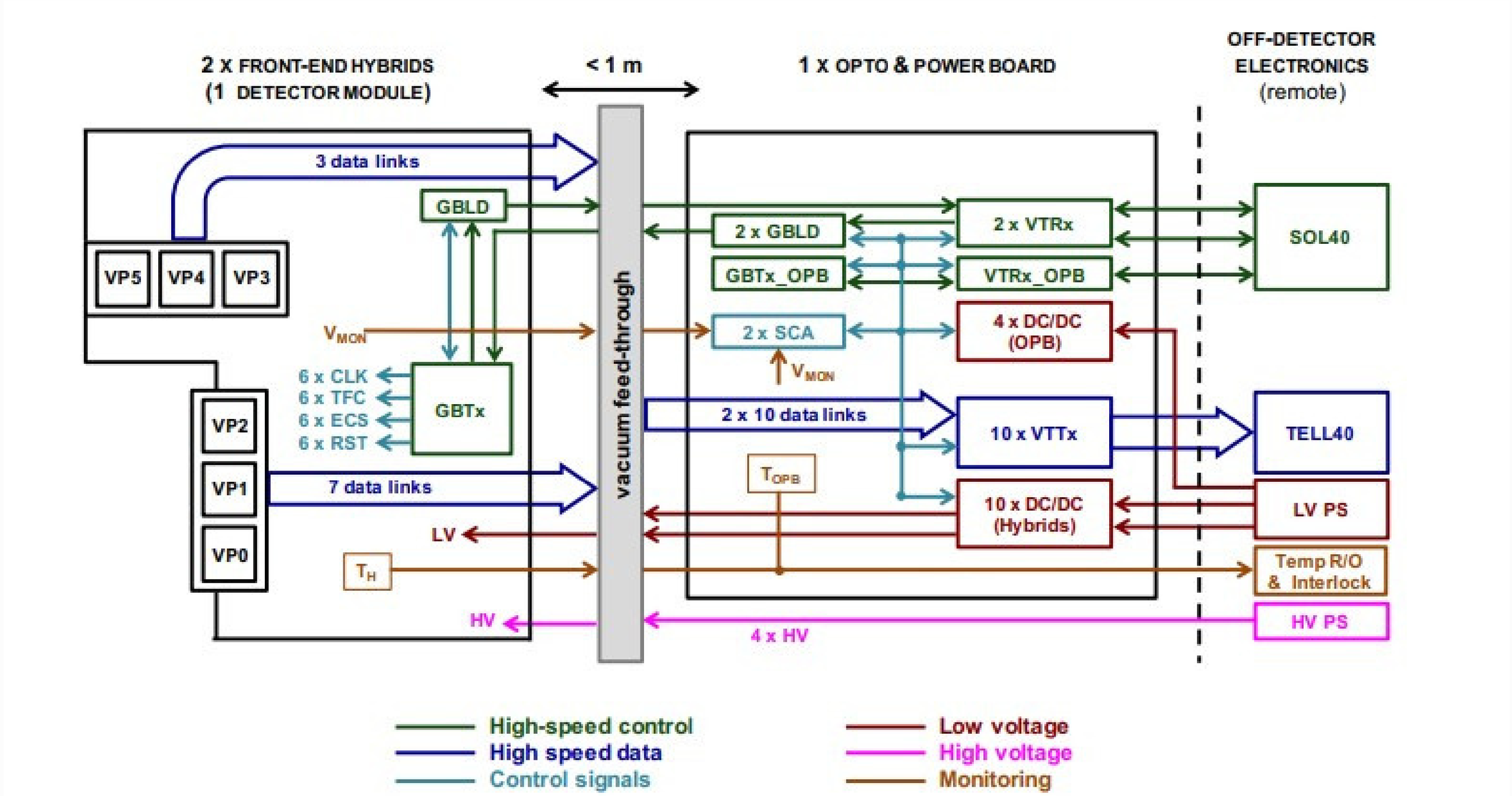
VELO MODULE



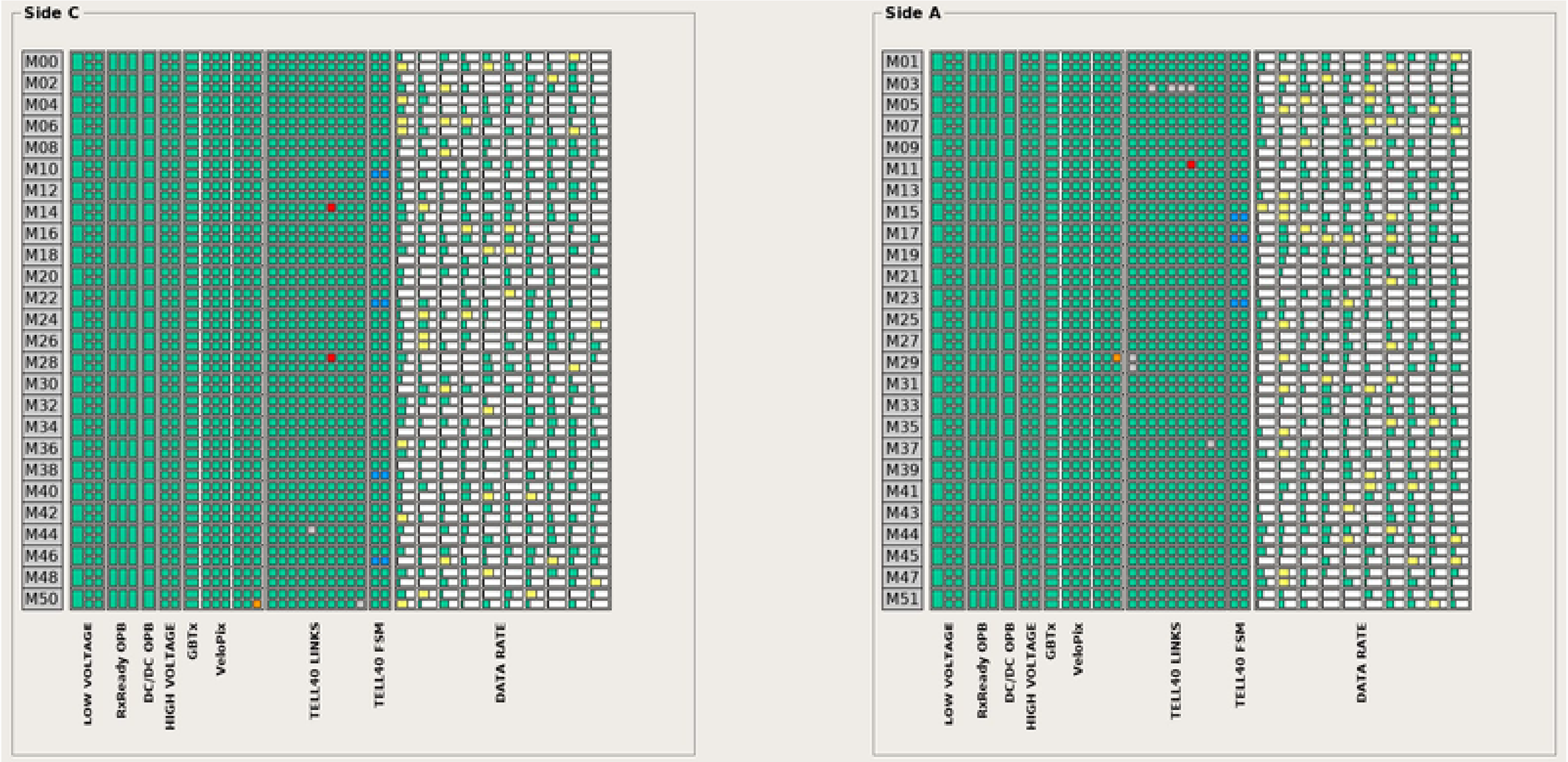
Upstream

Downstream

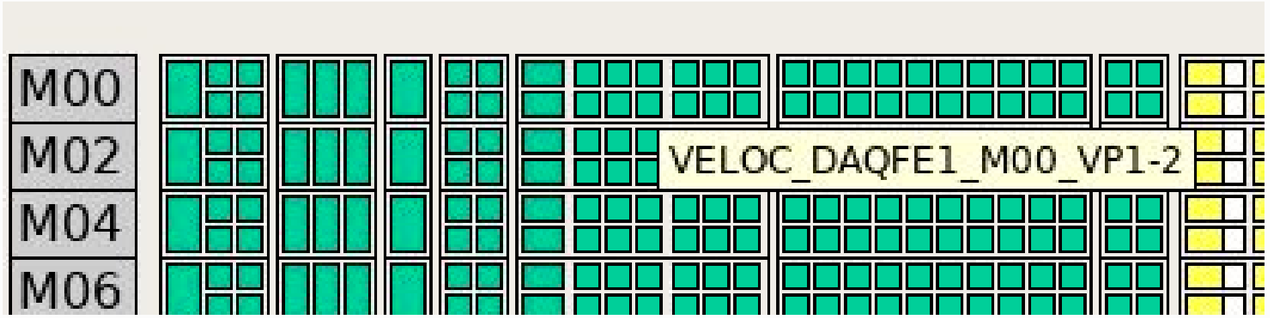
ELECTRONICS AND READOUT CHAIN

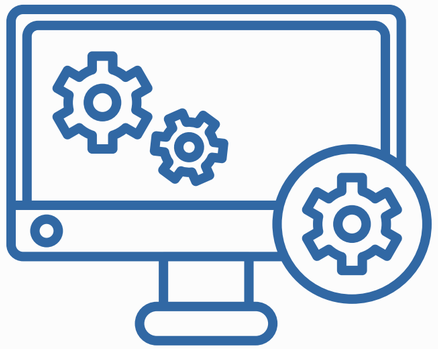


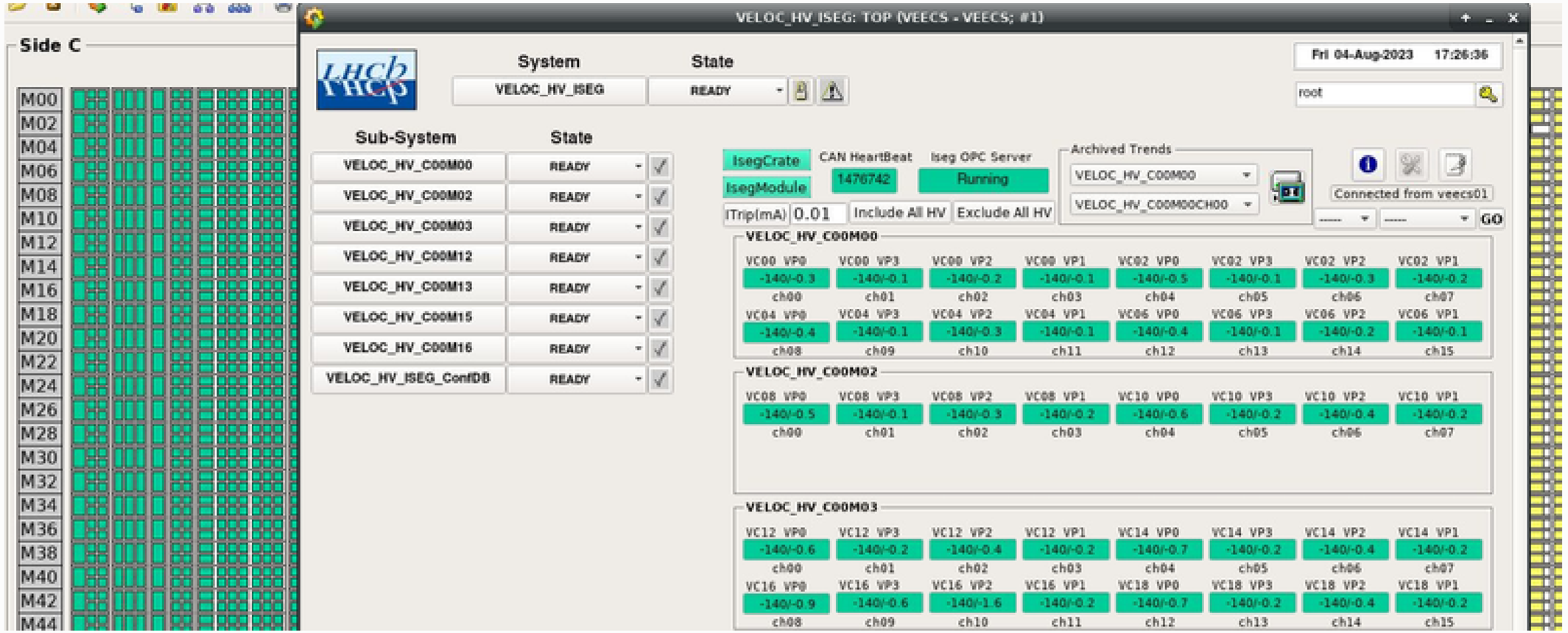
THE VELO DASHBOARD



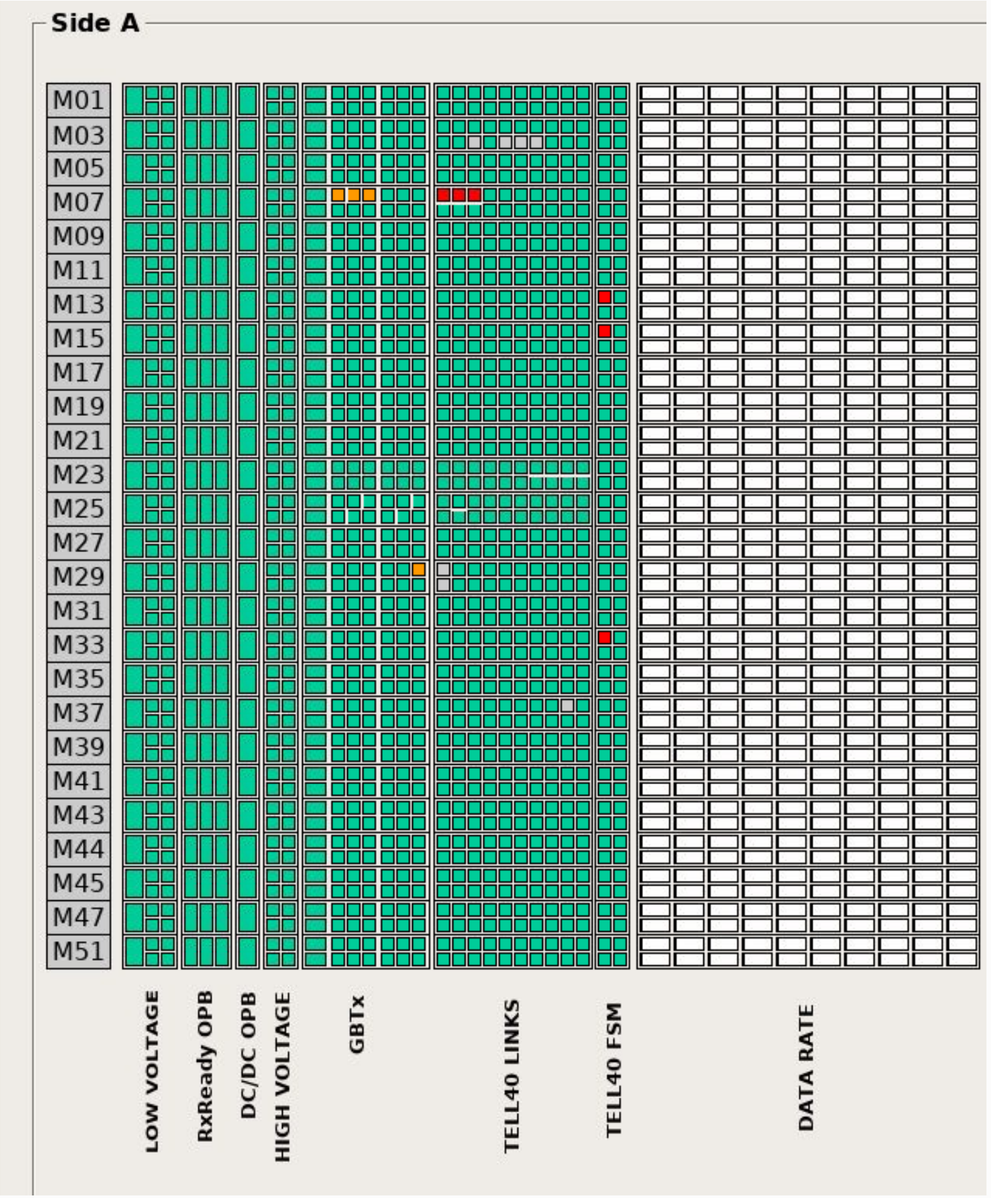
ADDITIONAL FEATURES

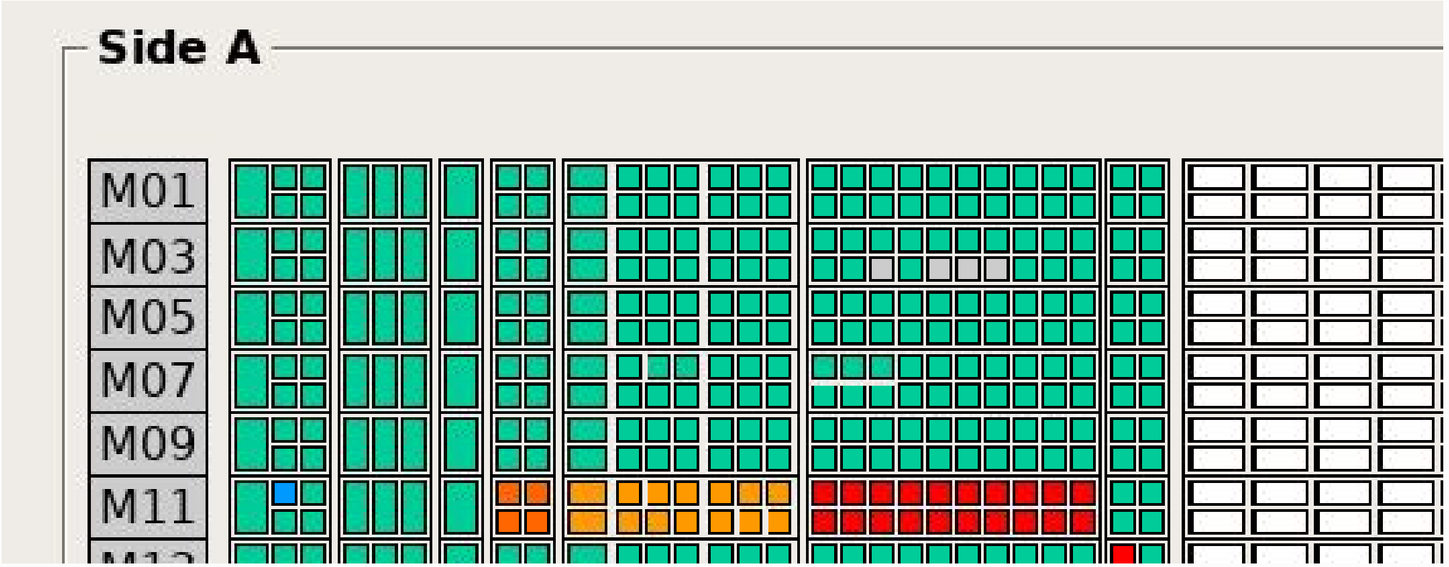




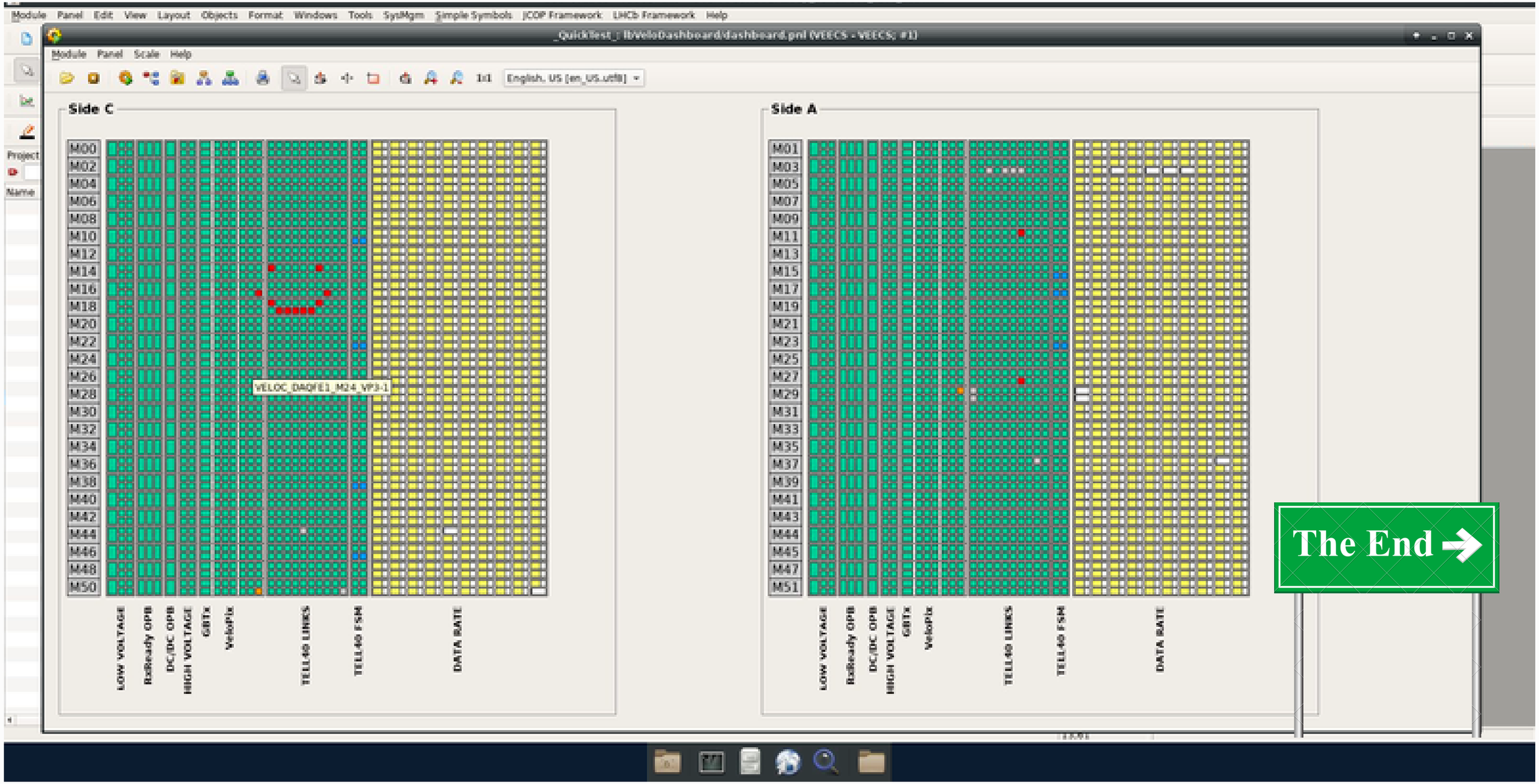


EASY ERROR IDENTIFICATION






Side C
M00
M02
M04
M06
M08
M10
M12
M14
M16
M18
M20
M22
M24
M26
M28
M30
M32
M34
M36
M38
M40
M42
M44
M46
M48
M50
LOW VOLTAGE
RxReady OPB
DC/DC OPB
HIGH VOLTAGE
GBTx
VeloPix
TELL40 LINKS
TELL40 FSM
DATA RATE
Side A
M01
M03
M05
M07
M09
M11
M13
M15
M17
M19
M21
M23
M25
M27
M29
M31
M33
M35
M37
M39
M41
M43
M44
M45
M47
M51
LOW VOLTAGE
RxReady OPB
DC/DC OPB
HIGH VOLTAGE
GBTx
VeloPix
TELL40 LINKS
TELL40 FSM
DATA RATE


Module Panel Edit View Layout Objects Format Windows Tools SysMgm Simple Symbols JCOP Framework LHCb Framework Help
QuickTest: lbVeloDashboard/dashboard.pnl (VEECS - VEECS: #1)
Module Panel Scale Help
English, US [en_US.utf8]
Side C
Side A
M00 M02 M04 M06 M08 M10 M12 M14 M16 M18 M20 M22 M24 M26 M28 M30 M32 M34 M36 M38 M40 M42 M44 M46 M48 M50
M01 M03 M05 M07 M09 M11 M13 M15 M17 M19 M21 M23 M25 M27 M29 M31 M33 M35 M37 M39 M41 M43 M44 M45 M47 M51
VELOC_DAQFE1_M24_VP3-1
LOW VOLTAGE
RxReady OPB
DC/DC OPB
HIGH VOLTAGE
GBTx
VeloPix
TELL40 LINKS
TELL40 FSM
DATA RATE
The End

CONCLUSION

SUMMARY

During this summer I have created a summary panel, the VELO Dashboard, that shows all the status of the electronics in real time and opens a more specific panel for a closer look.

ACKNOWLEDGEMENT

- Many thanks to my supervisors Victor Coco and Karol Hennessy for all the support and patience, and to guide me on this project.
- A special thanks to LHCb Secretariat.
- Thanks to the NMS Programme for the opportunity.
- And thanks to all the friends I made during this incredible summer.

Thank you!