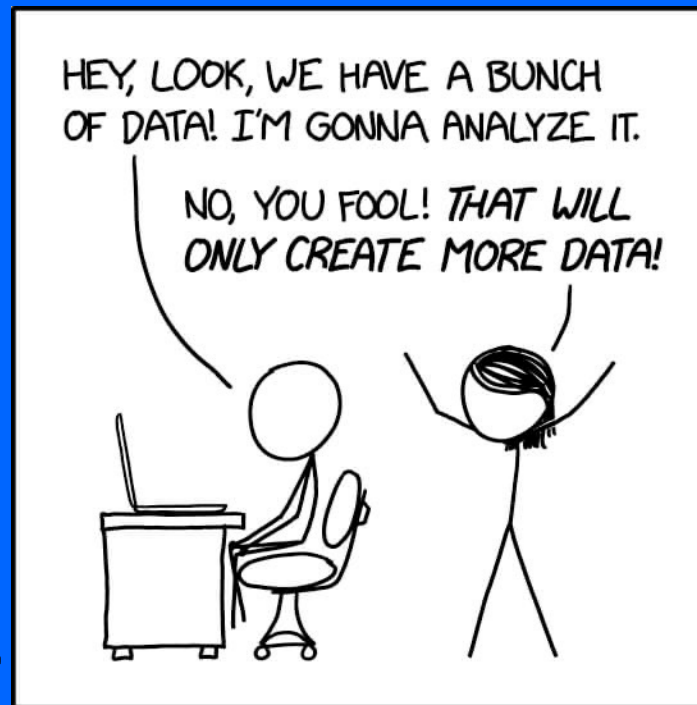


15 November 2022
Meeting on Muon at U2

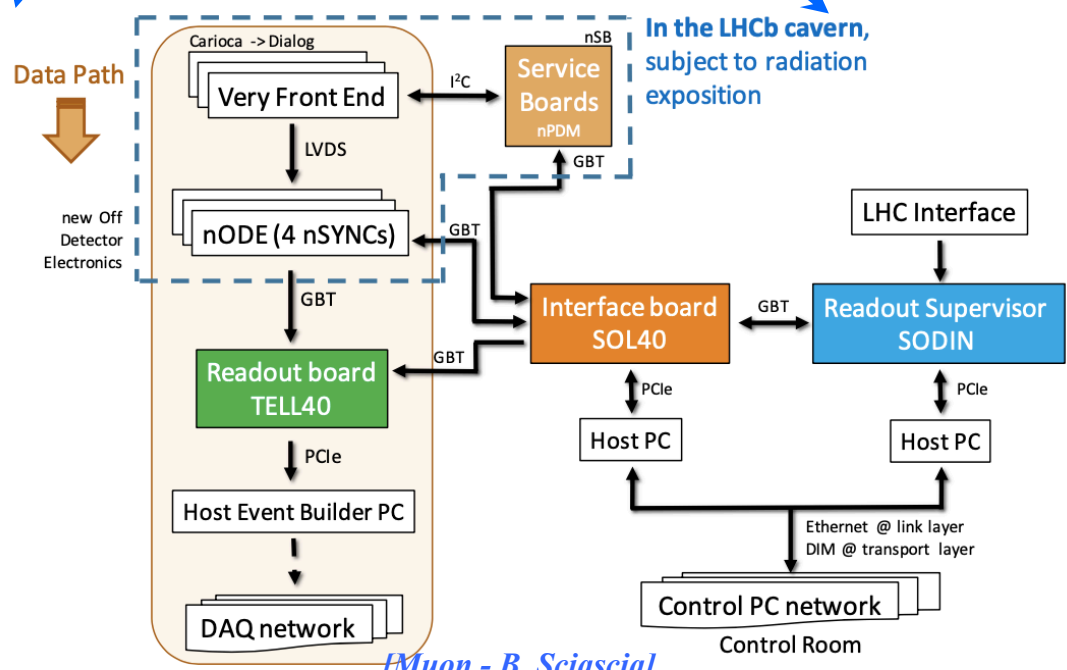
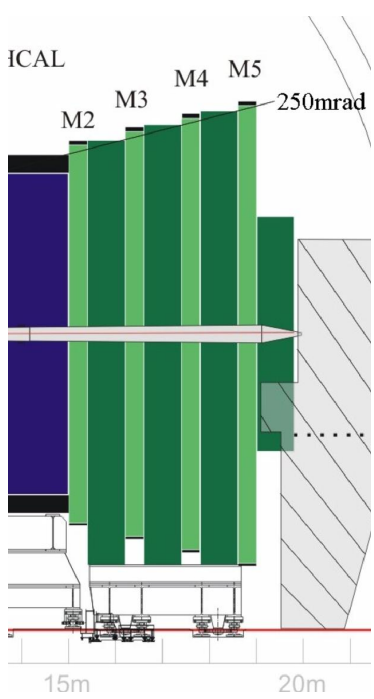
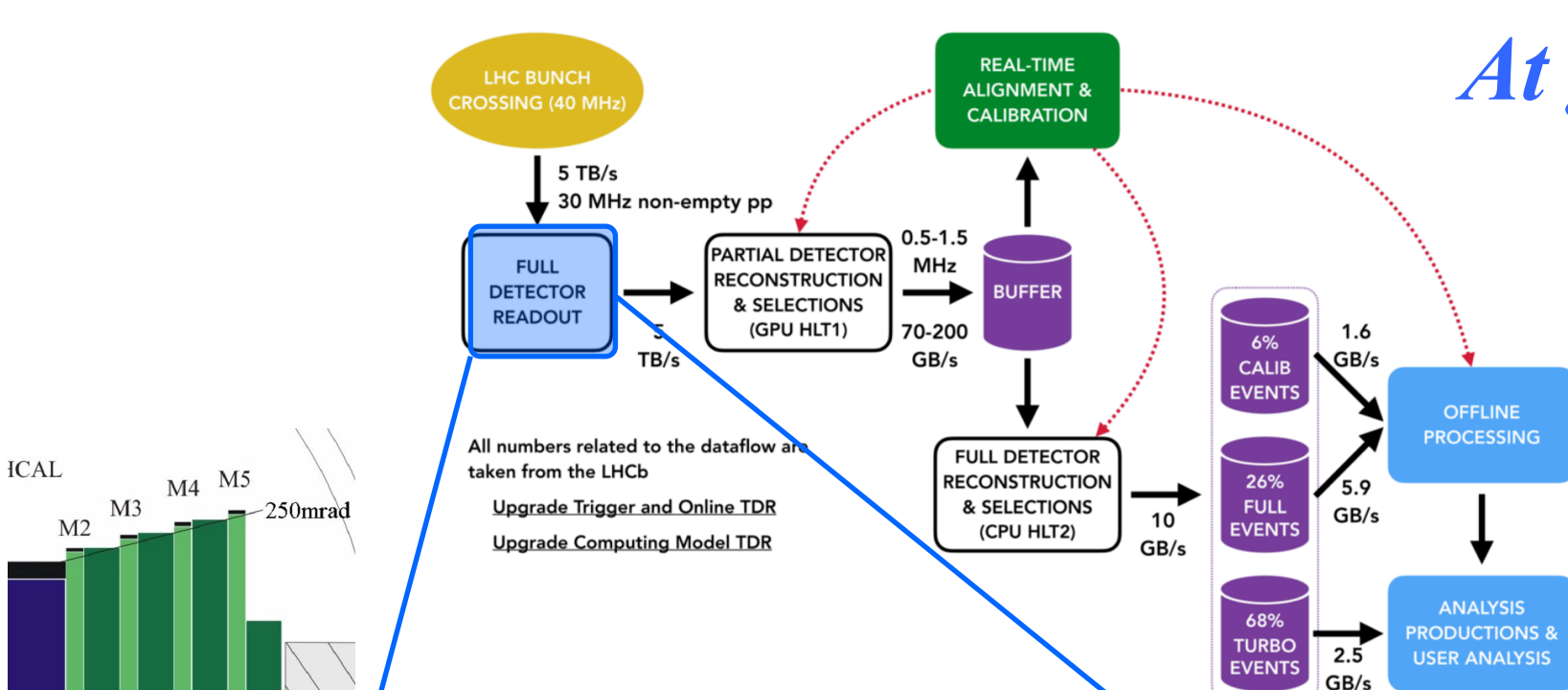
LHCb Muon Upgrade

<https://xkcd.com/2582/>

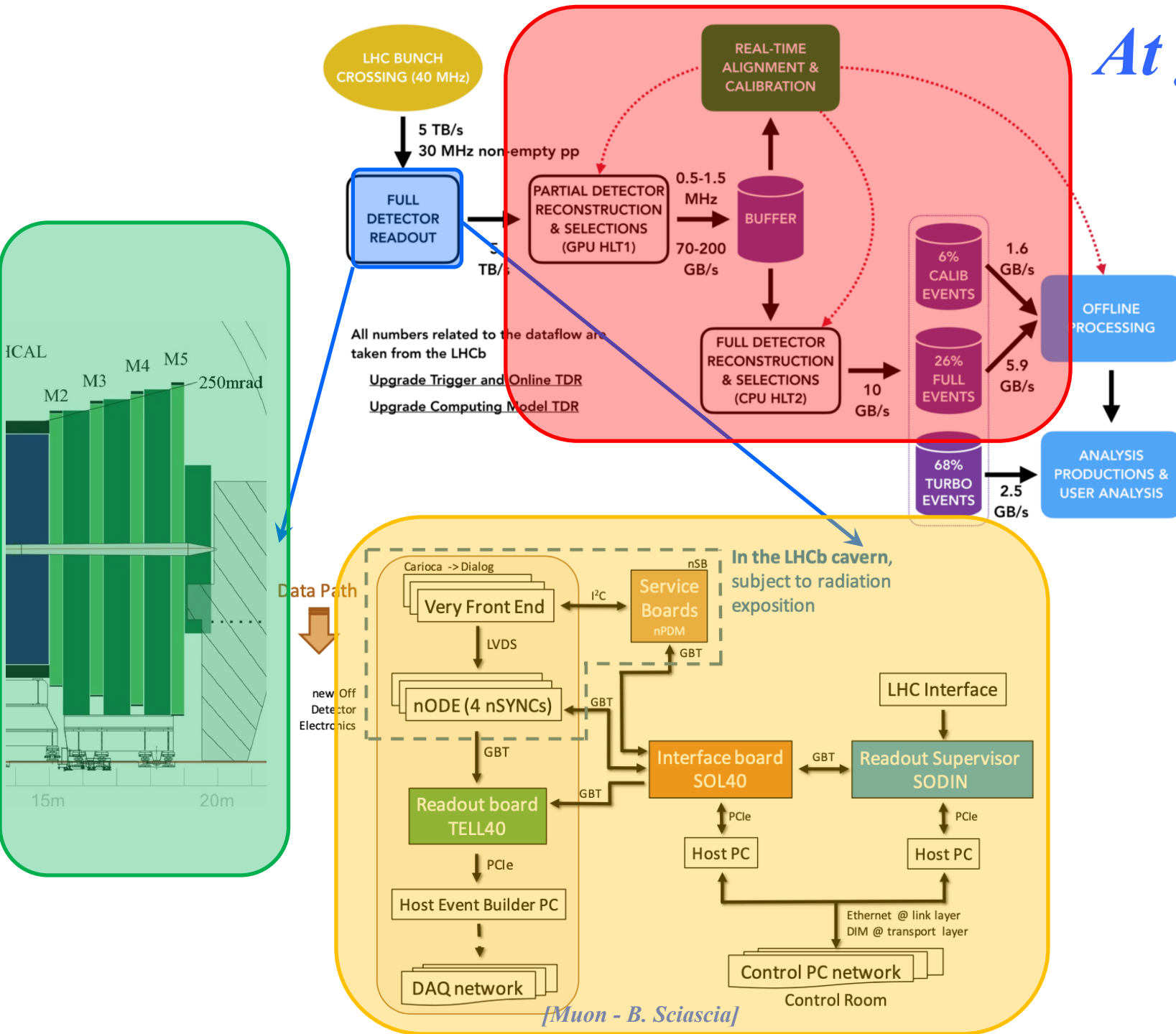


Barbara Sciascia
(INFN/Frascati)

At glance



At glance



Full Software Trigger

(RTA and Allen (GPU) projects)

- Completely new from Run 3
- Implies a strick connection between HW, FW, and SW
- Many aspects required much more effort than in Run 1/2
- The case of DetDesc to DD4HEP migration

Detector:

- same as Run 1/2
- business as usual: chambers repaire, HV, gas system,...

Electronics:

Very FEE (FEB), same as in Run 1/2

New FEE:

- nSB and nPDM: ~ok
- nODE and nSYNC: still some issues
- TELL40: still some issues

Summary of 2022

Intense months of commissioning for both hardware and software.

- Detector worked fine with no issues in this first year of data taking.
- Enough spares for both chambers and electronics (HV, LV, FEE)

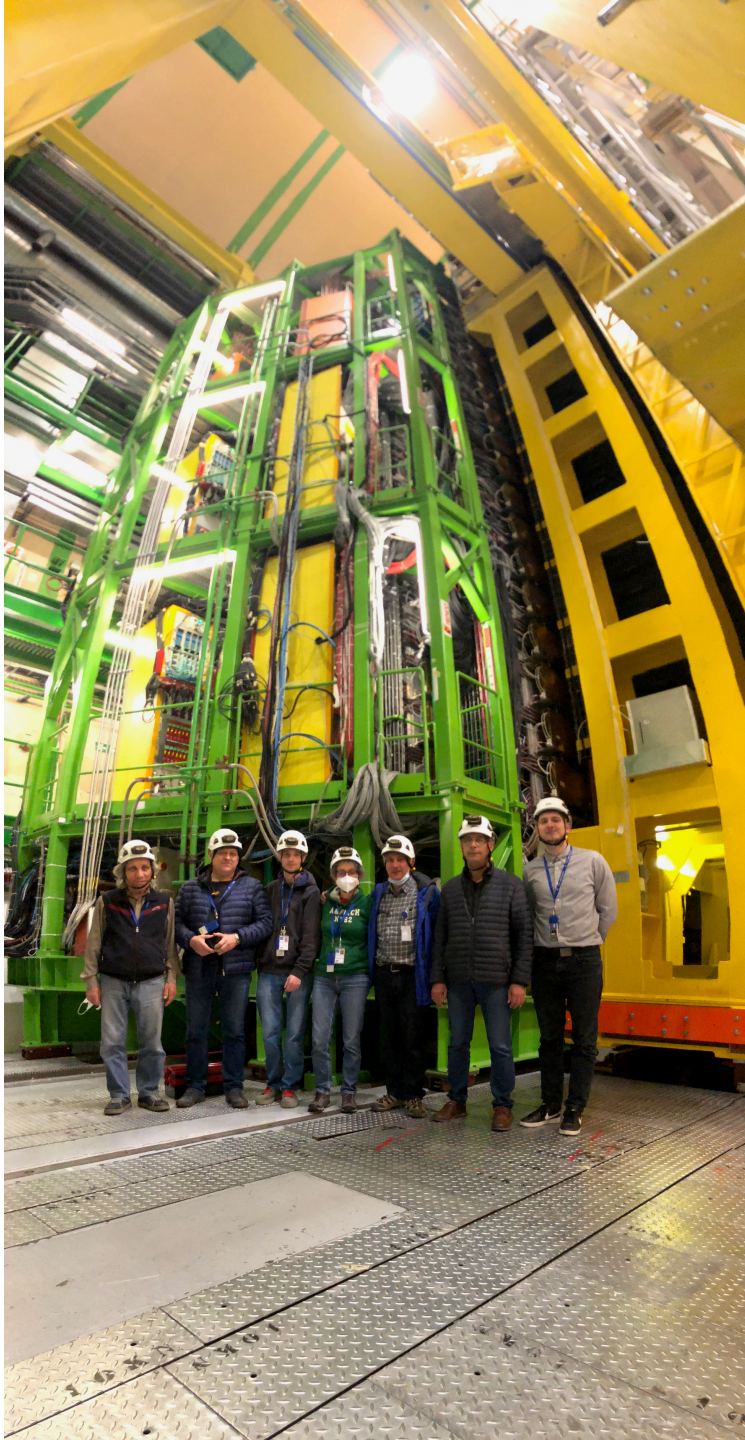
Finalisation of the time alignment

Completely renewed online monitoring running at pit

Decoding on GPU: tested and running in Allen

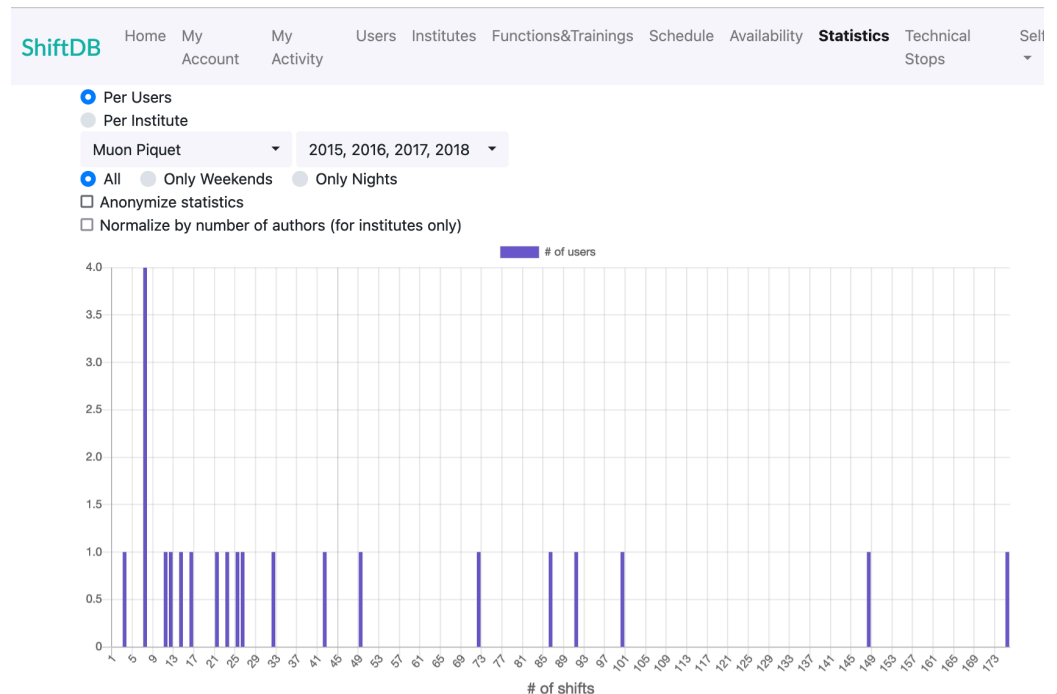
A huge effort ongoing to complete the transition from DetDesc to DD4HEP

Some internal reorganisation due to the consequences of the war: we should have enough people to afford the YETS and the restart of data taking in 2023



YETS activities and HW maintenance: since now, almost all done by PNPI colleagues based at CERN or coming on purpose from PNPI

Piquet shifts in Run 2: ~60% of the shifts taken by people based at CERN (mainly PNPI)



Towards U2

The success of the future Muon upgrades is based on the success of the present upgrade

The completion of the commissioning will take a large part of 2023 data taking

- Electronic experts still needed to optimize the DAQ process

From 2024 onward until the end of Run 4, “only” need to maintain the system working.

Muon specific SW and FW play an important role, unimaginable in the past Runs

- Recent new entries will give us some breathing space
- There is room to contribute even remotely and in small and well-defined areas

The war has changed perhaps forever the fruitful collaboration with PNPI colleagues

- strong impact on the presence at CERN of experts/person power
- in particular YETS and maintenance activities remain uncovered
- large fraction of HV system has been developed in PNPI

One of the U2 options foresees to keep the current MWPCs until Run 6

- important to guarantee the day-by-day care of MWPC

While projecting LHCb U2 (inside or outside Muon), we have to figure out how to maintain good health of the Muon Upgrade that we helped to design and realise

