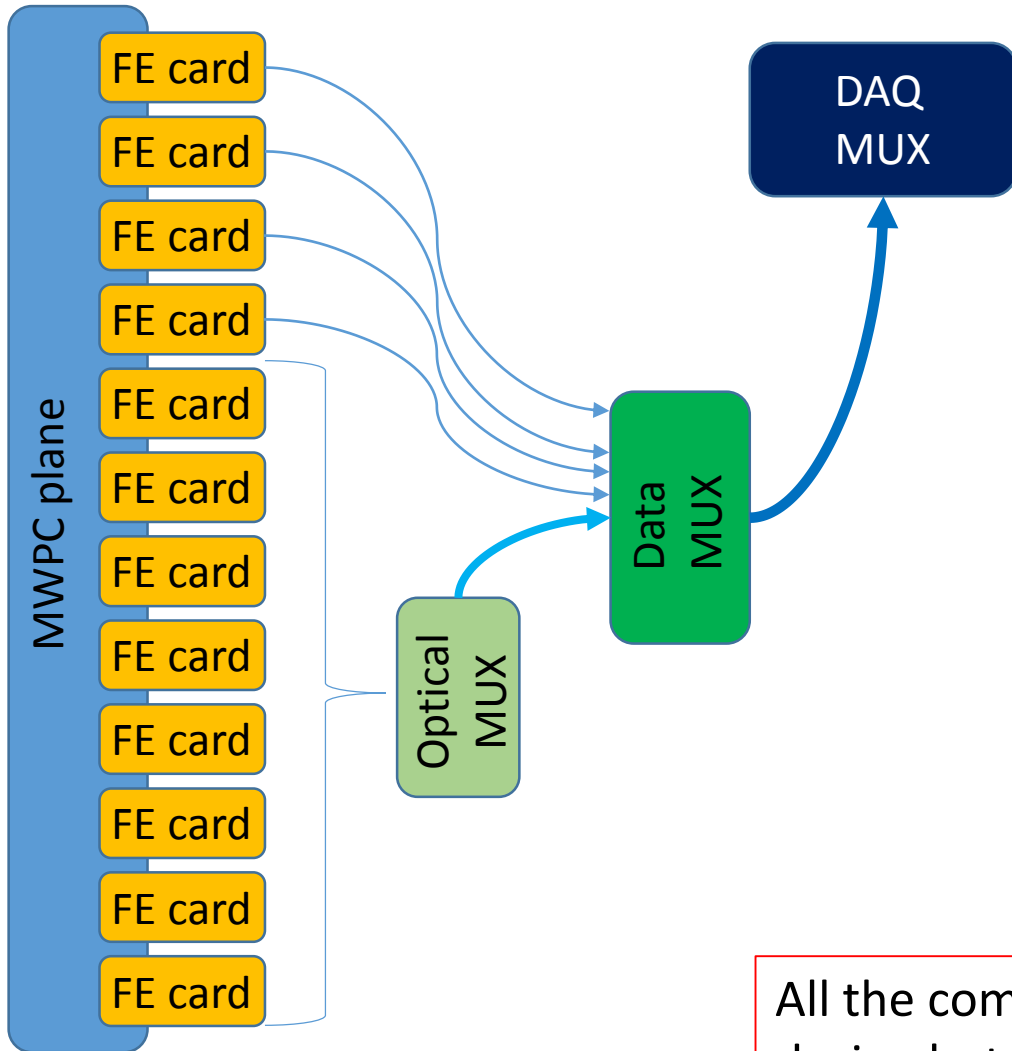


# MWPC's new FEs test request

- Since 2017 we are involved in the development of a prototype of a new FE solution for the MWPC.
- It is built around an FPGA based TDC and CMAD ASICs.
- The main advantages are the change of the RO scheme to optical and the use of proven production ready components (a possible solution for the 2021 COMPASS running).
- We expect that this solution would solve the main problems present in the current FEs.
- We have made a first “on beam” test during the last 5 hours of the 2017 running.
- The first test has shown a complete integration into the COMPASS DAQ but failed to provide useful data due to an error in the threshold programming software.
- The error was since identified, corrected and the operation was tested in lab conditions.



# Proposed scheme and timeline

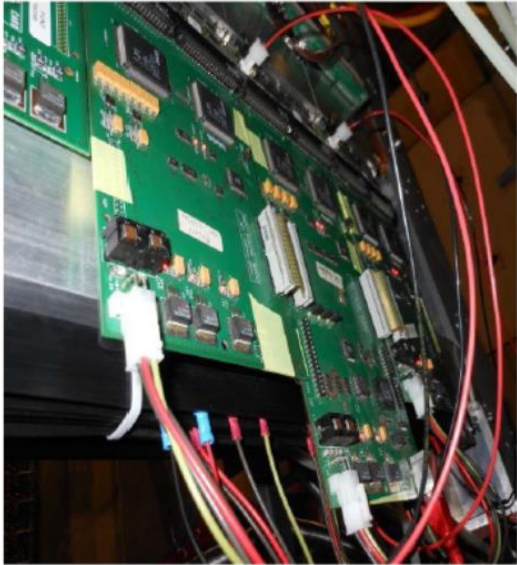


- We would substitute 4 standard triplets by 12 new FEs
  - ❖ 3-5 hours for power cabling and fibers installation
- The RO can be mixt or uniform:
  - ❖ in the first option we would use a 8->1 passive optical MUX and read the remaining 4 cards by individual fibers.
  - ❖ In the second we would use 12 direct fibers to the Data MUX
- A single fiber would go into the DAQ.

All the components of the proposed design but the passive MUXs already exist.

# The components status

Analog FE + MWPC



Tested in 2012

Analog FE + TDC



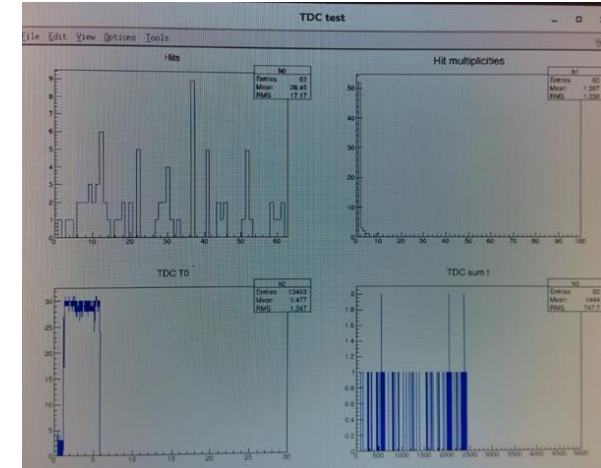
Tested in 2017

Data Mux



In operation at COMPASS

DAQ integration



Tested in 2017

- Presently we have all the elements to perform a test of a whole plane of one MWPC to validate that option for a possible future upgrade of the FEs.
- We need only to prepare in time and in needed numbers the elements. (optical MUX is available too)

We would like to request a short period at the end of the 2018 RUN to equip a whole plane of the MWPC with 12 new FEs and acquire data to have the final validation of the possible upgrade option operating in real conditions.

Exact time and length of the test are to be discussed

# RichWall disassembly for the repairs

- We did not have the expected manpower to fulfill the repair of the MDTs during the last winter stop.
- We would like to fulfill the duty before the 2021 and we would like to start the discussion of when the removal and dismounting of the detector fits best the COMPASS maintenance schedule.

Open for discussion

# Possibility for the installation of small R&D prototype into the COMPASS hall

- Our group is involved in an R&D project of a bulk Micromegas detector that target a possible future application in COMPASS.
- Presently we are at the laboratory test phase.
- If the testing is successful a possible installation in the end/side of the COMPASS hall could be of our interest for a short test using a standalone DAQ.
- The size of the prototype is of the order of 40x40cm<sup>2</sup>.
- The MM+FE would require 220V and Ar/CO<sub>2</sub> (70/30) mixture (can be used the outlet that was used by NA64 STRAW tubes) from the COMPASS infrastructure.
- The timeline of a possible installation is at the very end of the 2018 RUN.

Would the TB agree with such a possibility conditionally to a further detailed discussion on the exact position and time?

