



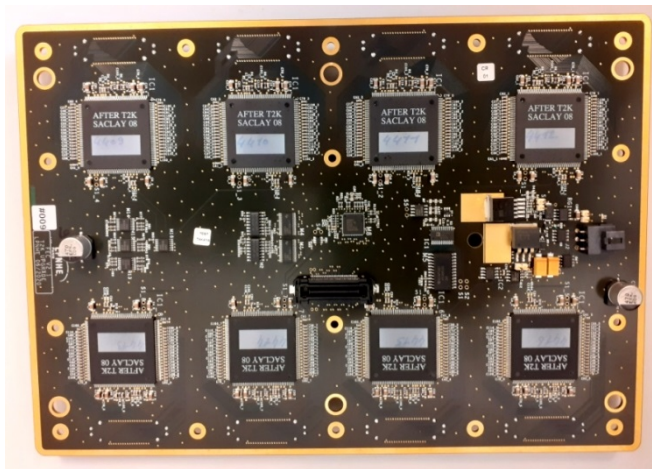
HA-TPC front-end electronics PRR

⇒ FEC

2020/10/29



Front End Card - **FEC**



LPNHE electronics staff :

Eric Pierre

François Toussenet

Jean-Marc Parraud

LPNHE scientist Manager :

Boris Popov



HA-TPC front-end electronics PRR

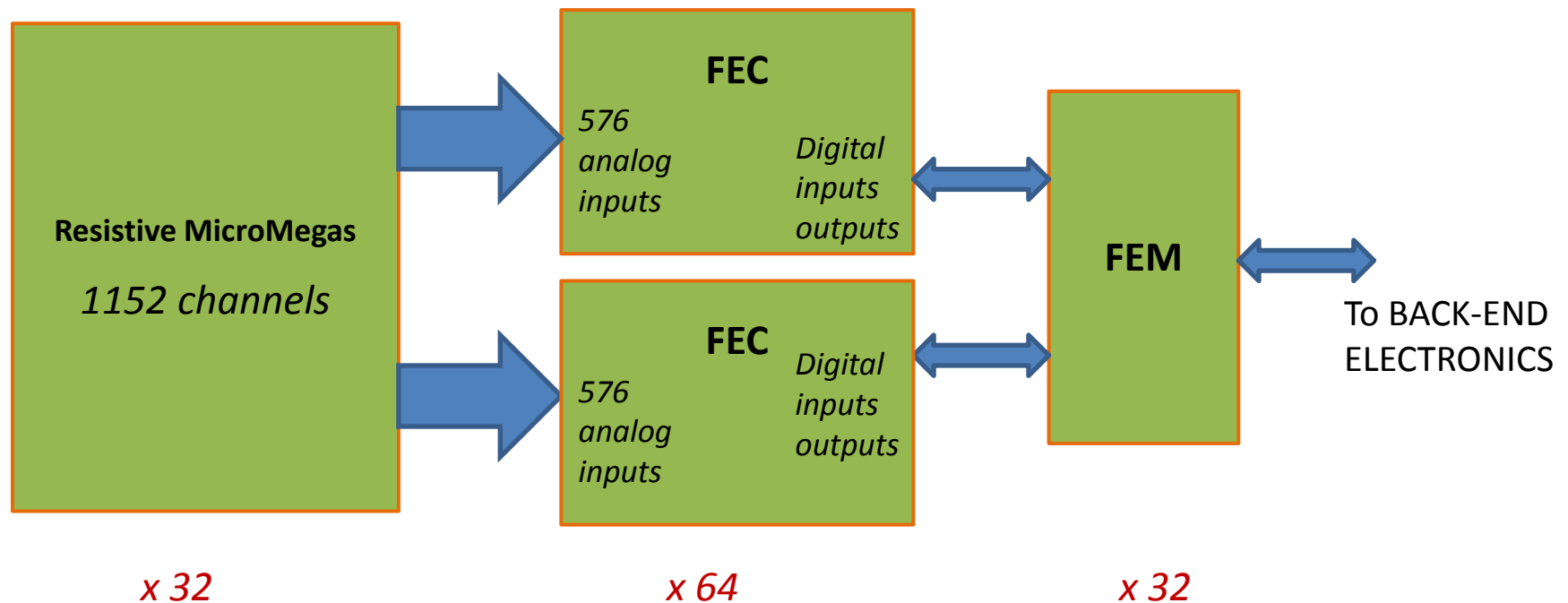
⇒ FEC

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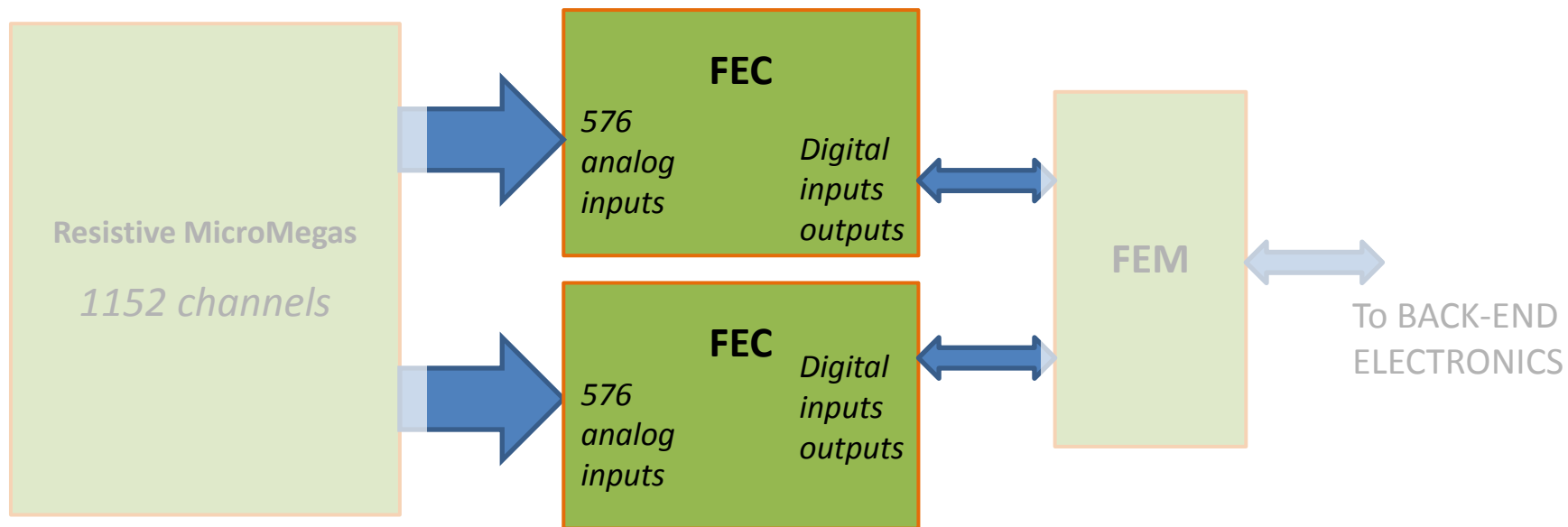
DETECTOR

FRONT-END ELECTRONICS



DETECTOR

FRONT-END ELECTRONICS



64 x FEC needed for on-site integration + spares

LPNHE contribution

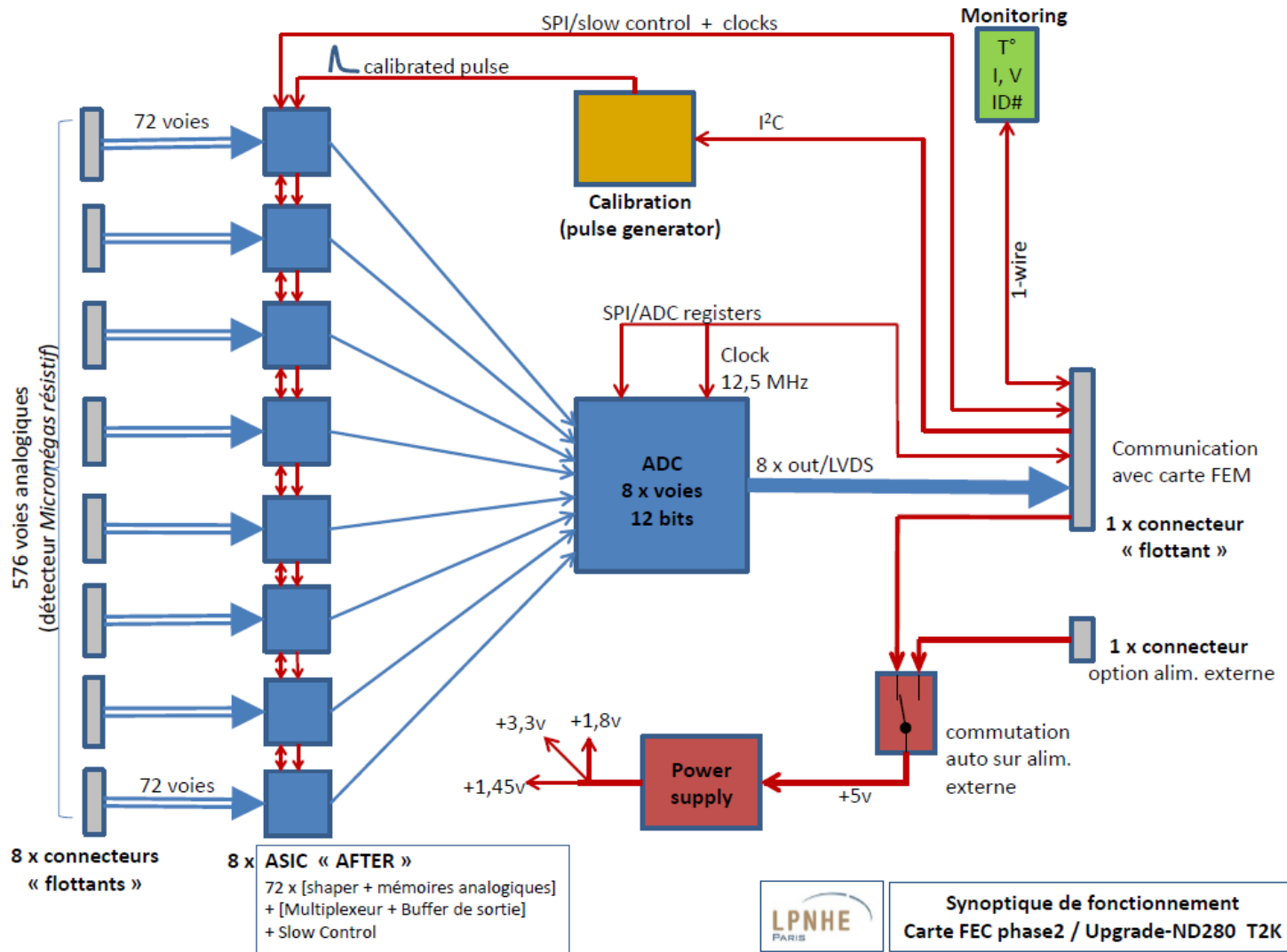
→ Production of **84 cards**: 12 x pre-prod cards
72 x prod cards

FEC :
Based on FEC/Phase1 that works fine for more than 10 years.

Use of the **same ASIC** (→ « After » / IRFU) for the read out and processing of analog signals coming from the detector.
Qty=8 (4 in Phase1)

Use of an **8 channel ADC (AD9637-40)**, instead of a 4 channel ADC.

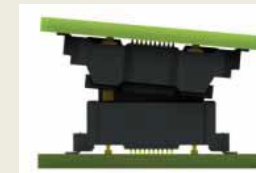
The **global architecture remains the same** as it is in Phase1.



How did it go till now :

- December 2018 : **1st FEC mock-up** *without active components*
 - March 2019 : **2nd FEC mock-up** " " "
- ⇒ These mock-ups allowed the validation of **floating connectors** intended for connecting signals : **MicroMegas detector** \leftrightarrow **FEC** (8 connectors)
FEC \leftrightarrow **FEM** (1 connector)

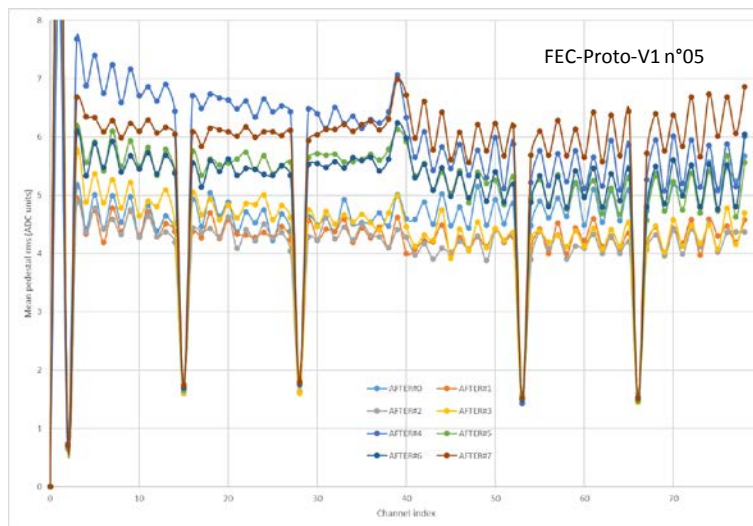
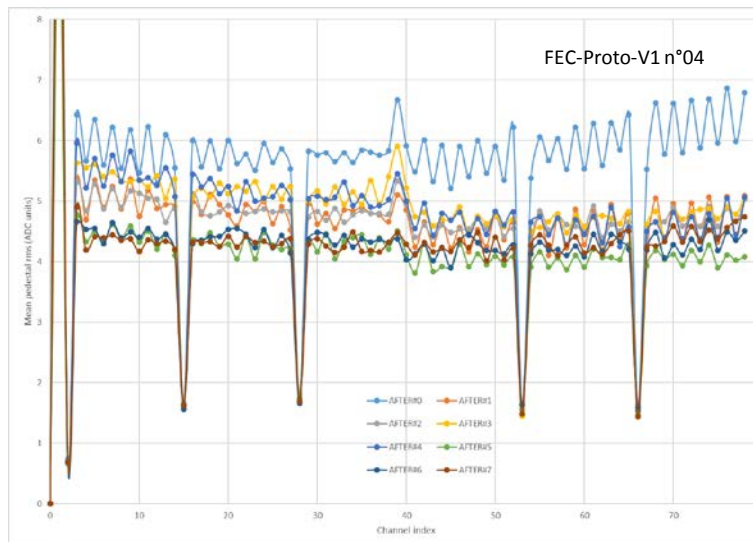
HIROSE FX23 series
 80 contacts
 + 4 power contacts



- February 2020 : **FEC prototype, including all fonctionnalités**
 ⇒ March to June 2020 : Tests at IRFU with FEM prototype and acquisition system **worked fine** after few fixes (2 wrong footprints, 1 missing connection on eFuse)
- August 2020 : **12 x pre-prod FEC**, rather few changes compared to the prototype
 ⇒ September 2020 : 4 x tested at IRFU with pre-prod FEM and acquisition system
 2 x tested at Warsaw with their new testbench
work fine / now waiting for production, qty = 72

Tests made on
FEC prototypes :

*Pedestals
measurement*
(inputs not
connected)





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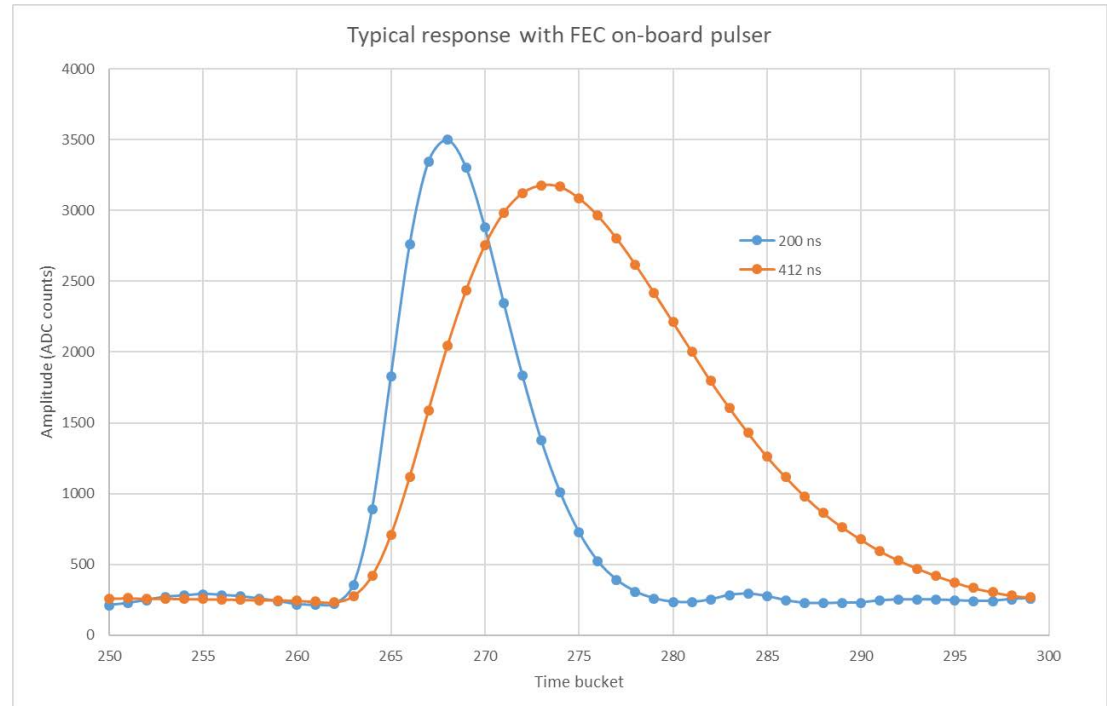
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Tests made on
FEC prototypes :

*Calibration pulse
measurements*



FEC-Proto-V1 n°05



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Points durs potentiels



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Planning production
+ tests



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Risques à venir



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