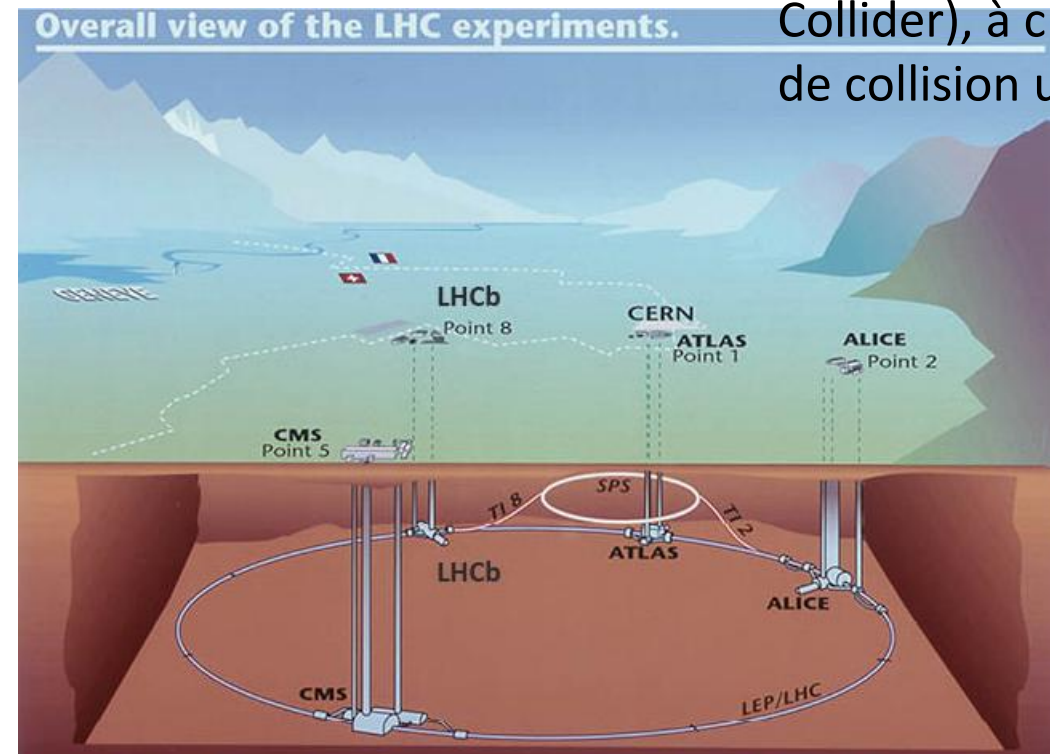
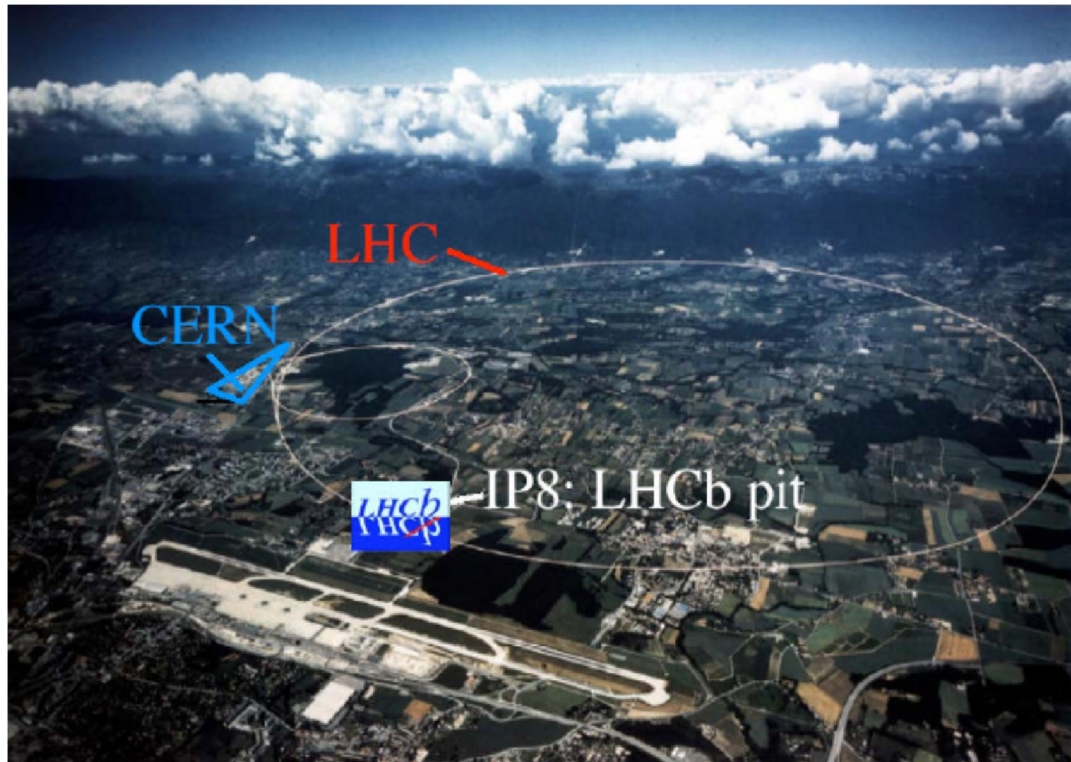




L'Expérience : LHCb

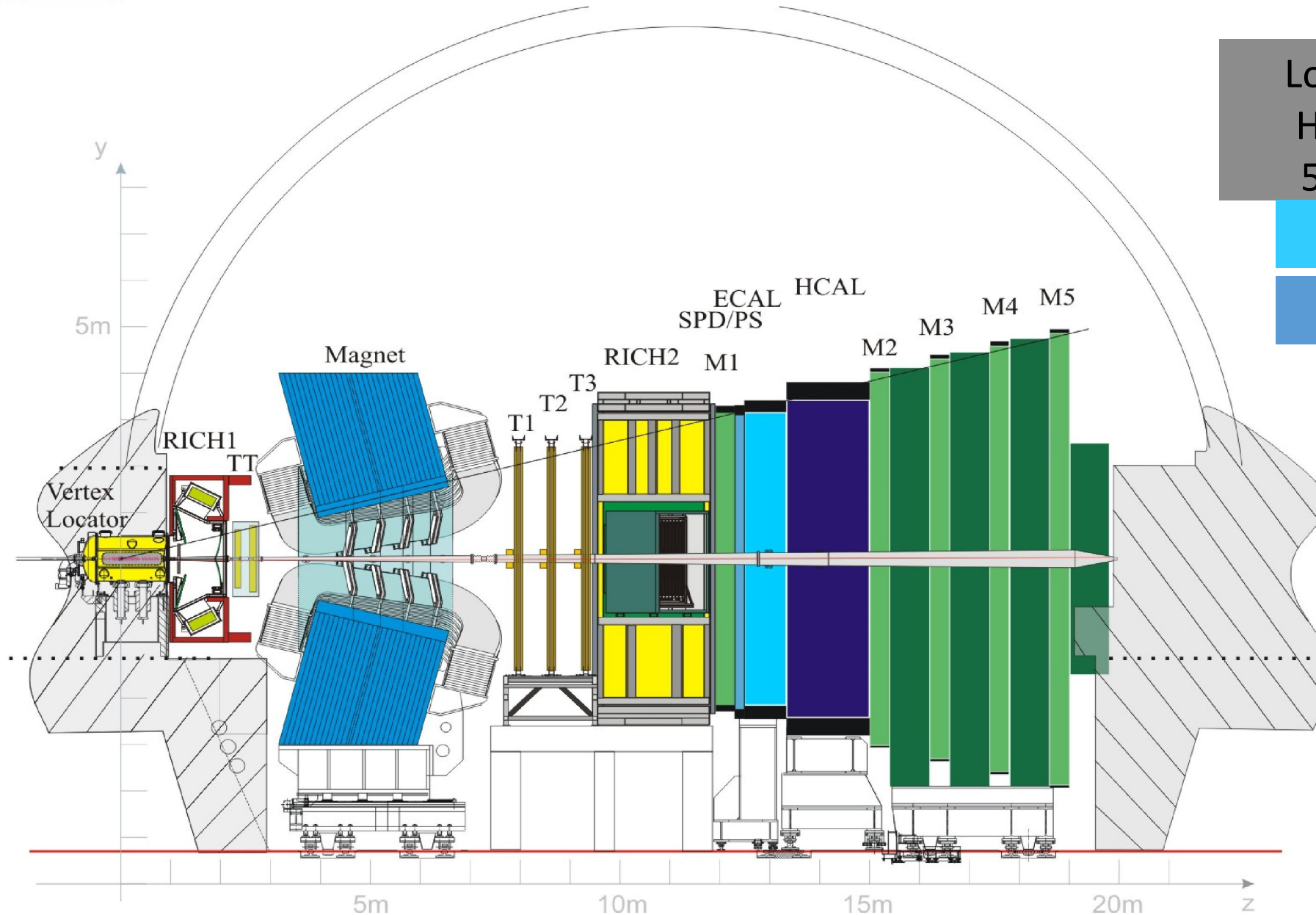
- LHCb est un outil spécialisé, destiné à réaliser la meilleure détection possible des particules « belles » (contenant un quark b) et de leurs produits de désintégration.

- LHC (Large Hadron Collider), à chaque point de collision un détecteur





Le détecteur : Calorimetre



Longueur 21m
Hauteur 10m
5600 Tonnes

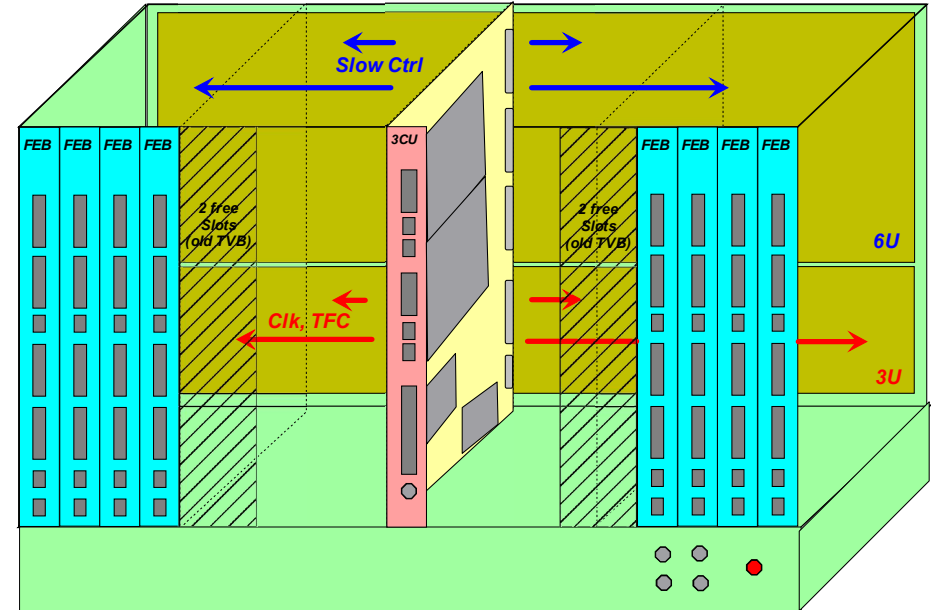
ECAL : 6000 ch

HCAL : 1500 ch



Calorimetre : Crate Front-end

- **Front-end crate** with same backplanes and power supply
 - 3U ⇒ power supply, clock distribution, ...
 - 6U ⇒ links between boards inside the same crate.
 - New Front-end board with optical link DAQ and LLT.
 - New Control Board (3CU).
 - Remove TVB.



- Calorimeter crate controller **board (3CU)**

Ensure signal distribution inside Front-end crate

- Clock distribution from the 3CU to all front-end board inside the same crate through 3U backplane.
- Slow control through 6U backplane
- Fast command (BxId Reset, FE Reset, ...) through 3U backplane

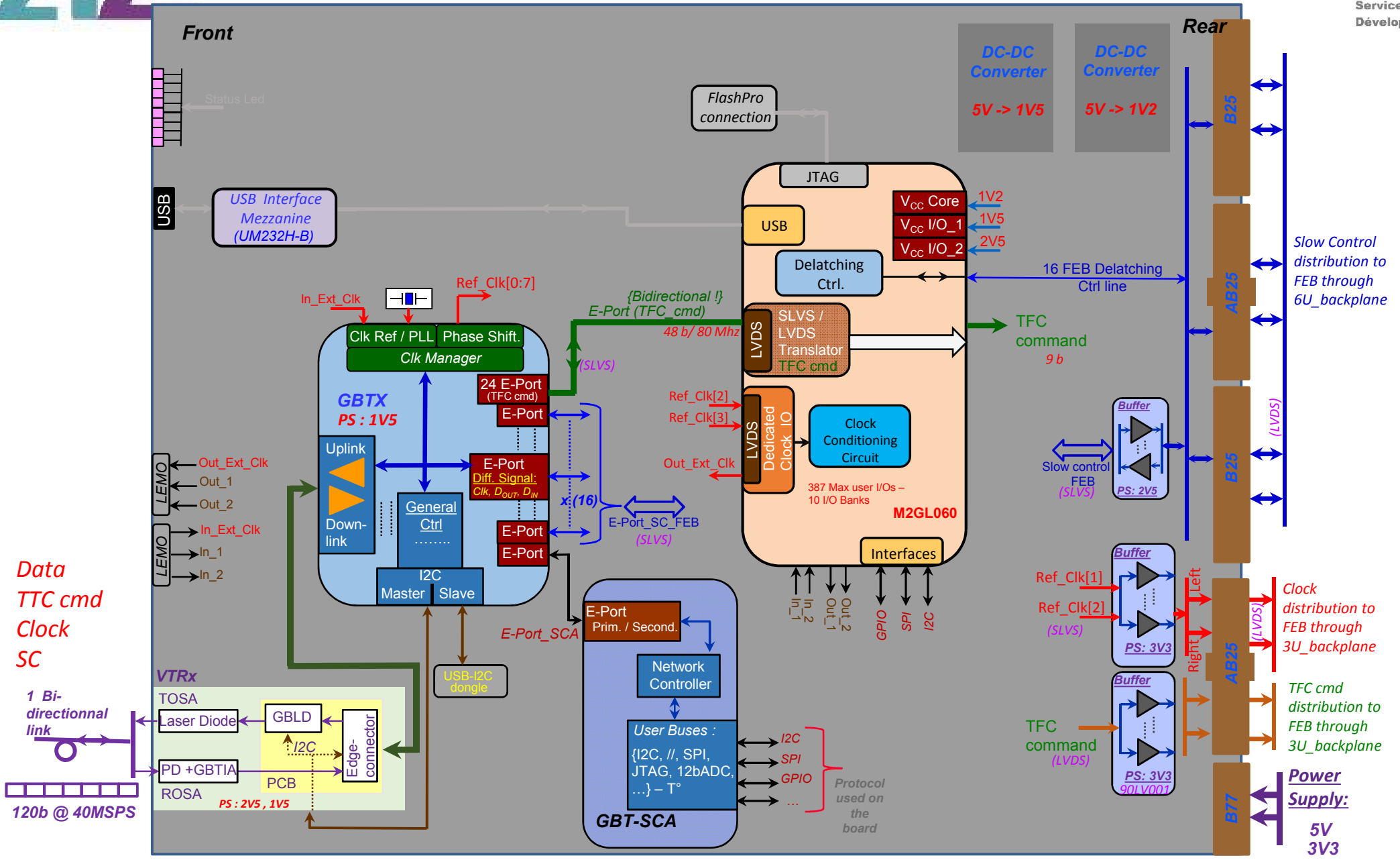
- Front-end crate

- LAL en charge électronique (Arnaud, Charles, Jean-Luc, Francisco, ...)
- Collaboration "Catalonia team"
- FEB (Christophe)
- 3CU (Olivier)

- Conception, production, installation

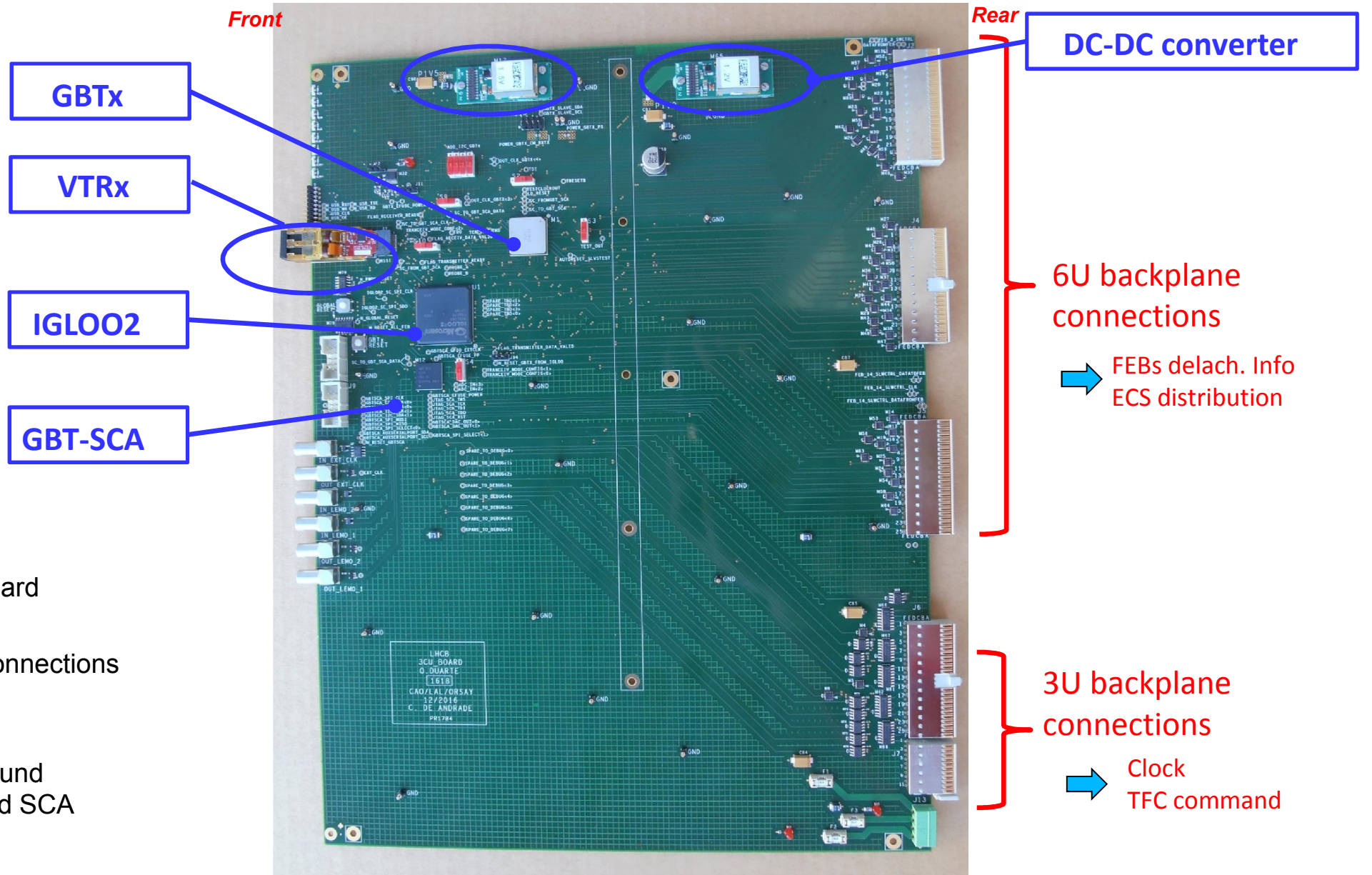
- Shut down 2019-20: demontage installation

Calorimeter Crate Controller for Upgrade : 3CU





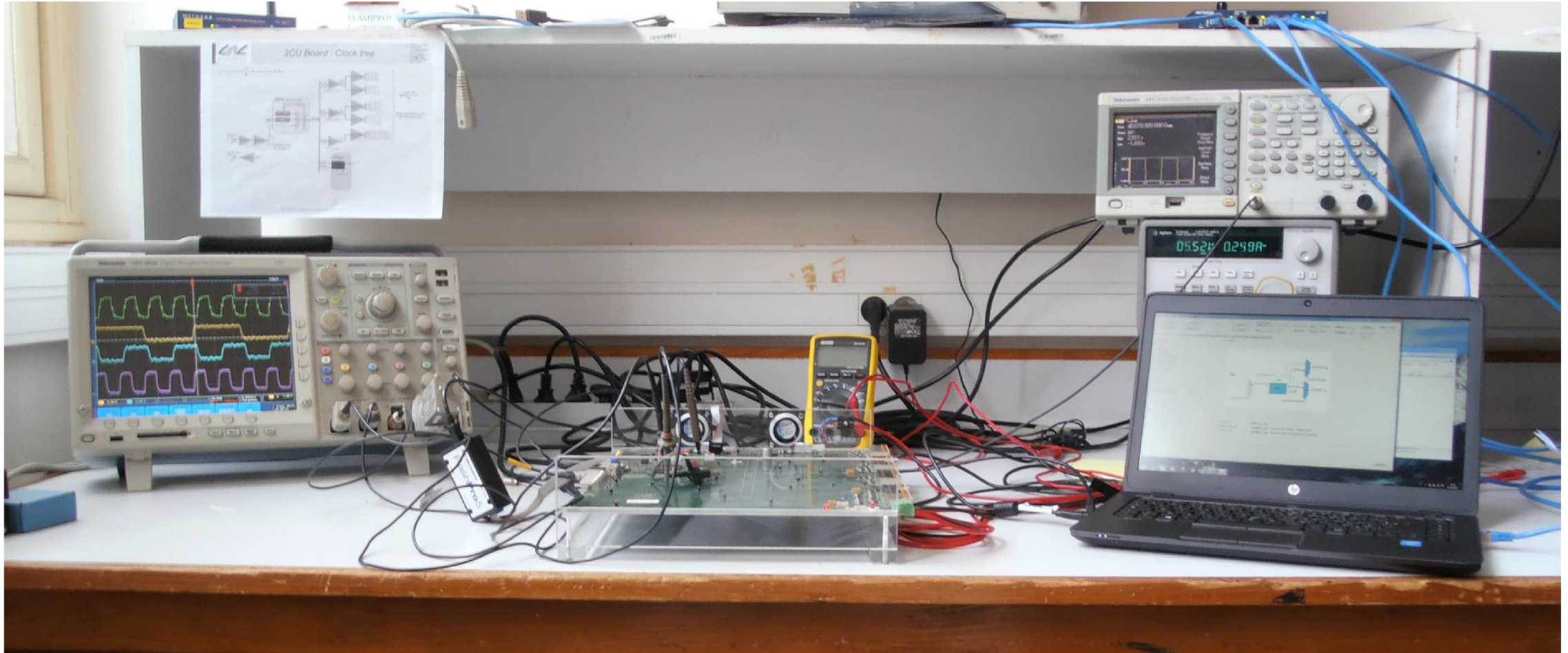
Calorimeter Crate Controller for Upgrade : 3CU



- 3CU board:
 - 9U / 280 mm VME board
 - Thickness 2.4 mm
 - Components 999 / Connections 5115
 - 12 layers
 - Routing very tight around IGLOO2 and GBTx and SCA



3CU : Tests

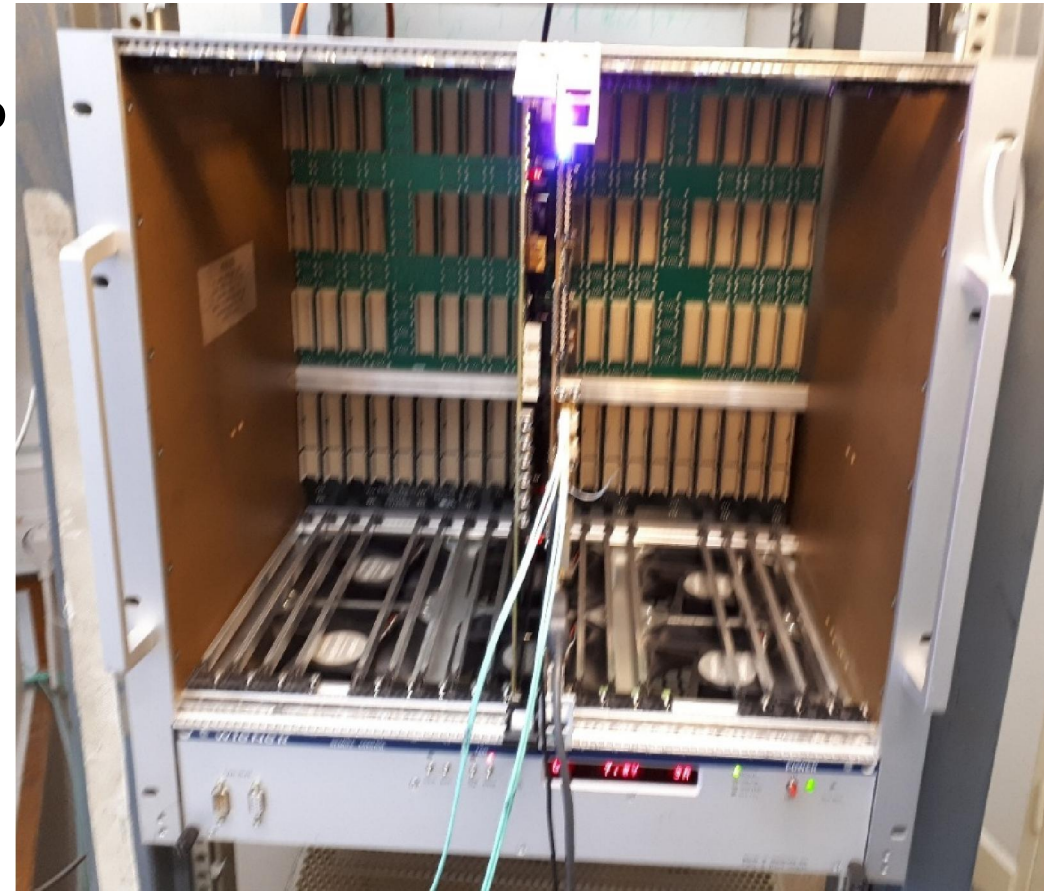
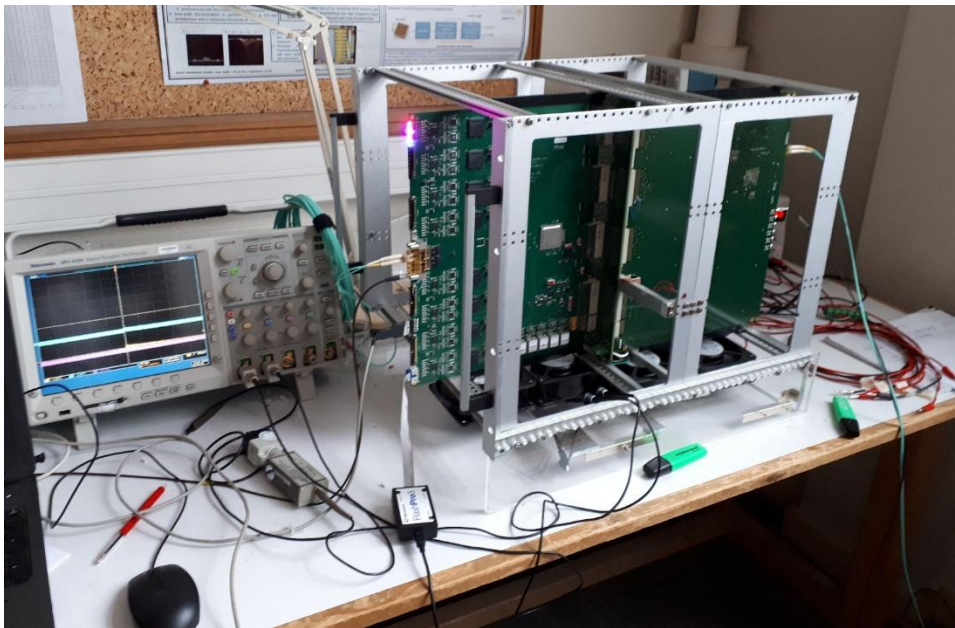


- Two 3CU board prototype available
 - Optical link from MiniDAQ
 - External clock generator
 - USB interface
 - Power supply, oscilloscope , ...



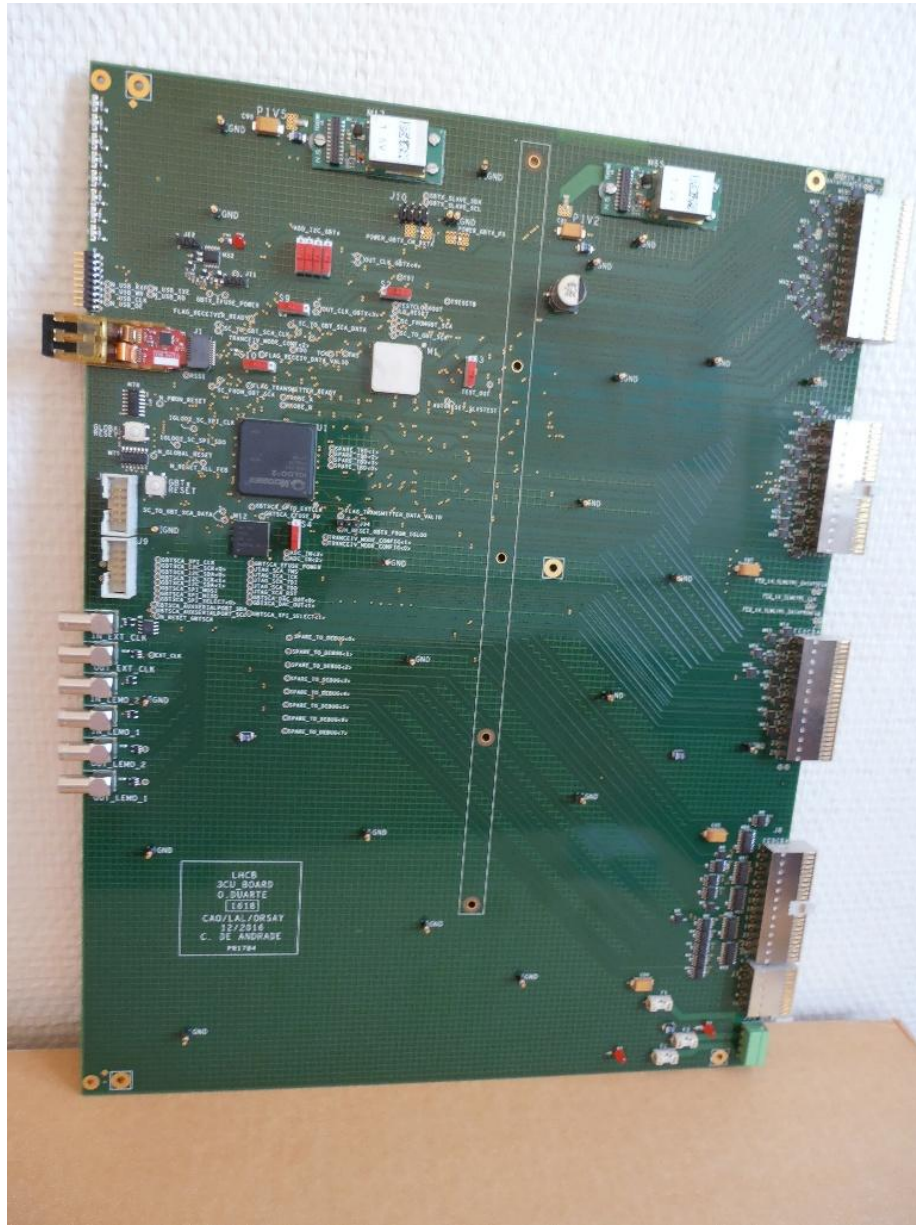
3CU : Tests avec FEB

- Test beam en Octobre
- Actuellement : 2eme Proto ou version finale en CAO
- Production courant 2019
- Tests commun globaux, suivi de production, ... ?





3CU : status



- CAO
- Tests globaux
- Face Avant, suivi de prod ...
- Etc ...
- Planning très tendu !!