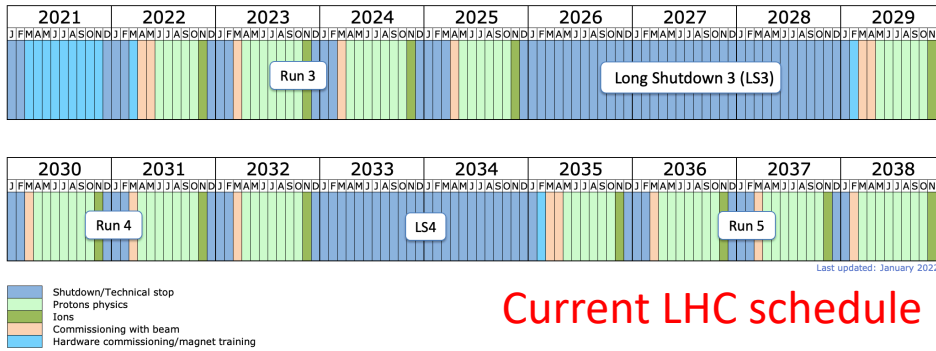


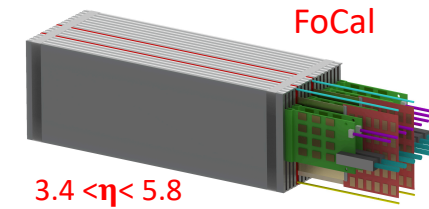
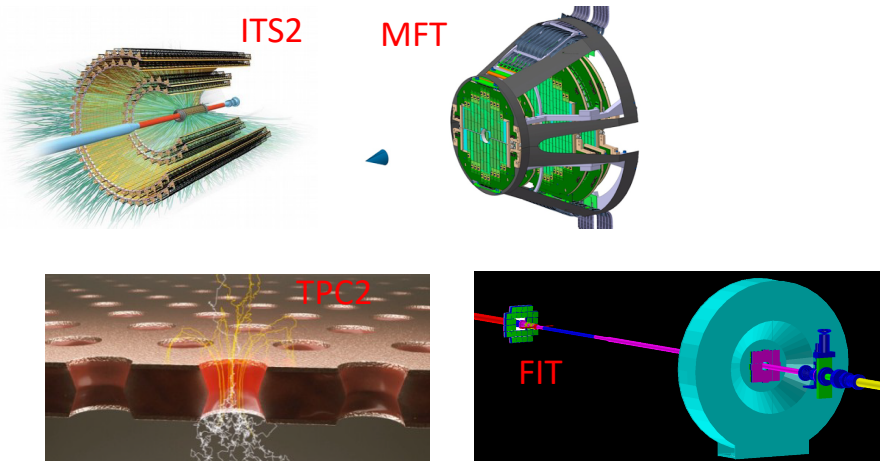
ALICE upgrades



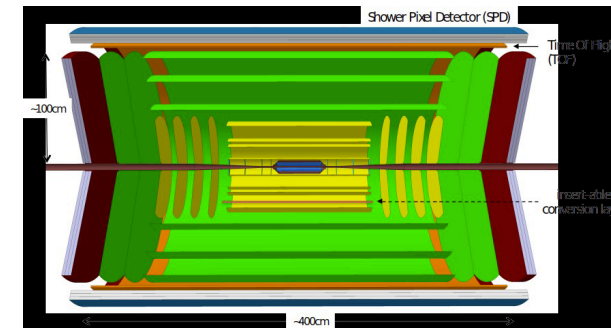
LS3: upgrades



LS2: upgrades



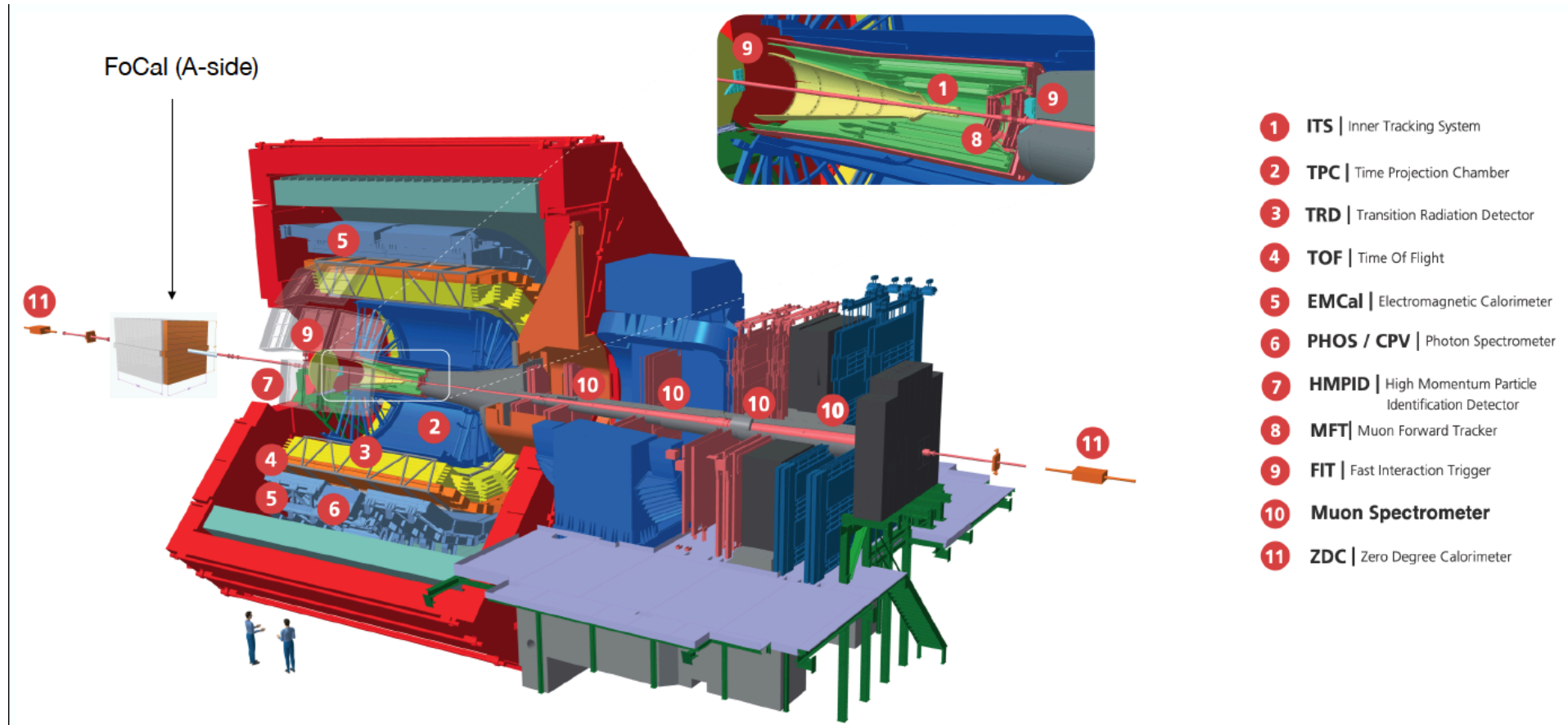
LS4: Future heavy-ion detector



Continuous data taking

- Detector upgrade
- Online-offline computing system upgrade
- Readout electronics and trigger upgrade

ALICE upgraded setup



- FIT: trigger, selection of high multiplicity and UPC collisions,...
- MFT: prompt/non-prompt charmonia, low-mass Drell-Yan, ... ($2.5 < \eta < 4.0$)
- FoCal (Run4): neutral mesons, isolated photons, jets, ... ($3.4 < \eta < 5.8$)

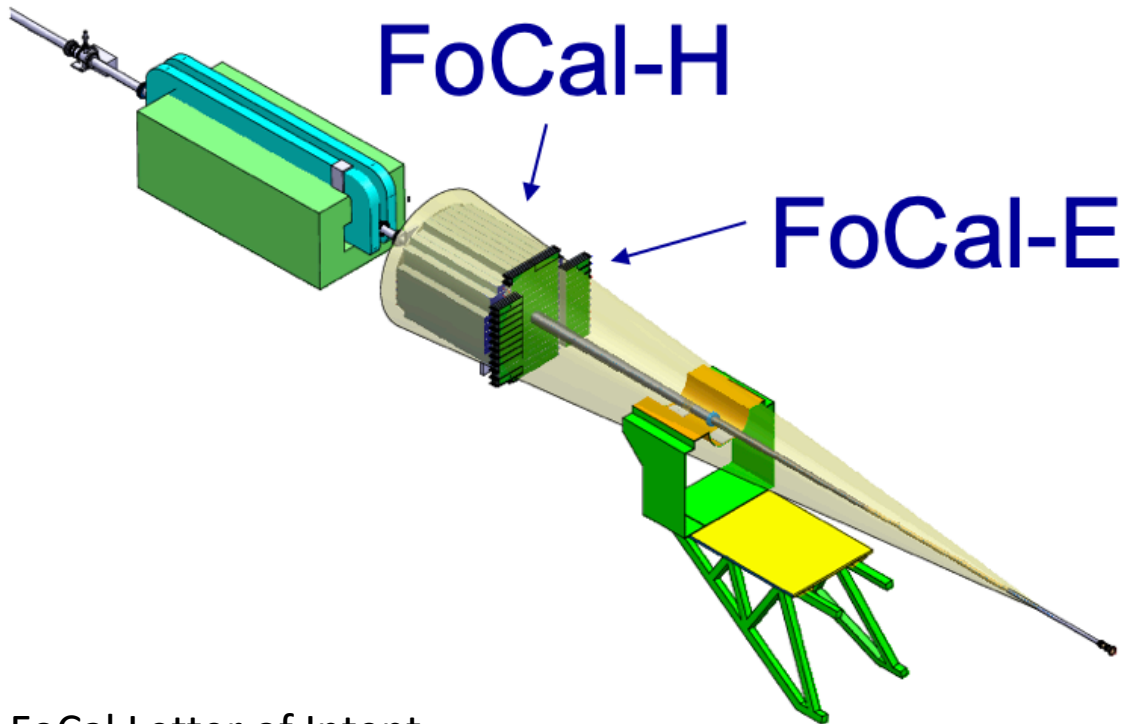
Fast Interaction Trigger (FIT)



<https://ep-news.web.cern.ch/content/new-alice-fast-interaction-trigger>

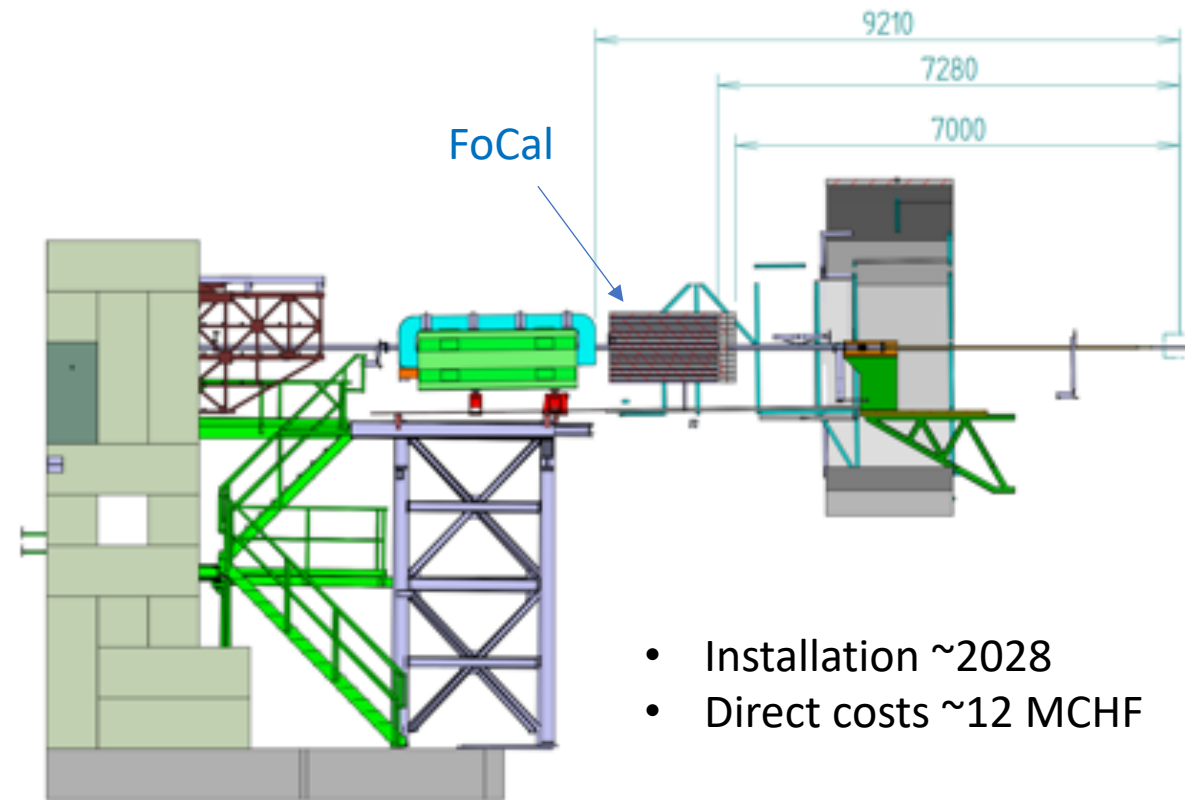


FoCal setup



FoCal Letter of Intent

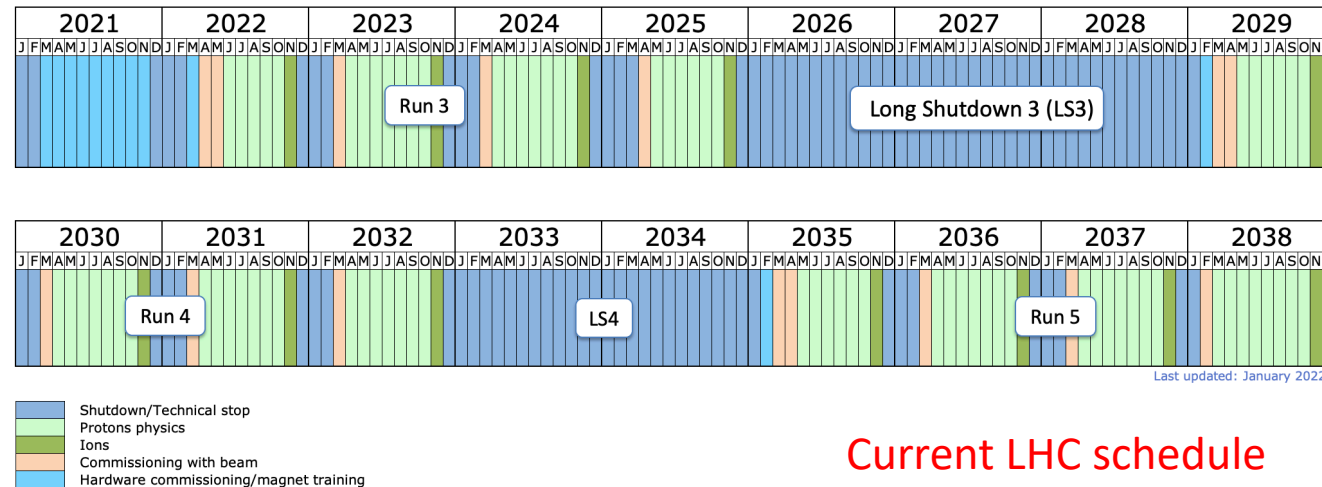
<https://cds.cern.ch/record/2719928?ln=en>



- Installation ~2028
- Direct costs ~12 MCHF

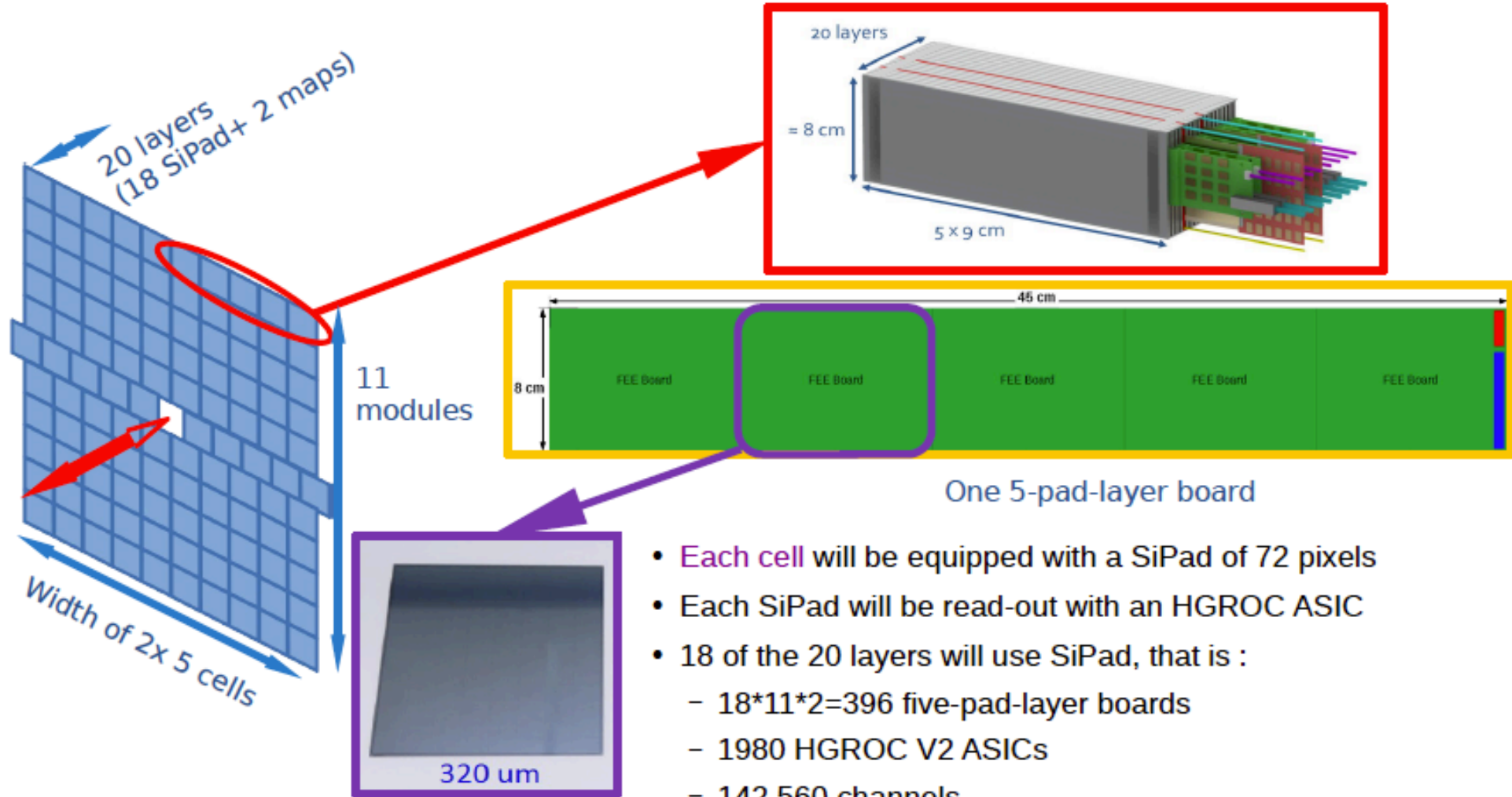
ALICE-PL Run4 upgrade grant – IFJ/AGH tasks

- FIT FEE upgrade – analog part and firmware (AGH)
- Mechanical and cooling system for FoCal-E (IFJ PAN)
- FoCal FEE readout unit and trigger?



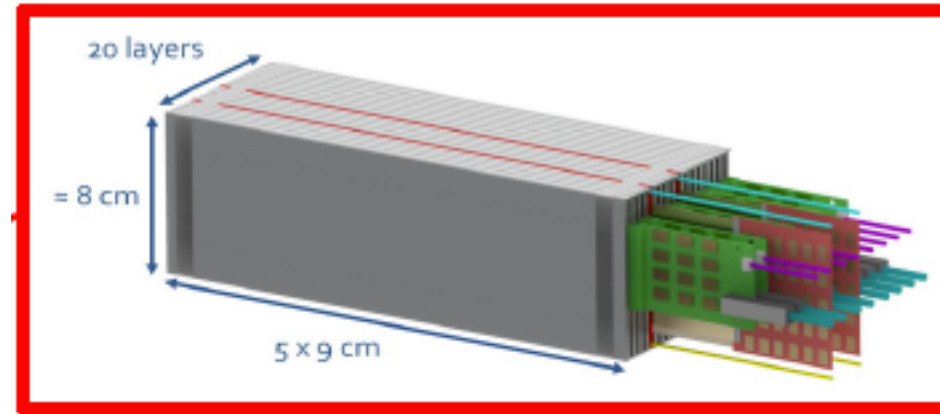
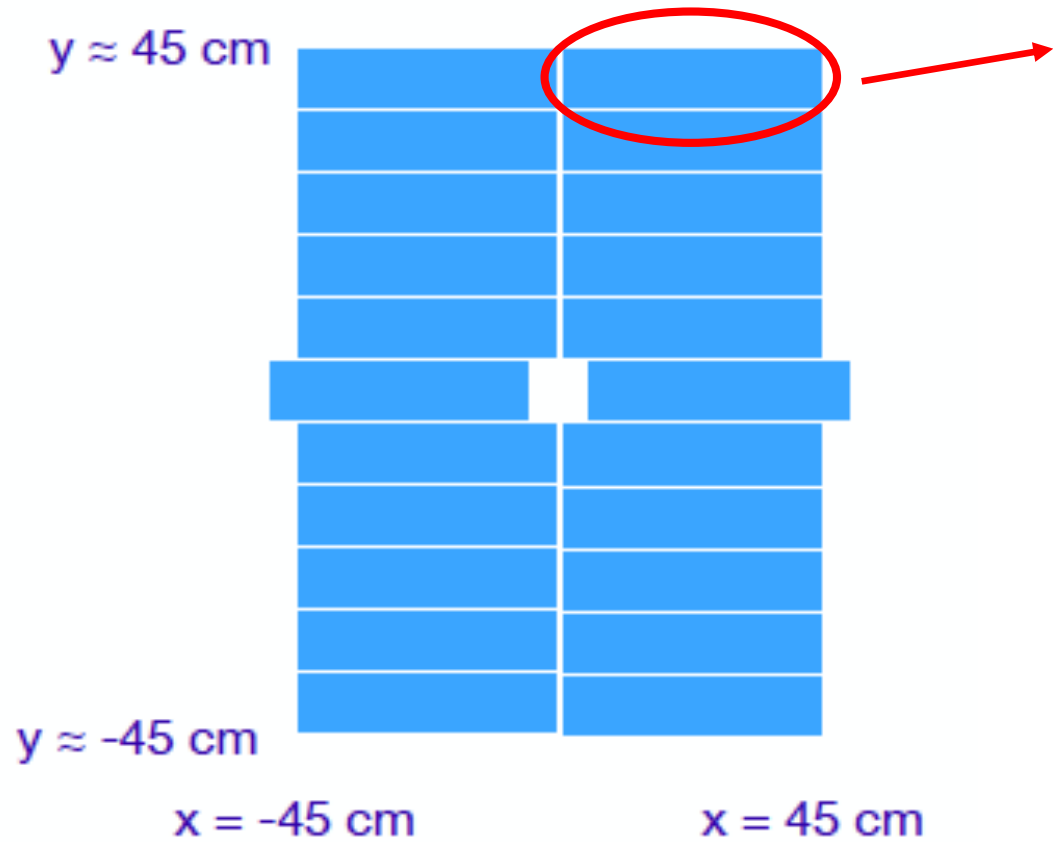
Backup

FoCal-E (SiPad layers)



- Each cell will be equipped with a SiPad of 72 pixels
- Each SiPad will be read-out with an HGROC ASIC
- 18 of the 20 layers will use SiPad, that is :
 - $18 \cdot 11 \cdot 2 = 396$ five-pad-layer boards
 - 1980 HGROC V2 ASICs
 - 142,560 channels

FoCal-E (MAPS)

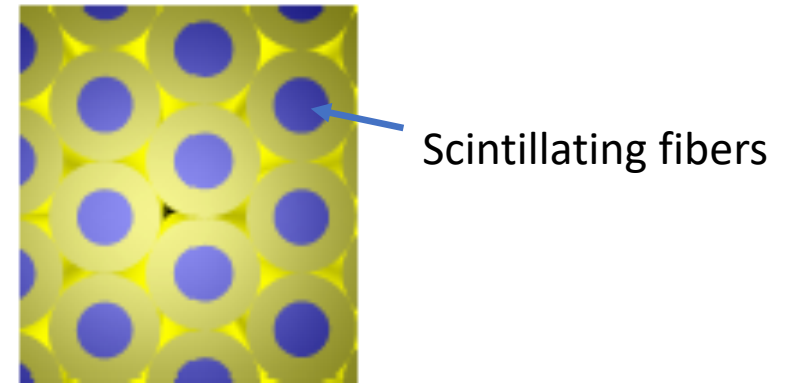
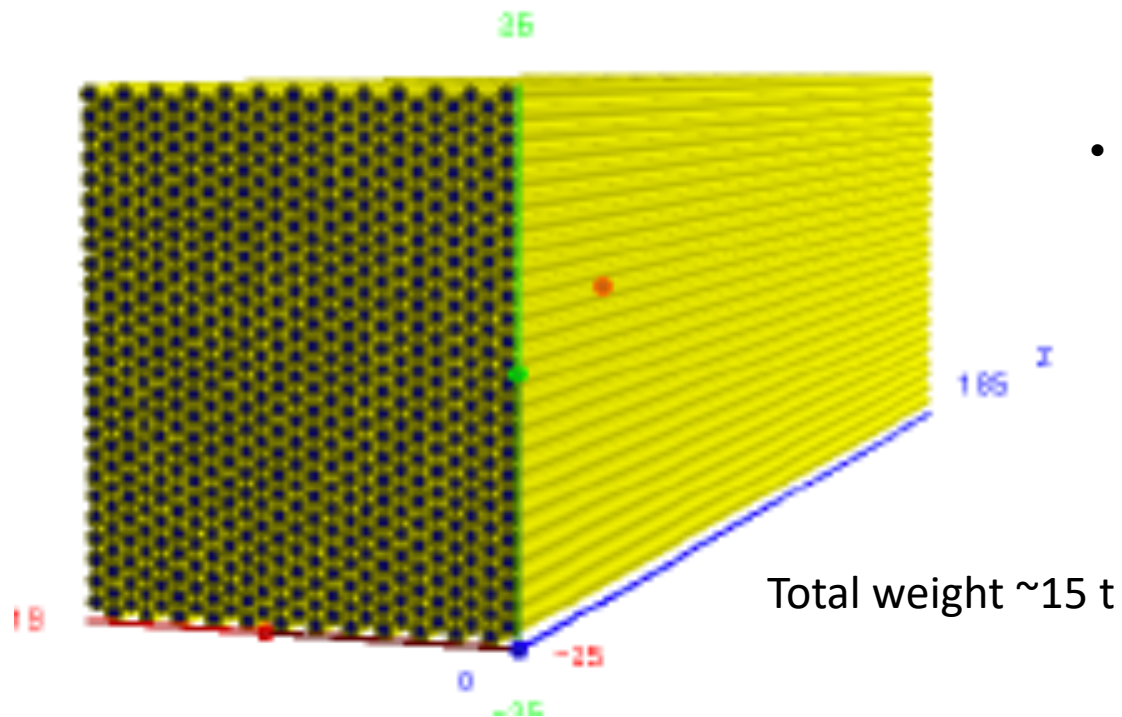


- ALPIDE Monolithic active pixel sensors (MAPS)
- ALPIDE chip: 15 mm \times 30 mm (512 \times 1024 pixels)

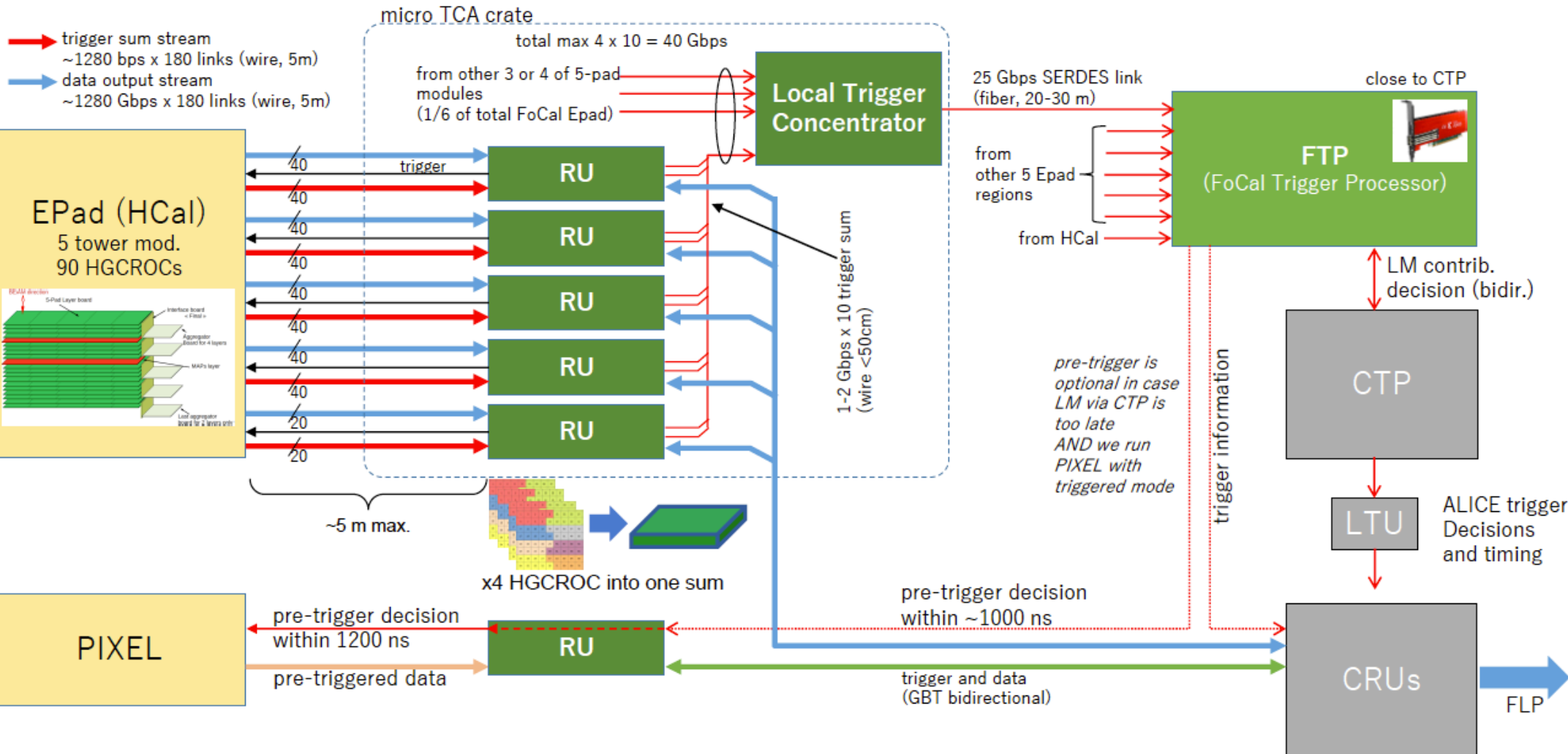
<https://doi.org/10.1016/j.nima.2016.05.016>

FoCal-H

- Build calorimeter out of commercially available Cu capillary tubes with scintillating fibers
- If we choose capillary tubes of OD 2.0mm ID 1.1mm 110cm long, each tube weighs 91.2 g, so $5 \times 5 \times 110 \text{ cm}^3$ prototype (625*) is 57kg
- Readout with SiPM: available sizes 1x1, 3x3, 4x4, 6x6 mm



FoCal trigger scheme

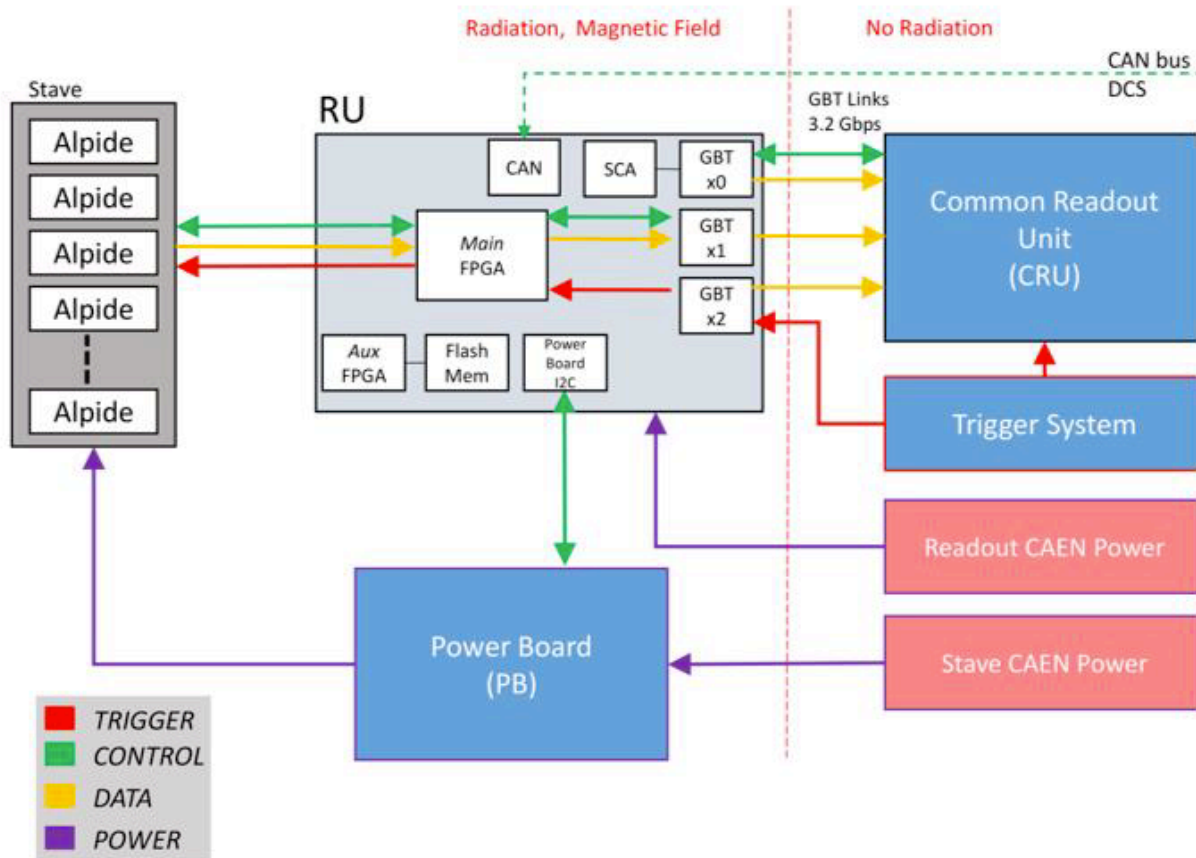


ITS Readout Unit



ALICE

Powerboard Interface



Outdated in 2028

