STARE

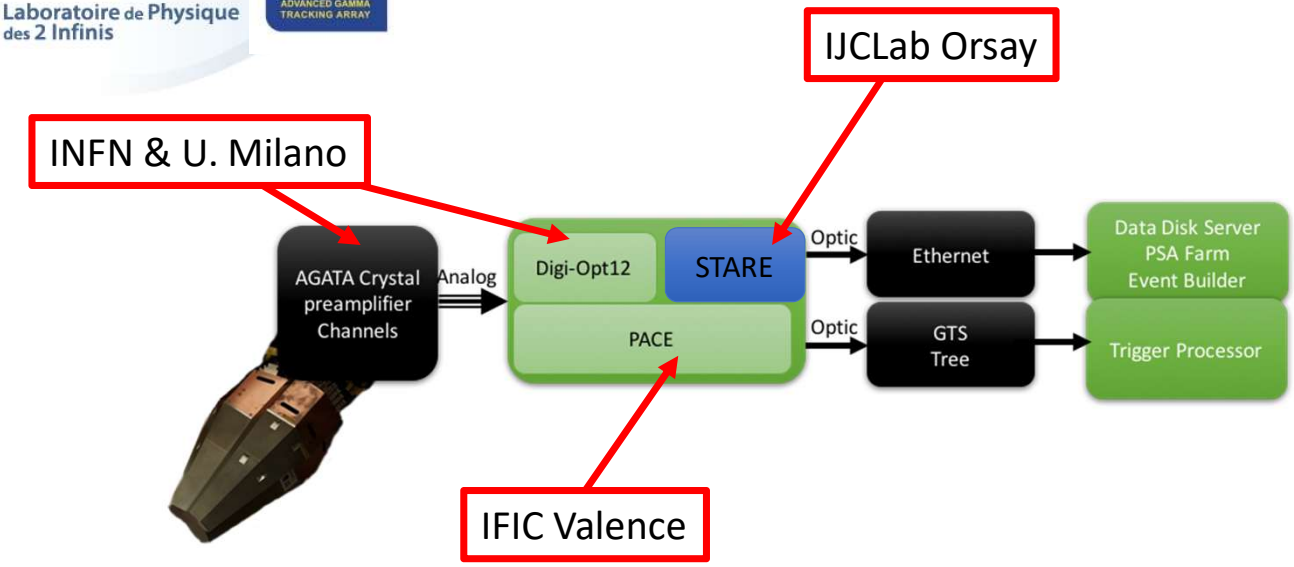
(Serial Transfer And Readout over Ethernet)

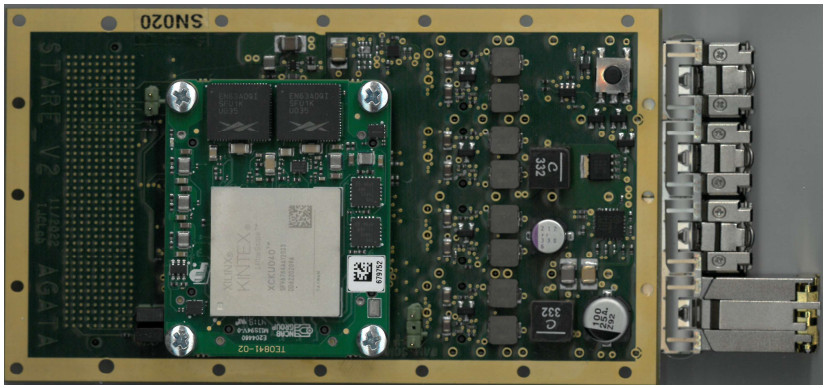
AGATA Project

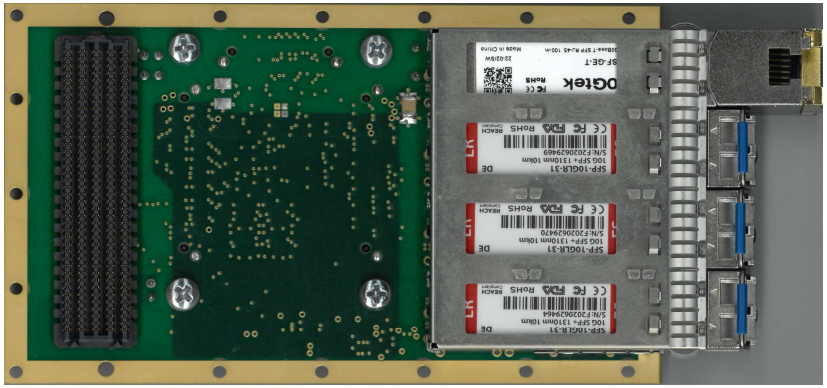
Plan

- ✓ STARE for AGATA
- ✓ STARE Firmware
- ✓ STARE Production
- ✓ AGATA simulator bay using STARE

STARE for AGATA : readout UDP 10Gbps





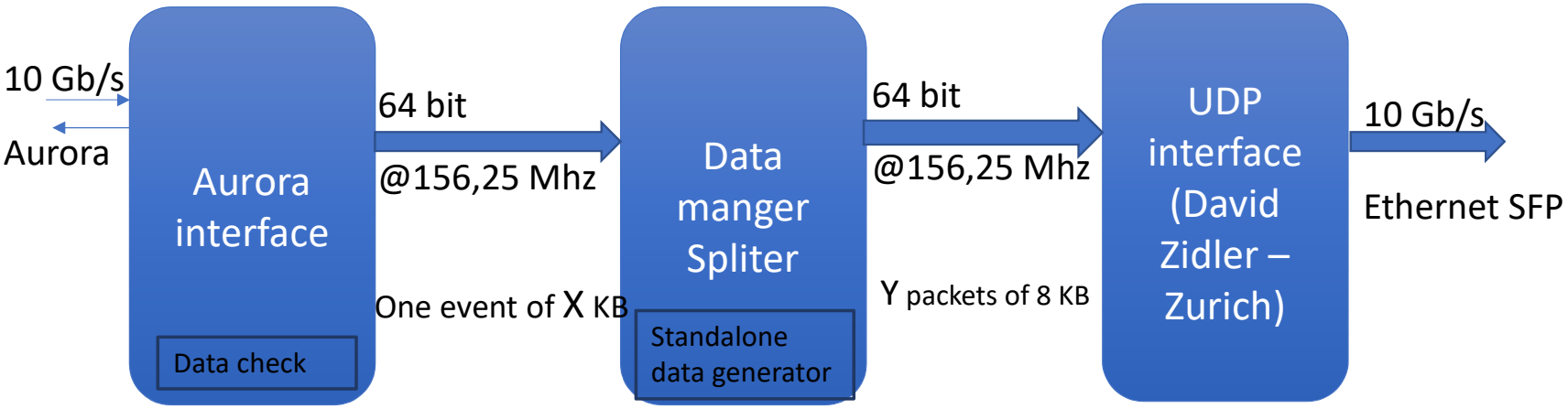


Input data rate from pre-processing : 4 x 10 Gbps serial (AURORA)
Network Bandwidth up to 4 x 10 Gbp (UDP)

FMC vita 57.2
Spare LVDS I/O with the pre-processing
Full clock management inside the SOM and the FMC carrier.

1 Gbps IPBus for slow control (use 1*10Gbps network link)

Data processing (1 * 10Gb/s)

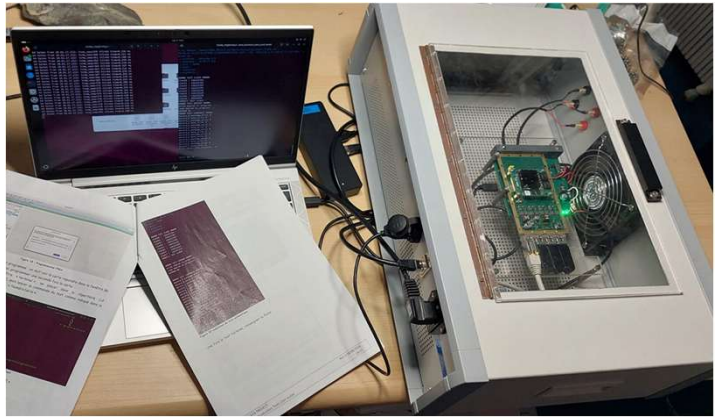


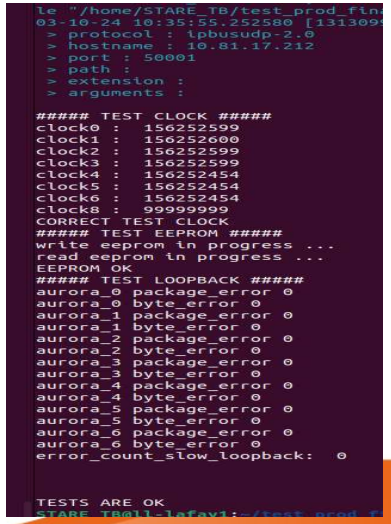
_ Slow control
_ EEPROM
_ Clock manager
_ Spare LVDS link

Generators available (compute by Ipbus, independant, rate ajustable, random trigger) :
_ byteANDpackage_counter : data can be checked by SQM ; size of event 8 Bytes -> 256 MBytes
_ 2 Rams of 8KB : can be fill by Ipbus

Production

- Manufacturer : STAE (Savigny-sur-Orges)
- 140 Stare produced (10 Pre-production)
  - 64 (+10 Pre-production) delivered at Orsay (+1 not_OK)
  - 61 ready to be delivered (+ 4 not_OK)
- testbench and test procedure developped at IJCLab : board is validated by the manufacturer before delivery
  - _ shortcut test
  - _ STARE-interface board
    - power supply (LED indicator)
    - power consumption measurement
    - loopback FMC link
  - _ optical loopback (SFP)
  - _ dedicated computer, control by Ipbus, log file
  - _ configure MAC address





AGATA crystal simulator using STARE

- A new Bay to be designed to house all the STARE facilities
- New PACE crate with cooling, Fans, PS mechanics to fix the backplane and up to 38 channels. Plus 3 Stare links
- 12 links Stare bench
- 100 Gbps switches
- Power switch
- 4 DAQ servers up to 8 STARE emulators
- Cristal emulator (pulser + faninfanout + single_diff)
- Total of 23 links @ 10 Gbps each (230 Gbps).
- 100 Gpbs fibre between 104 and 206 (200 Gbps as an upgrade)

Power Switch for remote control

100 Gbps Optical Switche

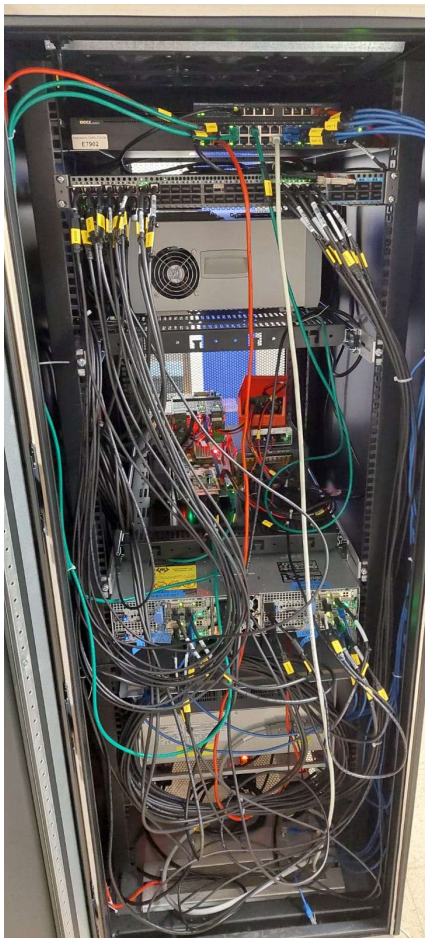
STARE 12 links

PACE Test Bench (in a crate *)

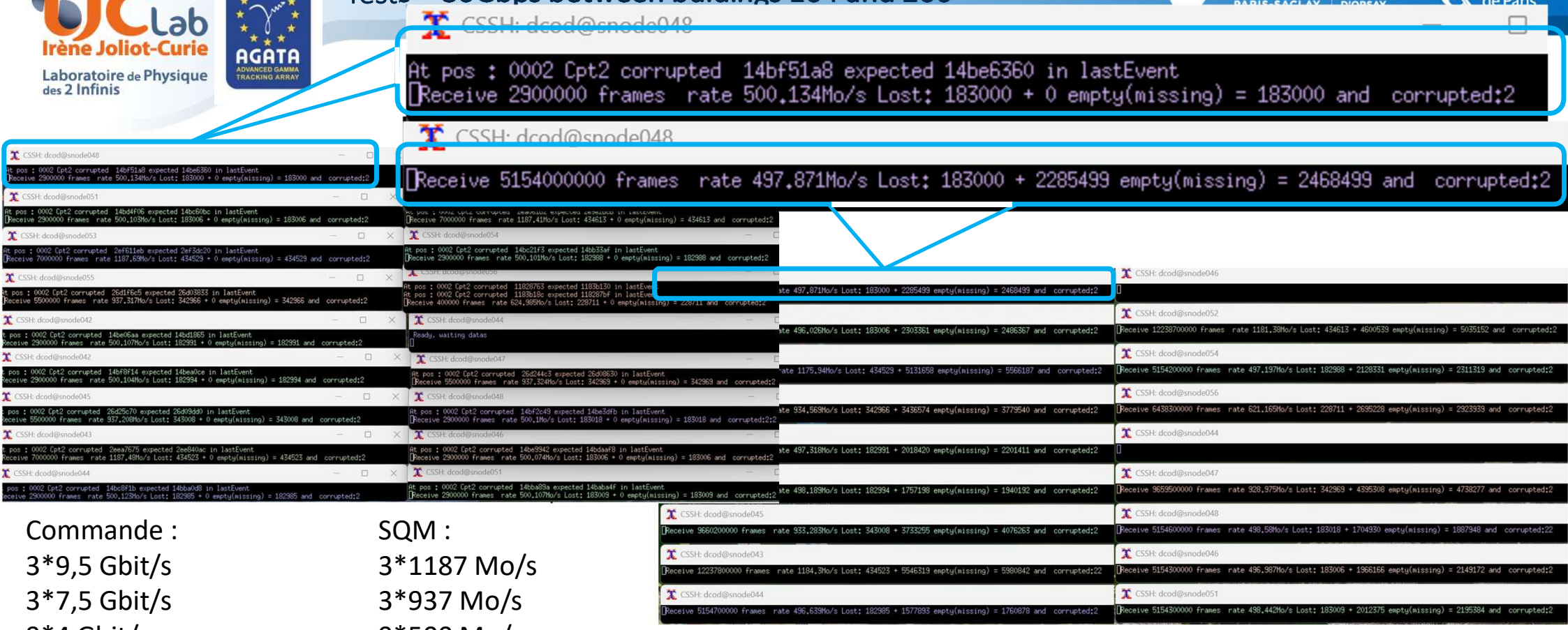
Pizza boxes (4 DAQ servers C6400)

Cristal emulator *

* Missing some parts



Tests – 80Gbps between buldings 104 and 206



Commande :
3*9,5 Gbit/s
3*7,5 Gbit/s
9*4 Gbit/s
1*5 Gbit/s
Total = 80 Gbit/s

SQM :
3*1187 Mo/s
3*937 Mo/s
9*500 Mo/s
1*625 Mo/s
9997 Mo/s (=79,98 Gbit/s)

Après 24h aucune loss, aucune corrupted
À Vérifier : les empty (missing) sont causés par l'encombrement du réseau ?

MERCI