Towards a common system

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The tower of Babel

Outline

- Cosmic Ray Test
- Scanning Stations
- Plans

CRT

- **Actual setup**:
  - CompactPCI crate with CPU on board: run the DAQ
  - Ancillary detectors: CAMAC TDCs connected via USB with the CPCI.
  - H8500: BLAB2/3 connected via optical link with the CPCI (custom transceiver needed - Gary's Board with 4 optical links)
- Question:
  - We plan to use 12 MaPMT with BLAB3. Do we have enough transceivers to read 12 H8500?
    - 1 Transceiver = 4 BLAB2/3 = 8 H8500

BLAB2/3

ADC
ADC
ADC
XILINX

C-PCI

Optical

USB

CAMAC
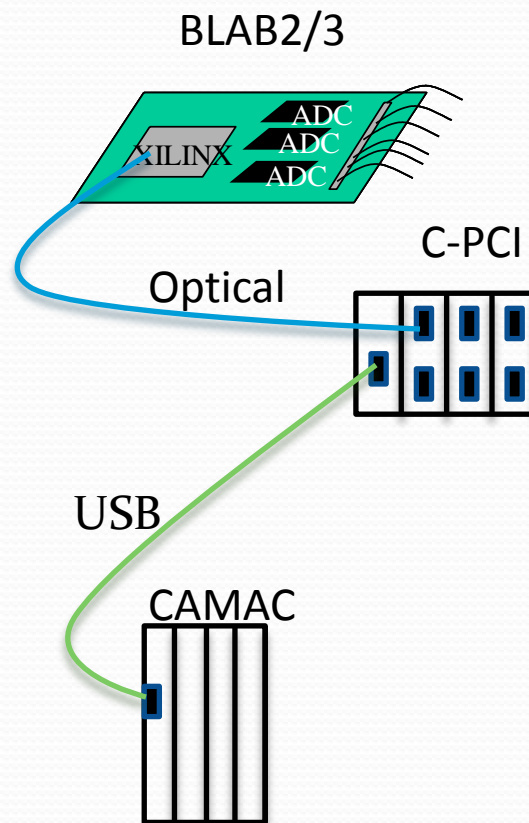
CRT in the near future

- The plan is to have a CRT with 12 H8500 readout with BLAB3 boards + 1 H8500 for analog test + 11 H8500 readout with LAL boards (LAL-B)

- Option A: One single DAQ system
  - Pro: Simple, No Synchronization needed
  - Against: Develop and test a communication protocol between LAL-B and CompactPCI

- Option B: Two DAQ system
  - Pro: simple LAL-B readout (?)
  - Against: Synchronization needed

CRT in the near future: Opt A

- The main problem for this option is to connect the LAL-B to the CompactPCI
    1. Direct optical link through Gary's transceiver.
        - Pro: Simple, Small changes in DAQ software
        - Against: New firmware, Add transceiver boards in the CompactPCI
            - 1Transceiver = 4 LAL-B = 4 H8500

    2. Direct link through USB(Ethernet) Cables
        - Pro: Simple, Small changes in DAQ system
        - Against: Add USB/Ethernet ports in the CompactPCI, Long USB/Ethernet cables
            - 1USB Blade = 8 LAL-B = 8 H8500
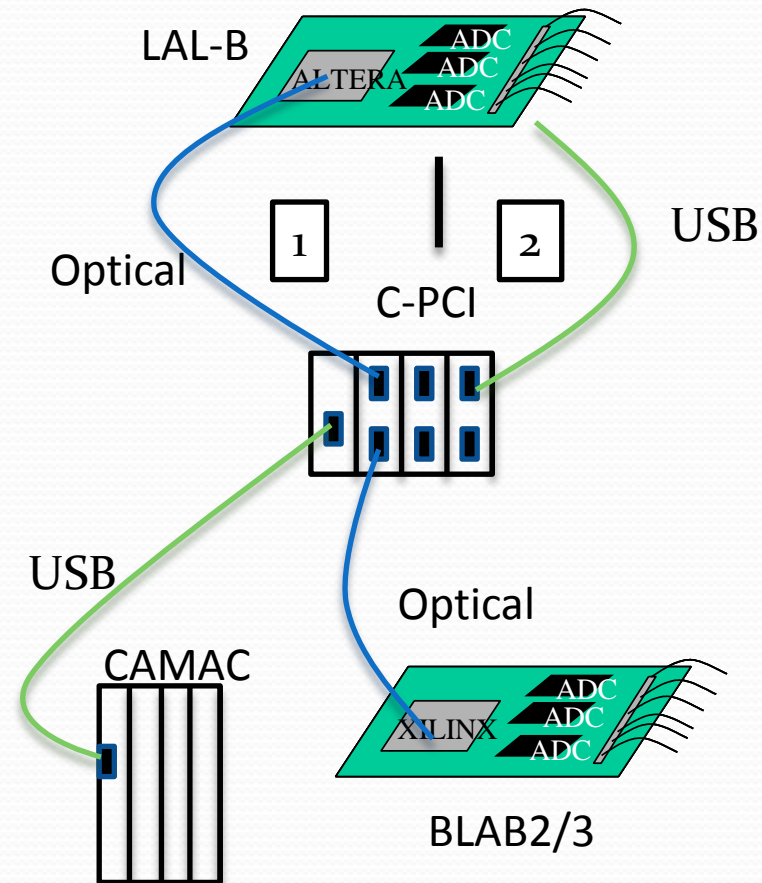   - 1Ethernet Blade = 12 LAL-B = 12H8500

    NETernity™ **CP981RC** 12 Ethernet Ports (2kEuro)
    http://defense.ge-ip.com/products/3348

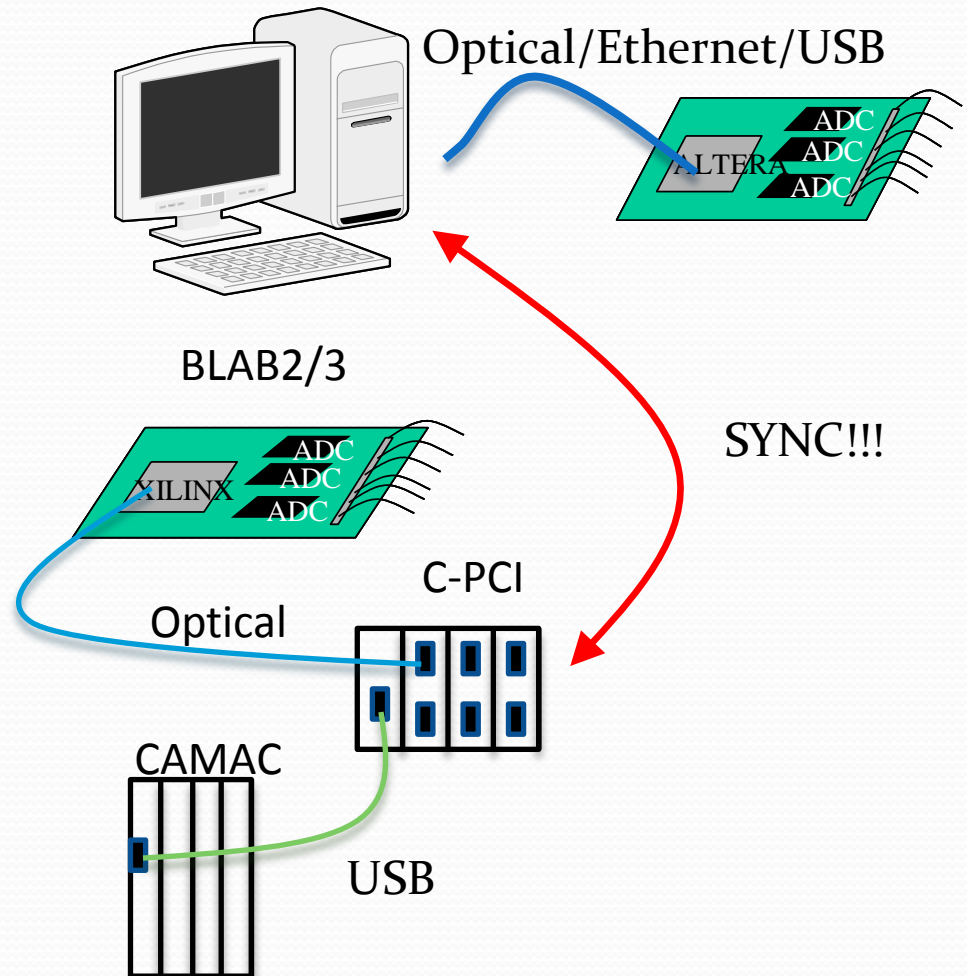   AdLink **PMC-8676 (x2) + cpci-8602** 8 USB Ports (1kEuro)
    http://www.adlinktech.com/PD/web/PD_detail.php?cKind=&pid=382&seq=&id=&sid=
    http://www.adlinktech.com/PD/web/PD_detail.php?cKind=&pid=290&seq=&id=&sid

CRT in the near future: Opt B

- The main problem with this solution is that we need to synchronize two different DAQ systems. The advantage is that we can used different method to readout LAL-B.

- I don't know how the DAQ works but I think that in order to properly synchronize the two systems we will need a common TRIGGER and possibly a VETO signal

Optical/Ethernet/USB

ADC
ADC
ADC
ALTERA

BLAB2/3

ADC
ADC
ADC
XILINX

SYNC!!!

C-PCI

Optical

CAMAC

USB

Summary

OPT A: 1 DAQ SYSTEM		Comment
BLAB3	Gary's Transceiver	**Already working** ☺
CAMAC	USB	**Already working** ☺
LAL-B	Gary's Transceiver	**New Firmware** ☹
		More Boards in the CompactPCI 😐
	USB/Ethernet	**More Boards in the CompactPCI** 😐 **Long Cables (noise, signal degradetion, etc...)**

| OPT B: 2 DAQ SYSTEM		Comment
BLAB3	Gary's Transceiver	**Already working** ☺
CAMAC	USB	**Already working** ☺
LAL-B	USB/Ethernet/Optical	**Synchronization** ☹

Scanning Station @ SLAC

- **Actual setup**:
  - CompactPCI crate with CPU on board: run the DAQ
  - Windows system to control the moving stage
  - CAMAC TDCs connected via USB with the CPCI.
  - H8500: BLAB2/3 connected via optical link with the CPCI (custom transceiver needed - Gary Board)
- **Future setup**
  - LAL-B connected to CPCI with optical link via Gary Board
  - LAL-B connected to CPCI with USB/Ethernet

		Comment
BLAB3	Gary Transceiver	**Already working** ☺
CAMAC	USB	**Already working** ☺
Motion	Windows PC	**Already working** ☺
LAL-B	Gary Transceiver	**New Firmware** ☹
	USB/Ethernet	**No major issue (just 1 H8500)**

Scanning Stations in other labs

- At the moment all the others scanning stations are using different kind of setups
  - VME CAEN Waveform digitizer
  - VME CAEN TDC and ADC
- For the "new" scanning stations we can try different solutions among the ones proposed by Christophe
  - Optical link with A2818 CAEN board
  - Ethernet link
  - USB link

Optical/Ethernet/USB

ADC
ADC
ADC
ALTERA
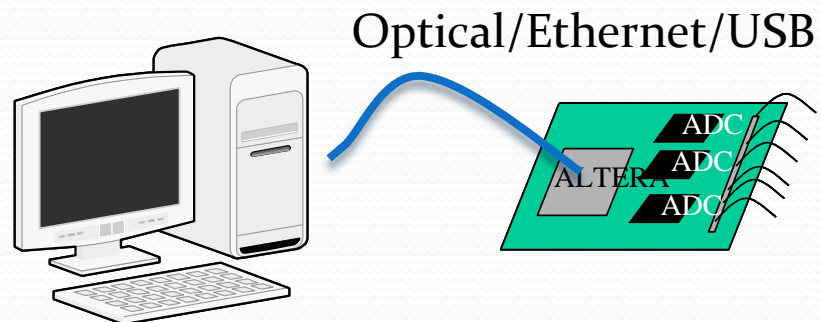
Bari plans

- We are in contact with Matt Andrew to understand if we can join the efforts to produce new transceiver boards.
  - We have investigated the possibility to produce 10 boards by a vendor near Bari: 10kEuro for 10 boards
- I'm in contact with Kurtis Nishimura to learn more on the DAQ system and to check if there is the possibility to readout LAL-B via USB or Ethernet with commercial C-PCI boards
- In any case we think it's better to have a running CompactPCI system in Bari in order to study different way to readout the LAL-B while keeping full compatibility with CRT DAQ system