LP TPC DAQ

Present understanding and plan

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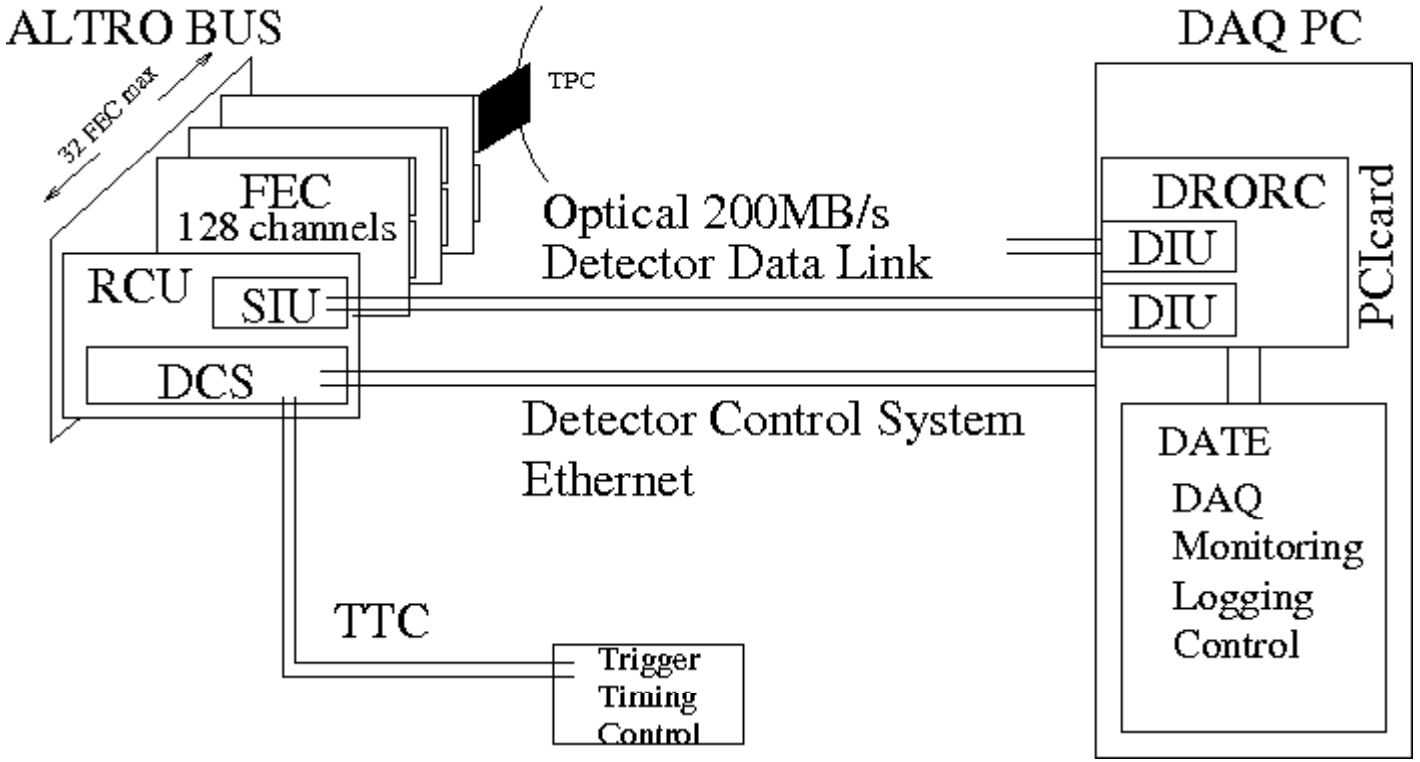
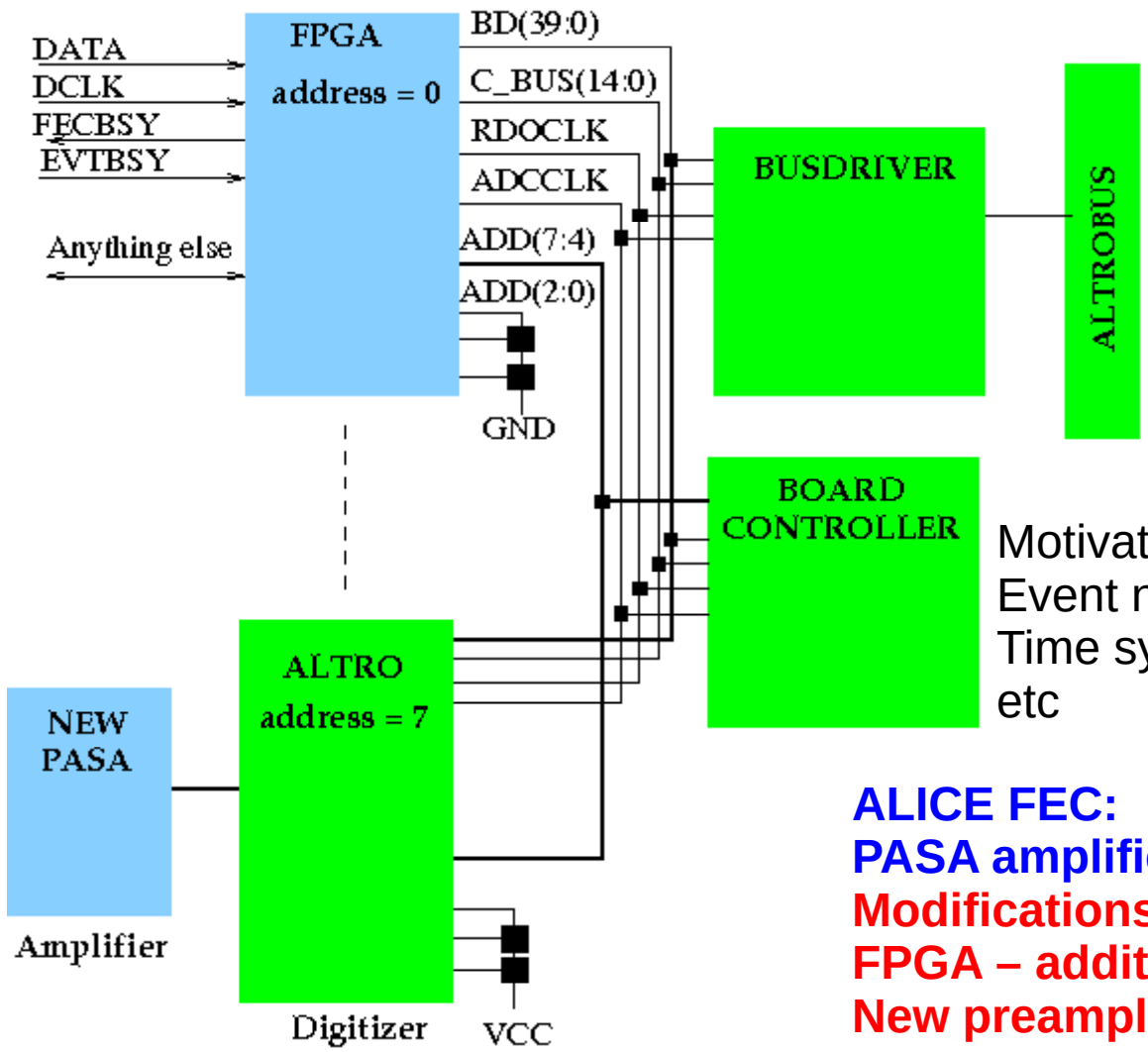
Based on the ALICE TPC readout

Front End Card (FEC), modified for new amplifier
Readout Control Unit (RCU), Source Interface Unit (SIU)
ReadOut Receiver Card (DRORC), Destination Interface Unit (DIU)
ALICE Data Acquisition and Test Environment (DATE)
Trigger Timing Control (TTC)



EUDET: 1 RCU
10000 ch: 4 RCU
possible to distribute 1 RCU system

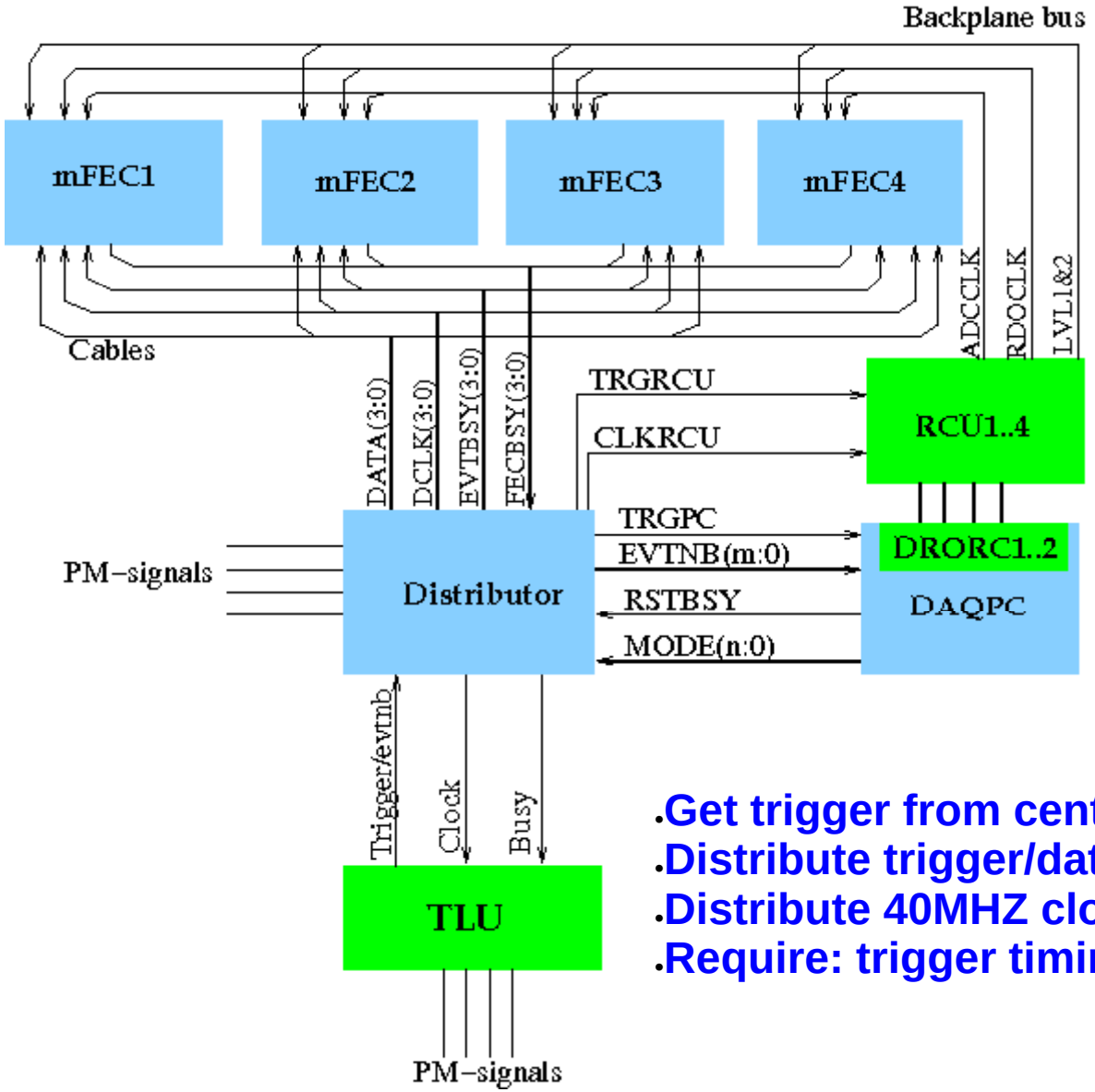
Modified Front End Card (mFEC)



Motivations:
Event number into data stream
Time synchroniztion with other systems
etc

ALICE FEC:
PASA amplifier & ALTRO readout chip
Modifications:
FPGA – additional data readout
New preamplifier

Proposed Trigger Timing Control

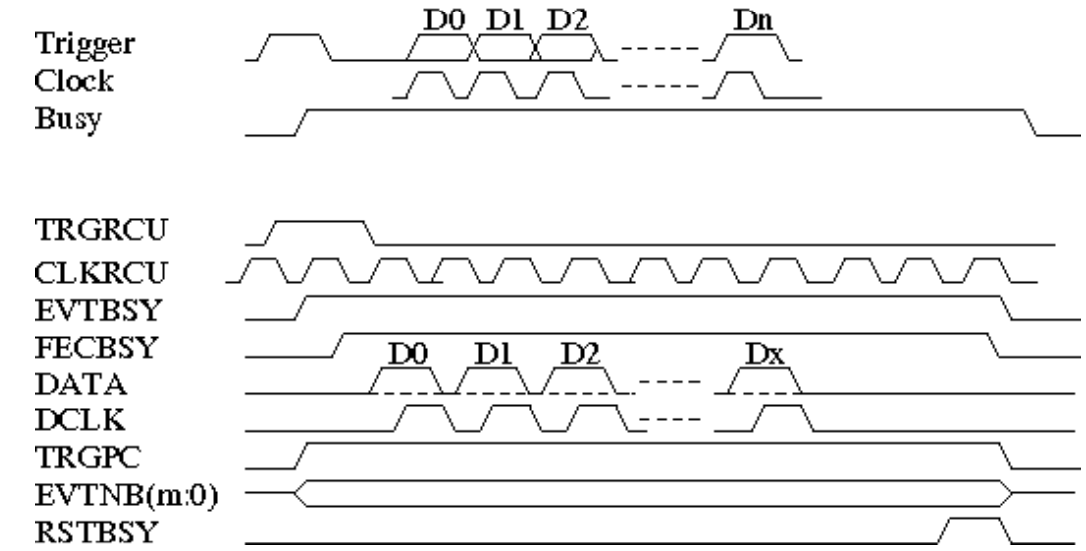


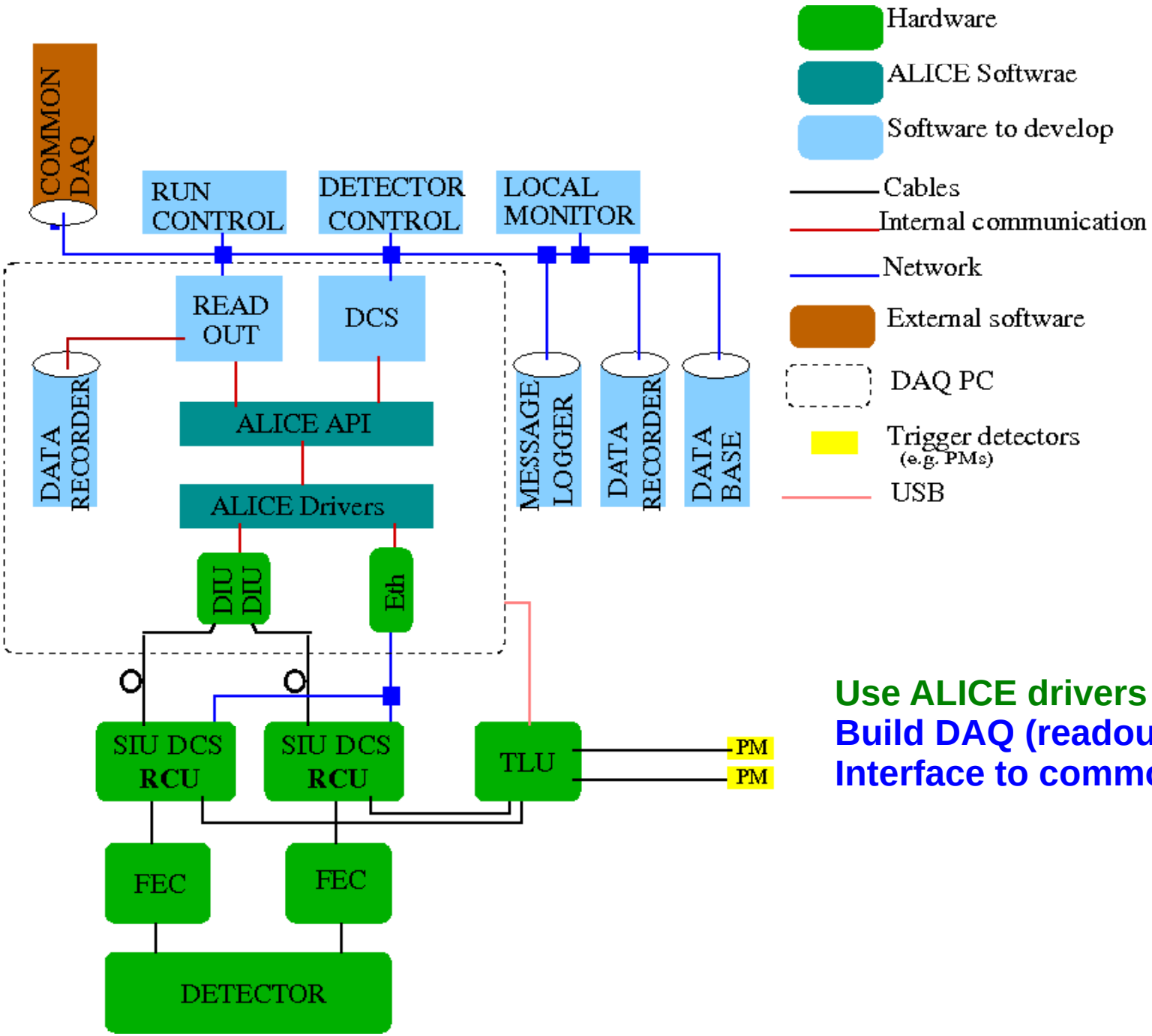
- Get trigger from central Trigger Logic Unit
- Distribute trigger/data to mFEC & RCUs
- Distribute 40MHZ clock to RCUs
- Require: trigger timing accuracy < 1ns

Trigger Timing

TLU

Distributor





Use ALICE drivers and APIs as is
Build DAQ (readout/control) on top
Interface to common DAQ

Tasks

Electronics – hardware: Lund
Electronics – firmware: Brussels(?)
DAQ – readout: Lund
DAQ – LCIO data format: Bonn
DAQ – common DAQ interface: Bonn
DAQ – local control/user interface: Lund(?)

Webpage:
http://www.hep.lu.se/eudet/

SUMMARY

- **Based on the ALICE TPC DAQ**
- **Modify the FEC for the new amplifier**
- **Modify the FEC for additonal data**
- **Need to distribute trigger to RCU and trigger number to mFEC**
- **Need modification to the RCUs for clock/trigger (done in ALICE tests)**
- **Use standard DRORC and ALICE API/drivers for the DRORC**
- **Build our own DAQ on top**
- **Interface to common DAQ**