

EUDET JRA1 Meeting Munich October 2006

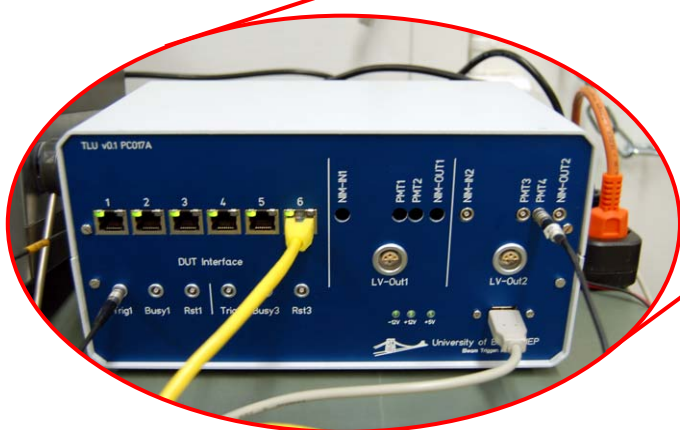
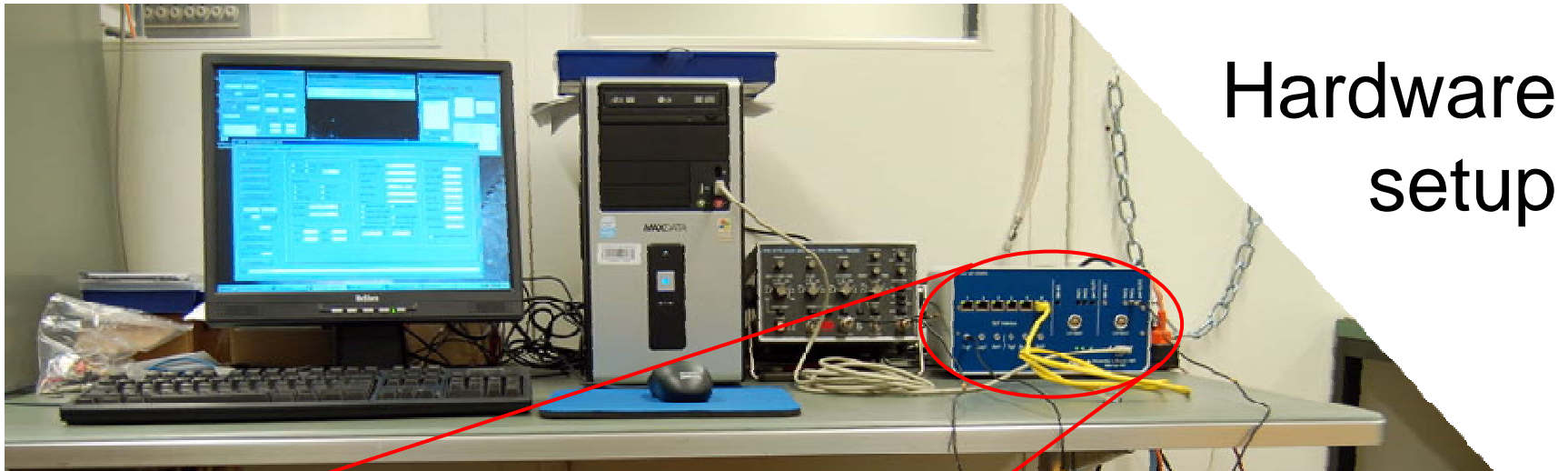


DAQ Status
Emlyn Corrin
DPNC Geneva

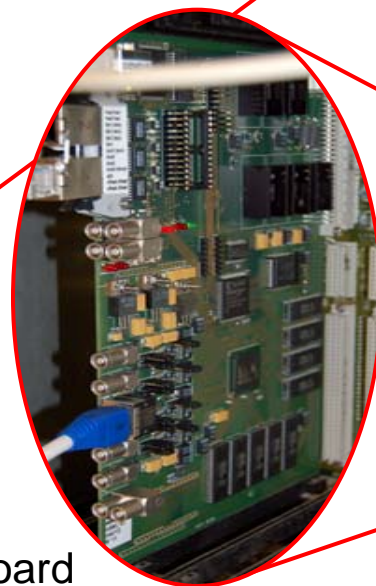
Outline

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- DAQ overview
- Software sources
 - Bonn
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- Root script
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- Summary

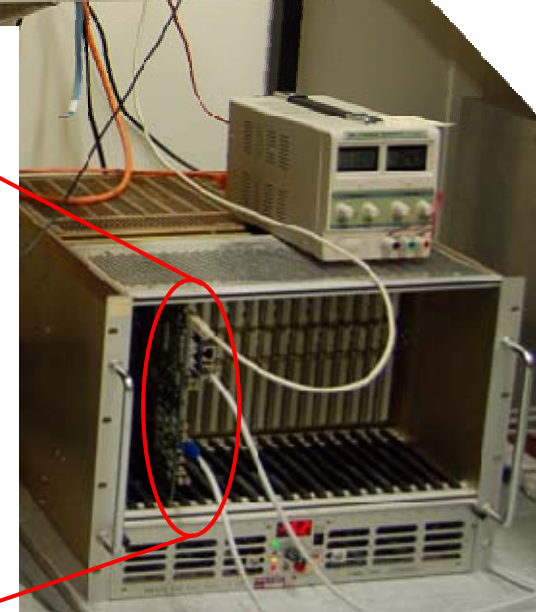
Hardware setup



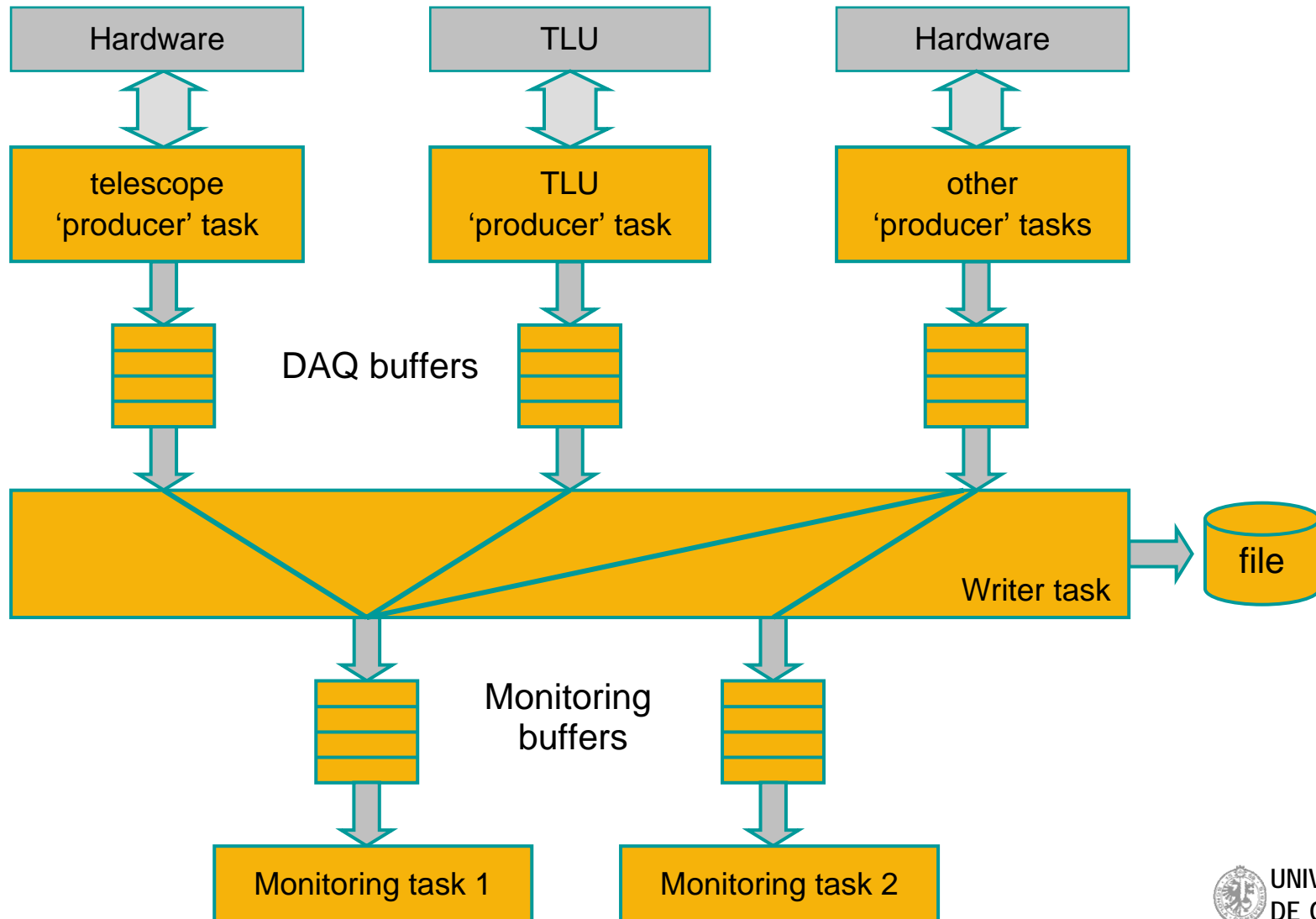
Trigger Logic Unit (TLU)



Strasbourg Board



DAQ overview



Software sources

Bonn code:

- SharedBuffer, Event
- BufferMonitor
- DEPFET_DummyProducer
- FileWriter

Strasbourg code:

- USB Imager demo application

Bristol code:

- TLU library
- Perl script

Bonn code

- Generalized DEPFET_Event into DUT_Event for any pixel-like data.
- Added TLU_Event containing just a timestamp.

Buffer Monitor - 3 buffers found

File Update Rate Spy

Buffer Name	Type	Size	Fill	Total Written
DUT_1	DAQ	0x00100000	0.0%	0x00000000
DUMMY_1	DAQ	0x00010000	0.0%	0x00000000
TLU	DAQ	0x00010000	0.0%	0x00000000

DEPFET Dummy producer

Shared Buffer

Name: DUMMY_1 Size [ints]: 0x010000

Mod.ID: 0x2 Disconnect

Write full events (no zero supr.)

Amplitude

Sigma: 1000 Mean: 5000

Hits per Event

Sigma: 2 Mean: 5

Hit location

Sigma Mean

X: 6 32

Y: 6 64

Start Pause Stop

Stop at 100

Events / sec. 10 Written: ...

FileWriter

File Tools

Event Number: -

Main Control

Show DAQ Buffers

DUT_1
 DUMMY_1
 TLU

OMO Info

Send DAQ Buffers:

OMO Fraction:

Write to File

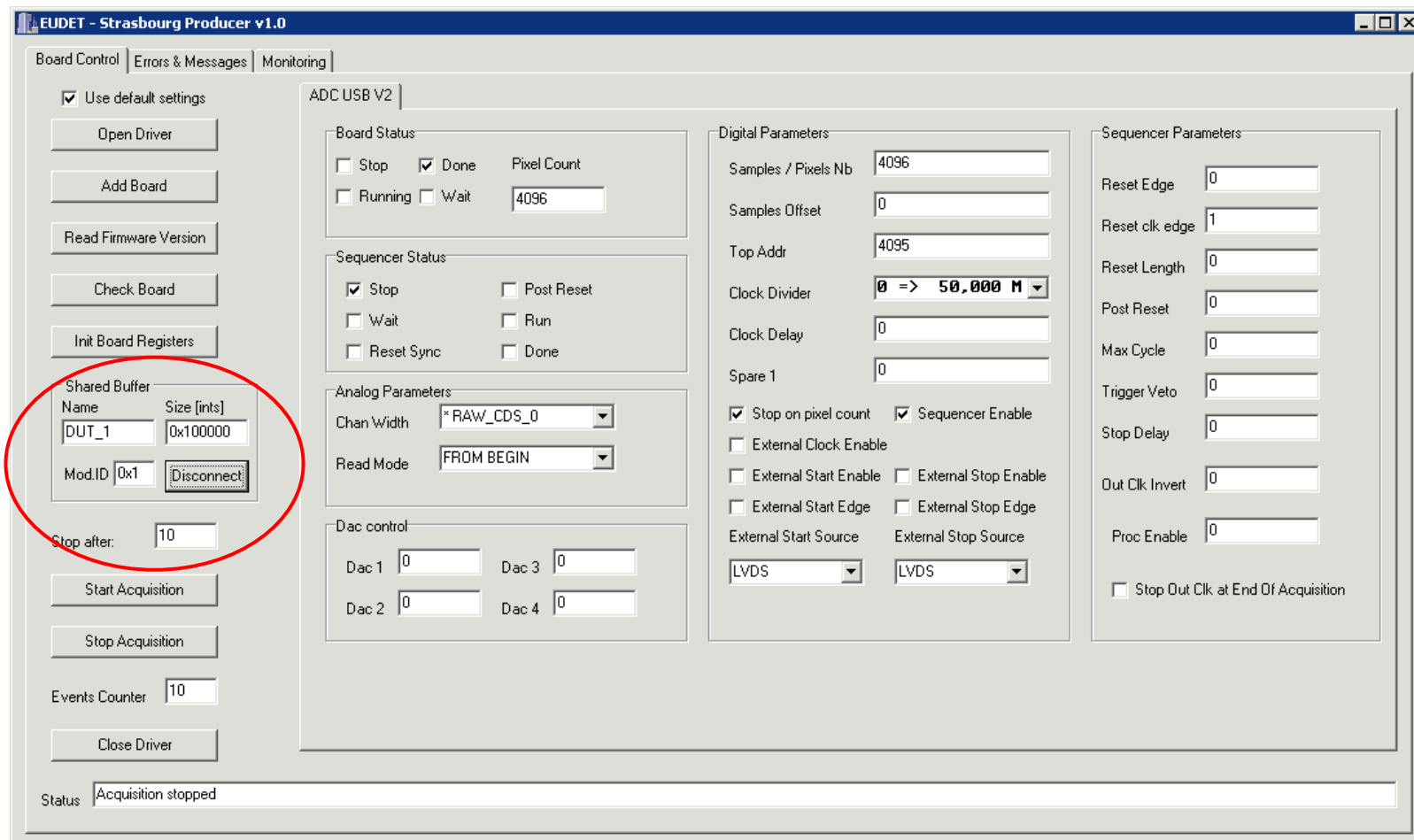
Run number: 2102

Start Stop

File = X:\DAQ_EUDET\Runs

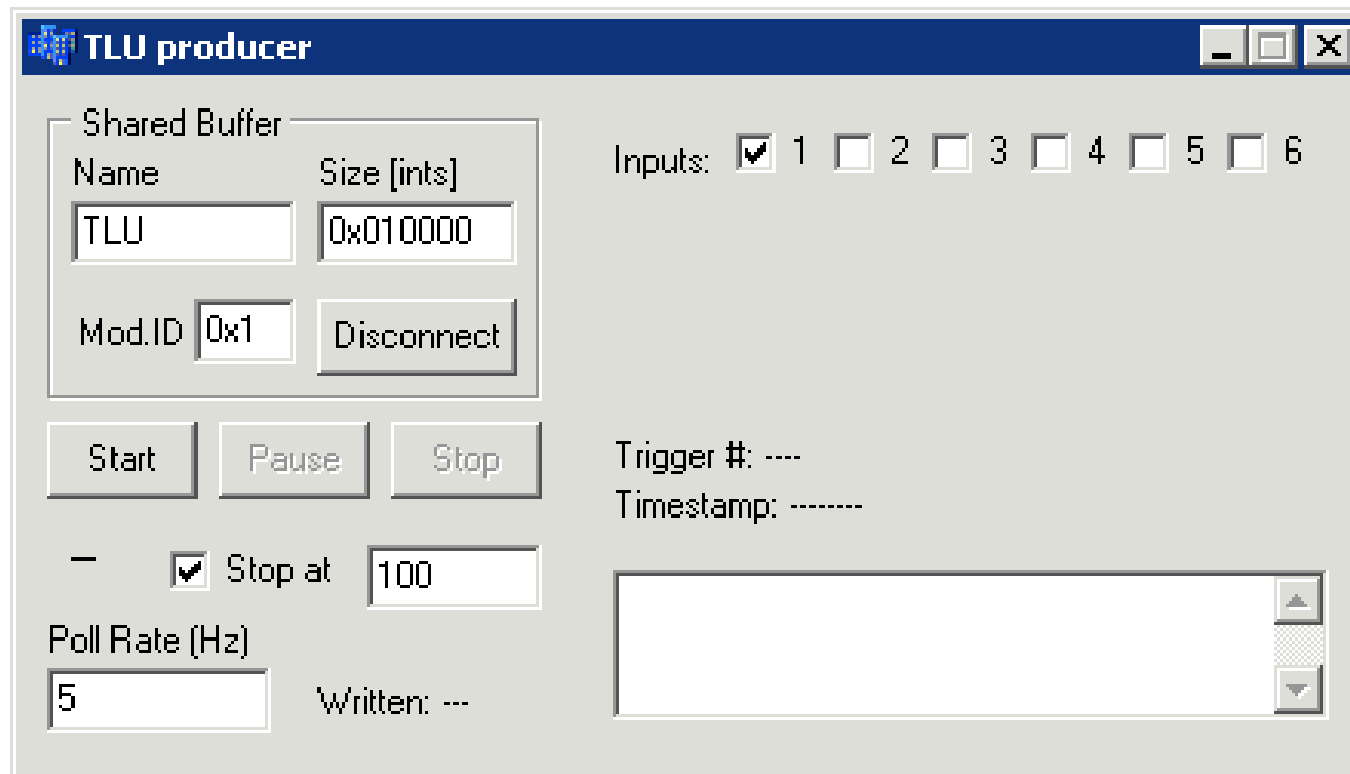
Strasbourg code

- Added DUT_Event and SharedBuffer code to USB Imager demo.
- GUI slightly modified:



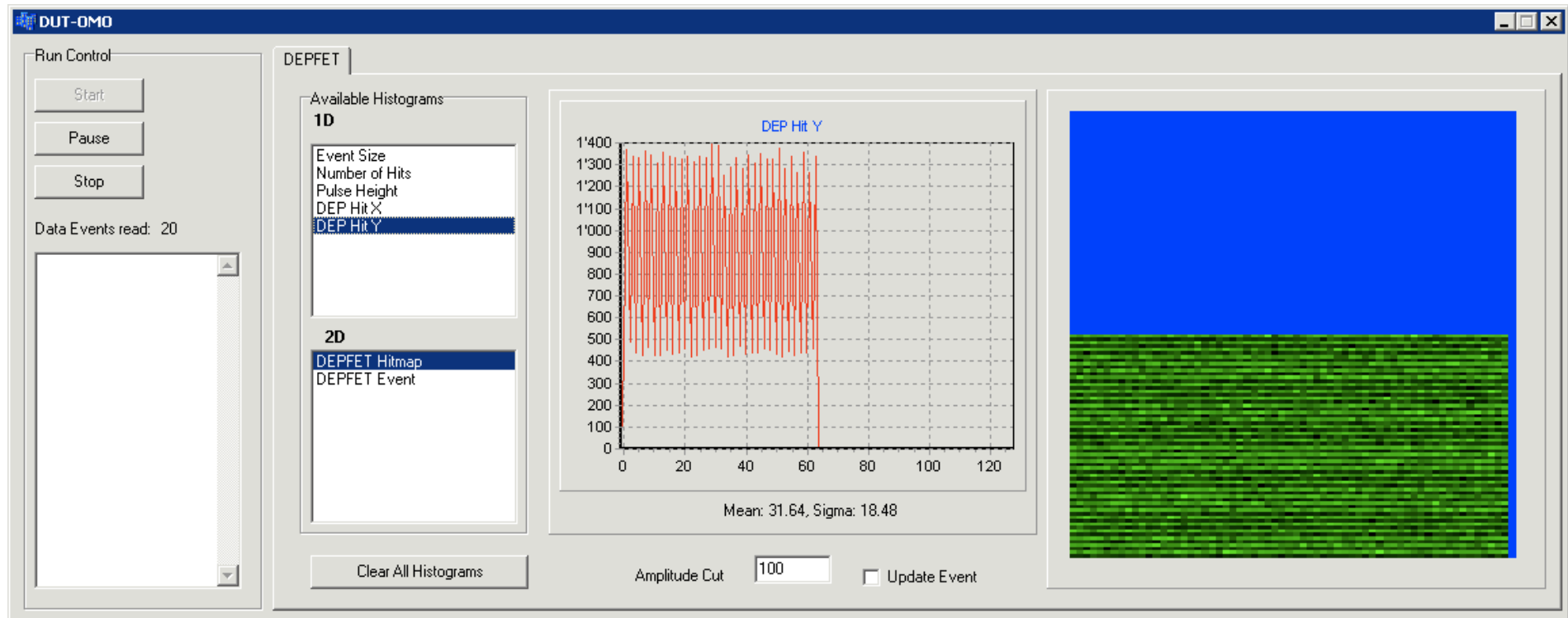
Bristol code

- Converted static library to DLL so it can work with Borland compiler.
- Rewrote Perl script as C++ TLUController class.
- Combined this with TLU_Event and DEPFET_DummyProducer to make TLUProducer:



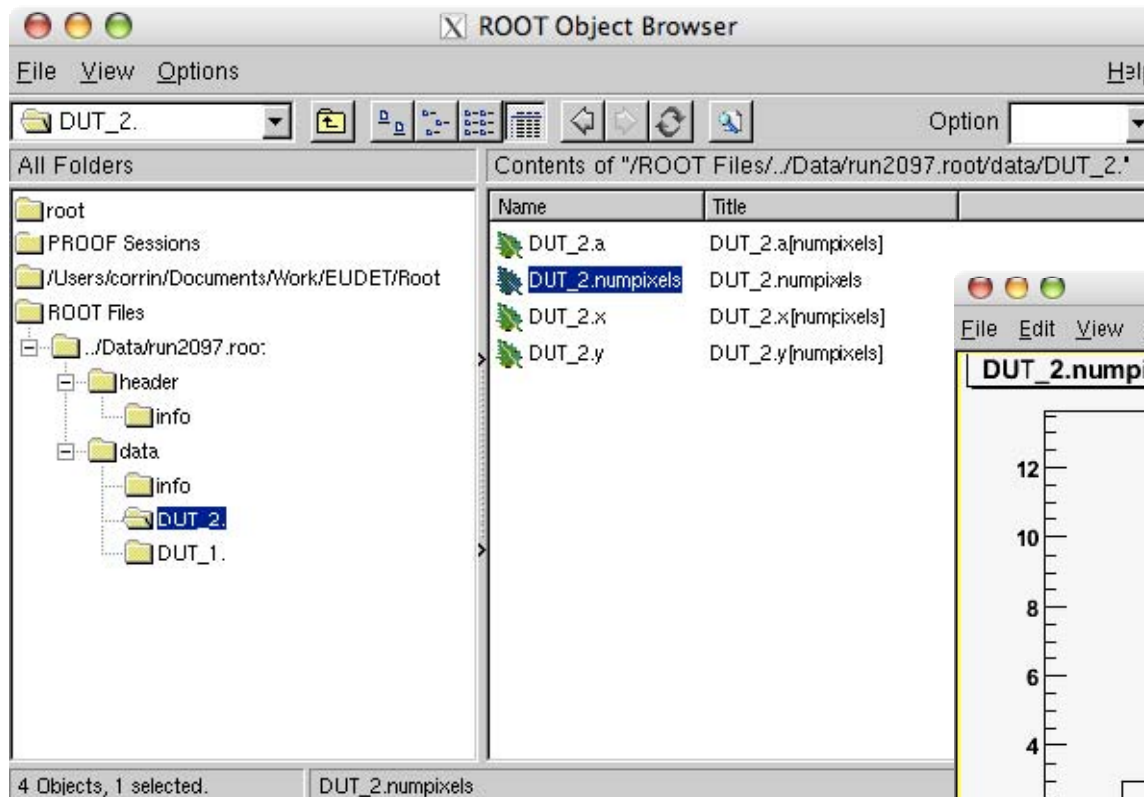
Preliminary Results

- We can send the Strasbourg data to Bonn's DEPFET monitor, but:
 - Detector shapes do not match
 - No detector connected, so we only see ADC noise

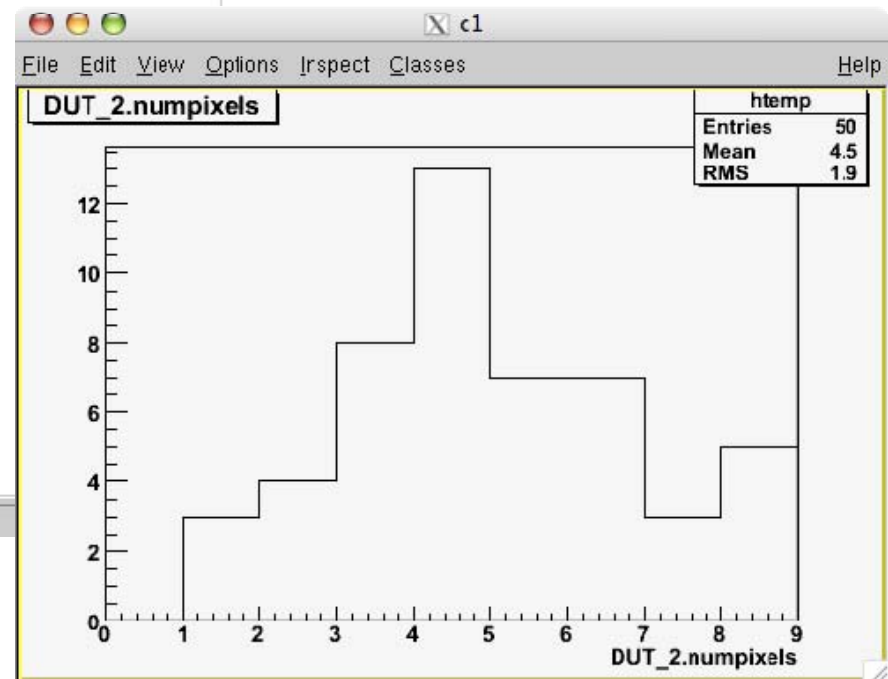


Root

Created script to convert binary files produced by FileWriter into Root files.



Still need to agree on the precise data format.



Next steps

Remaining:

- Send more realistic data, either:
 - get a new board with a detector,
 - or just send test pulses injected externally.
- Trigger the Strasbourg board with the TLU
 - requires firmware update for Strasbourg board.

Then: Version 2 DAQ

- Use ideas from current version, but rewrite code cleanly.
- Use networkable inter-process communication (TCP/IP, SOAP, I2O) so DAQ can be distributed over several computers.
- Write Hit-finder and Track-finder.
- Portable between Windows / Mac OS X / Linux if possible:
 - as much as possible Standard C++
 - portable GUI (Qt, WxWidgets, FLTK)

Summary

- Can have several producers (Dummy, Strasbourg, TLU) all running together.
- Data from all of them combined by FileWriter and written to a binary file.
- This can then be converted to a Root file for easier analysis.
- All working properly, but should be tested with more realistic data.
- Should start work on Version 2 DAQ soon.