DAQ status

6–Sep–2012
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PAB

Nevis/MIT has made the PAB test stand work as needed.

"As needed" means(meant) reading out through Crate controller, taking reasonable-length runs, with modest frame size, and shortening the input trigger pulse to $\sim > 1/64$MHz (17 nsec) in width.

DAB

- Chen delivered the full feedthrough's warm cables, config boards, pre-amps, and (cycle3) ASICS on motherboards while I was at Nevis, mid-August. They connected them up to 10 (not 12) of the 16 FEMs and read out initially through Controller. And then through XMIT: neutrino data, not yet SN.

- Full calibration run performed: set up ASICS (rise time, gain, polarity), ran the pulser on the order of 100 pulses and then just read out the data. Controller is told to force trigger to trigger & simultaneously generates a pulse that puts data on toyTPC capacitors that are read out in the proper frames.

DAB contd

- They read out half the feedthrough at a time since 2 of Chi's ADC boards have a known issue – which he'll fix easily.

- Georgia will show the readout for this at some mtg in near future. Her parser reads up the resulting text files. All 64x12 channels behaved as Chen expected by cursory inspection.

- XMIT readout worked. With some limitations. The dataframe size is some small fraction of the needed 3200 0.5 musec ticks. The DMA chunks are small still.

- No SN data yet. No compression yet.

DAB cont'd 2

- This is our DAB test stand.
- Nevis/BNL will bring this on 8-October.

- Georgia has run in XMIT mode.

- We checked in the early XMIT code and a couple data files into DAQ repository.

- Georgia has since added the binary XMIT data files to the repository.

Now, the DAQ

❑ Have so far reported Nevis's work!

❑ The binary XMIT data file now allows for a very real test of fake data throughput exercises. This is how the data will appear in memory to the SEB processes. It is one step short of a full DMA test. This is my priority in next 4 wks: 10 fake SEB processes shipping events to Assembler.

❑ There is another, slightly more real-lifelike way of doing this with the actual DMA'ing into PCIe card, that involves putting pre-defined data patterns on the ADCs.

- This requires having the crates in hand.
- We may decide, once we have crates in hand, that we'd rather just use the calibration data.

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Readying DAB for full-on Test Stand

Nevis cards go here.

BNL chimney goes here.

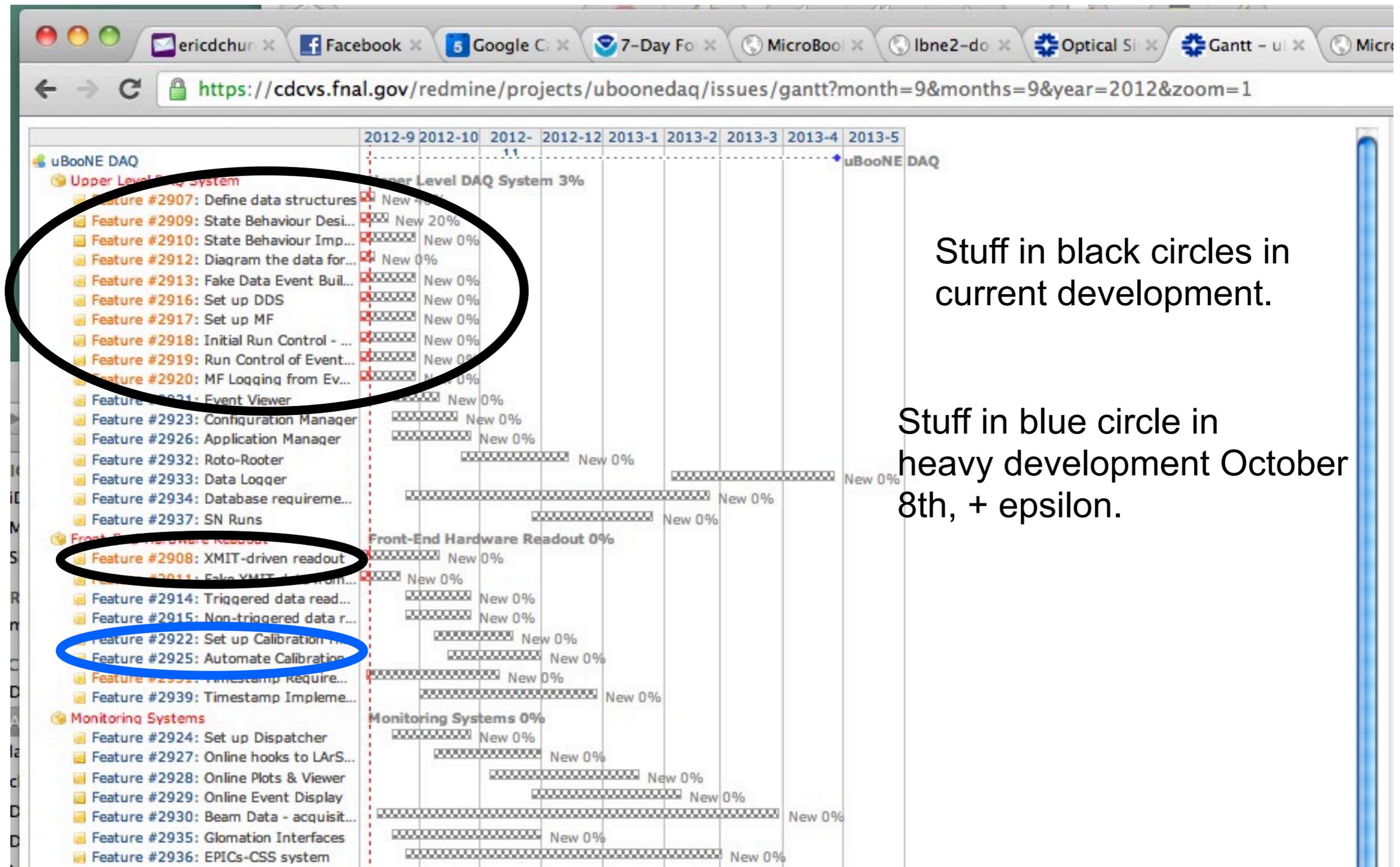# Tasks

- I, Cat, Kurt have created a task list.

- It resides on the uboonedaq redmine wiki.

- It represents a semi-realistic timeline.
  - Nevertheless, it represents a far faster pace than heretofore experienced.
- We have tried to order the work in a sensible sequence and factor out tasks such that people may take ownership of bits and pieces.
- Still a work in progress. Names perhaps should begin to be assigned.

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Tasklist

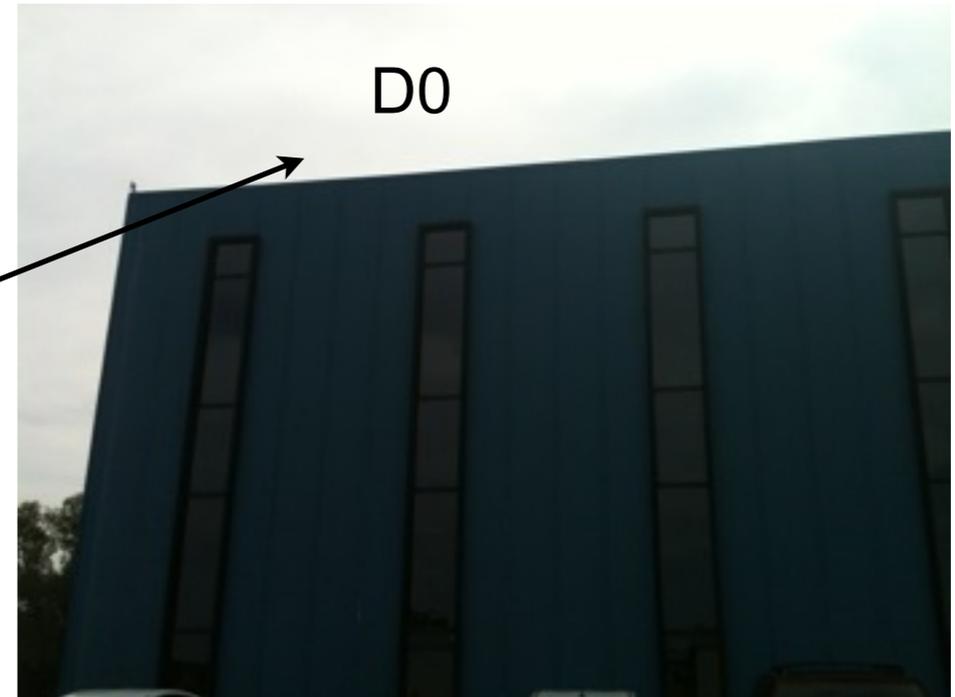Stuff starting ~November+
represents factored-off projects

☐ The Gantt feature at uboonedaq redmine:

Stuff in black circles in current development.

Stuff in blue circle in heavy development October 8th, + epsilon.

GPS

- At Nevis in August, we hashed out a way to put the GPS time into the frames -- or at least every Nth frame.

- A pulse-per-second from our GPS (resident in the SEB-10 server, connected to the PMT crate) will be an input into trigger card. Chi will make such an input at that instant store the frame # and the 16 MHz clock value internally on the trigger card. Simultaneous to the PPS going out we will grab in software the latched GPS time and query the quantities above on the trigger card (through controller card). We will shove that time into that frame header when we see it in DMA stream.

GPS 2

D0

This $3k Symmetricom PCIe card advertises 170 nsec accuracy.

PCIe card In ren/uboonedaq-seb-10

Cosimo is writing/modifying the linux module now to watch for the PPS hardware interrupt to grab the GPS time. We'll simultaneously increment a scaler in NIM bin: this will be "proof" of concept.