Quick DAQ Updates

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NP02 / ProtoDUNE-VD Coordination Meeting

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Software Releases

- dunedaq v5.2.1 released last week
  - Adds support for PDS (DAPHNE v2, SSPs) to new DAQ v5 line
- Working now to update standard monitoring runs to use this as a new base, with hope to have transitioned by next week
  - Significant updates for configs, run control, etc.
- Currently planning next set of releases, with key features including …
  - Data format change for TriggerPrimtives to be more space efficient
  - PDS TriggerPrimitive generation
  - CRT interfaces
  - Interface and usability updates for run configuration and control
  - TDE integration
- Need good planning of activities so we know how we can accommodate software testing and detector support

PDS Software Trigger Integration

- Generation of TriggerPrimitives from PDS a high priority for us
- Work underway to …
  - Create TP objects from DAPHNE self-trigger data frames
  - Ensure PDS TPs are included in TriggerRecords and TPStream files
  - Test the flow of TPs through the high-level trigger
- A further goal will be to demonstrate ability to trigger detector using an algorithm based on PDS TPs
  - Still need studies to decide what algorithms may be most useful for operations
- There are limitations
  - PDS TriggerPrimitives are not available from full streaming waveforms → we have to pick one or the other for run modes
  - We would really like to keep the same format for both TPC and PDS TPs, which seems suitable
    - If we find a need later, it's not impossible to change, but would represent a mid-run data format change

CRT Integration

- We have two new (to-the-DAQ) systems to integration for the CRT: Grenoble and Bern panels
- Timing
  - Discussions are well underway and interface needs well defined
  - Ensuring we have all timing hardware available for use
- Trigger
  - Each system can produce simple logic outputs that should be incorporated into trigger
  - Need to understand the physical layout better to finalize on the what and where of hardware to be used to capture signals
    - Signals will be timestamped and can be used to select data on full detector
  - One limitation: Central Trigger Board (CTB) would be needed to combine logic of beam spill with CRT triggers
    - E.g. if we want to veto CRT triggers during the beam spill, then all signals need to be handled by CTB → implies both beam and CRT signals can get to the same location
- Software interface
  - Including CRT in DAQ data stream is straightforward though not trivial → will take some development effort

General

- Marco Roda (Liverpool) will be coming on as DAQ operations lead at EHN1 starting April 1
  - Will be stationed at CERN on long-term assignment, arriving soon
  - Marco and I will be working together (along with the rest of the DAQ team) over the ProtoDUNE-VD run to ensure continuity / good operations