Upstream DAQ WG

The UD WG (short for Upstream DAQ Working Group) has the mandate of designing and implementing the timing and fast command distribution system as well as the detector readout system for all detectors and front-end devices requiring it (TPC electronics, PD electronics, hardware Calibration systems, for both single and dual phase technology).

The UDWG specifies the interface between DAQ and the front-end devices for the timing and fast command distribution and provides firmware blocks and test software to facilitate the integration. It is in the scope of the UDWG to follow up on the integration with all different timing end-points and providing support as needed. The timing also includes the system allowing DUNE to be synchronized across modules and with external signals such as the accelerator and SNEWS.

The UDWG designs and implements the readout for all front-end devices providing event data (hardware, firmware and software). It is in charge of supporting trigger primitives generation (in sw or fw) as defined by the DSWG and of buffering data for as long as they cannot be deleted or transferred to the dataflow system. It is also in charge of facilitating the integration of front-end systems, through test setups.

For the fw/sw implementation the UDWG follows the overall development model agreed within the DAQ consortium and, in particular for the software, it uses the application framework and communication libraries provided by the DFWG. The overall design of the Upstream DAQ systems has to focus on reliability, fault tolerance and dynamic error recovery. As such the UDWG will collaborate closely with the CCM WG to ensure that the overall DAQ operations and recovery models can be effectively implemented.

In the DAQ coordination team, the UDWG coordinators participate to the shaping of the overall DAQ system, with particular attention to the timing and readout systems; they support the DAQ consortium leadership in defining the interface documents with the detector and calibration systems electronics. It is a responsibility of the UDWG coordinators to clarify requirements w.r.t. the application framework for the DFWG, highlight any issues in supporting trigger primitives generation with the DSWG and raise any concerns with impact beyond the WG itself (e.g. affecting the facility).