DAQ Physics Performance WG

The PP WG (short for Physics Performance in DAQ) has the mandate of understanding and tracking the physics requirements, as well as the overall experiment constraints on the DAQ (e.g. max data output to offline, calibration needs), and carry out the studies (mainly simulation) that translate those into DAQ parameters (bandwidths, rates, fine grained regional selection of data w.r.t. full module events, ...). It also provides input on the signatures that will allow the trigger to select data which match the physics goals.

The PP WG works in close collaboration with the Upstream DAQ, Data Flow and particularly Data Selection working groups, since it validates and benchmarks the overall DAQ physics performance against ProtoDUNE data, DUNE simulation data and, eventually, DUNE data, and compares them to the expectations. As such it is responsible for creating the software infrastructure allowing to carry out these studies effectively and produce well defined, quantitative metrics.

A key aspect of the PP WG is its relation to several DUNE-wide activities:
1) The calibration consortium: the PP WG studies requirements and calibration scenarios, evaluates the impact on the DAQ and physics data taking efficiency and proposes approaches to maximize the overall physics outcome, while satisfying the detector calibration needs.
2) The data model specification: the PP WG contributes to the specification of the overall DUNE data model, evaluating pros and cons of proposals from the DAQ perspective.
3) The DAQ metadata identification: the PP WG ensures that the DAQ is aware of the metadata that it is required to produce for use by the offline computing and physics groups.

In the DAQ coordination team, the PP WG coordinators participate to the shaping of the overall DAQ system, with particular attention to the physics performance; they report back on the interactions with DUNE wide task forces and calibration consortium, raise any issue to be followed up and prepare proposals allowing the coordination team to take informed decisions; they report on the results obtained in the WG, and discuss work to be carried out to better understand or to improve the DAQ behavior.