

Figure 1: Scheme of current LHC Run-3 demonstrator of the CMS Level-1 trigger Data Scouting (L1DS). It captures data from multiple sources: the outputs of the Global Muon Trigger (uGMT), data from Calorimeter Trigger (DeMux), the Global Trigger output (GT) and the inputs stubs to the Barrel Muon Track Finder (BMTF). Two Xilinx VCU128 boards are used in the system: the first one captures the input stubs to the BMTF from 24 \times 10 Gb/s trigger input links and sends out the pre-processed primitives through 3 \times 100 Gb/s output links; the second one receives 18 \times 10 Gb/s trigger input links from the GT and sends out the algorithm decision bits of the GT through 1 \times 100 Gb/s output link.

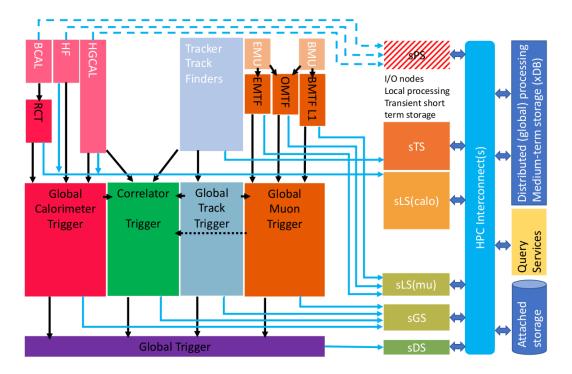


Figure 2: Architecture of the CMS Phase-2 Level-1 trigger Data Scouting. The output of the Global Trigger (GT) is captured by the scouting Decision System (sDS). The output of the four global systems, Global Calorimeter Trigger (GCT), Global Muon Trigger (GMT), Global Track Trigger (GTT), and the Correlator Trigger (PFT), is captured by the scouting Global System (sGS). The sDS and sGS constitute a first and independent stage of the scouting (referred to as Stage 1), with relatively modest throughput requirements. The architecture can be extended with a scouting Local System (sLS) to include local muon and regional barrel calorimeter triggers and the endcap calorimeter primitives.