The mircoTCA.4 fast control and processing board for generic control and data acquisition applications in HEP experiments (#69)

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Motivation

- Finding new physics requires massive increase of processing power, much more flexible algorithms in firmware and much faster interconnects
- MicroTCA: high-level reliability, availability and maintainability.

Implementation

- u4FCP & uRTM for mid-sized system
    - Inside a MicroTCA crate
        - Clock, control, trigger and DAQ
    - or stand-alone on desktop with optical links or Ethernet to PC.
- FMC, DDR, PCIe, FireFly optical transceiver, WR, etc.

Build a mid-sized system inside a MicroTCA crate

Stand-alone to build an prototype of readout electronics

Applications

- The hardware has benefited from the multiple high-speed data links of FPGA, the u4FCP is adopted in the SHINE pixel detector. The prototype system was assembled with 12 channels and achieved a peak rate of 94 Gbps.