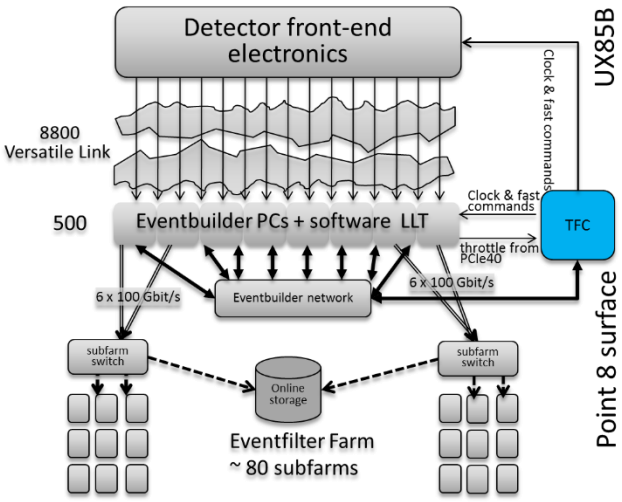
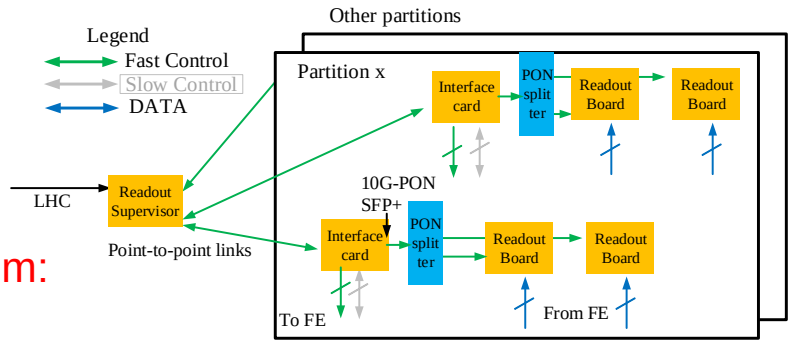
Timing and clocking scheme in the upgraded LHCb detector

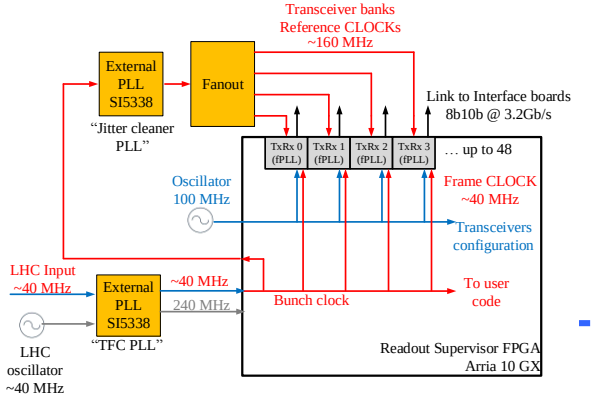


Complex upgrade of the LHCb detector in 2019-2020

- replace all Front-End and Back-End electronics
- replace >90% of the detector channels
- trigger-less data taking at full LHC frequency
- run at x10 more instantaneous luminosity for the next 10 years
- ~40 Tbps data acquisition system

→ The upgraded LHCb readout system will be centrally controlled by a single Readout Supervisor



Clocking scheme is centrally manager by TFC system:

- Respect partitioning of sub-detectors
- Scalability in case of expanding the system
- Point-to-point and Optical splitters
  - 10G-PON SFP+ as Tx/Rx medium
- Possibility of profiting from the uplink as well
- Interface to the LHC clock
- Fixed latency commands distribution
- Deterministic and reproducible clock phase