LHCb 2015 Trigger Diagram

40 MHz bunch crossing rate

L0 Hardware Trigger : 1 MHz readout, high E_T/P_T signatures

- 450 kHz $h^{\pm}$
- 400 kHz $\mu/\mu\mu$
- 150 kHz e/γ

Software High Level Trigger

- Partial event reconstruction, select displaced tracks/vertices and dimuons
- Buffer events to disk, perform online detector calibration and alignment
- Full offline-like event selection, mixture of inclusive and exclusive triggers

12.5 kHz (0.6 GB/s) to storage

LHCb Upgrade Trigger Diagram

30 MHz inelastic event rate (full rate event building)

Software High Level Trigger

- Full event reconstruction, inclusive and exclusive kinematic/geometric selections
- Buffer events to disk, perform online detector calibration and alignment
- Add offline precision particle identification and track quality information to selections
- Output full event information for inclusive triggers, trigger candidates and related primary vertices for exclusive triggers

2-5 GB/s to storage