

Thoughts on SiD computing

Introduction

For the campus planning, SiD was asked to provide estimates of the resources needed for CPU, Storage, Network

ILD has put significant effort into this since AWLC. SiD is the beneficiary of much of this work.

A Few Numbers

From the SiD DBD: Event size/train: 1.1 GB
Conservative scaling of the # hits from pairs
and ggHadron events from 1 TeV \rightarrow 500 GeV:
2.5

\rightarrow ~ 1.1 GB/s raw data from the detector

\rightarrow 8.8 PB / yr from SiD (0.8×10^7 s beamtime)

Raw Train

Storage
(entire Train)

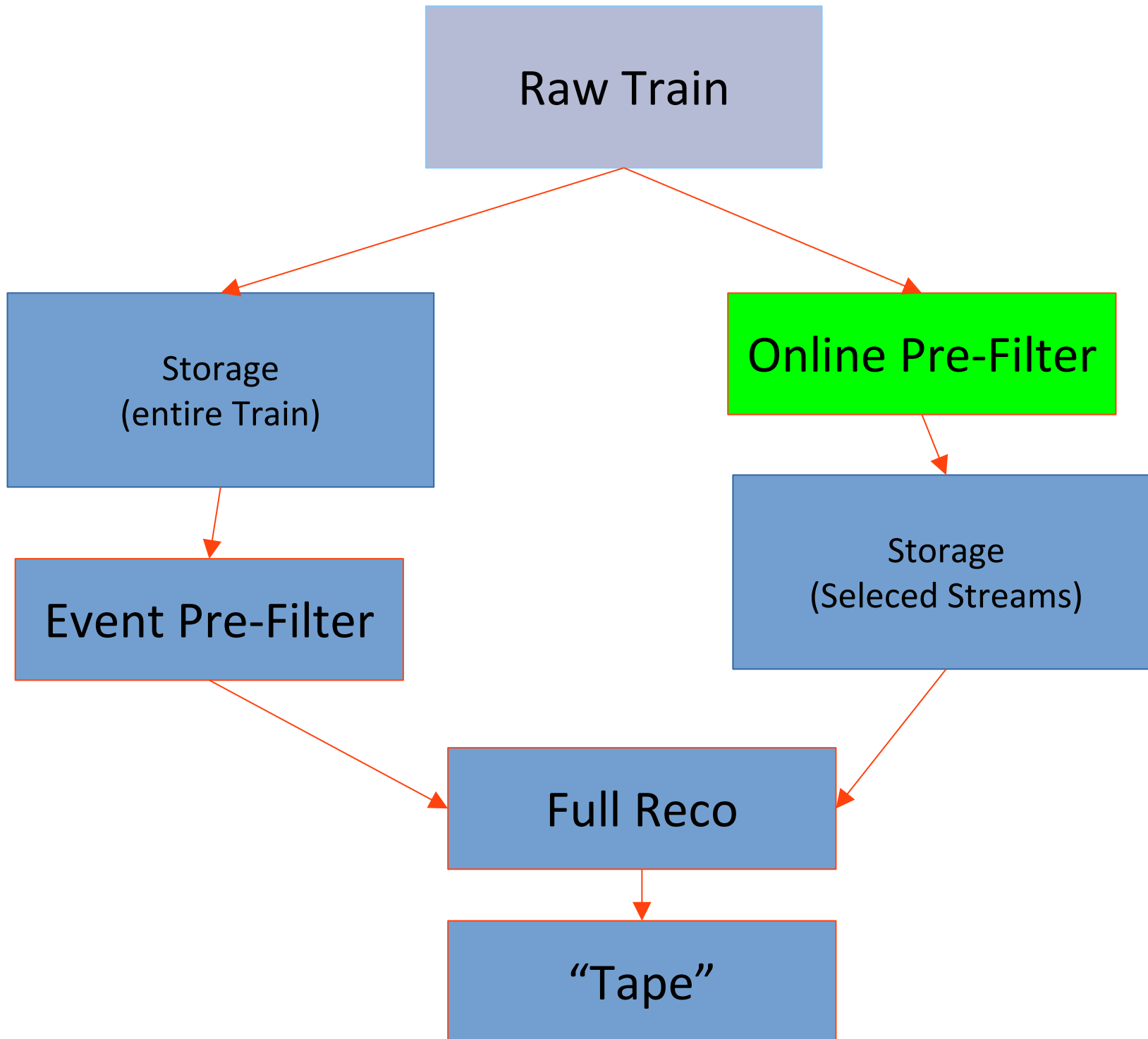
Online Pre-Filter

Event Pre-Filter

Storage
(Selected Streams)

Full Reco

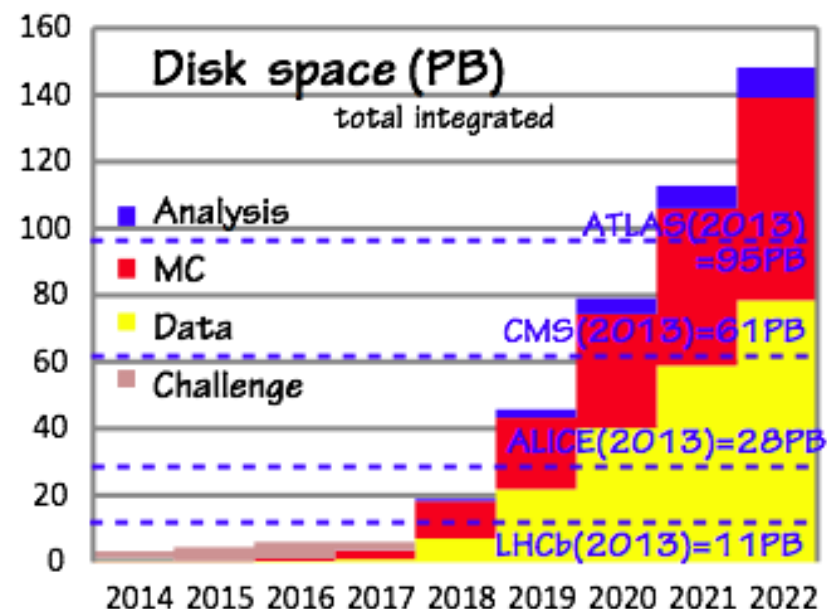
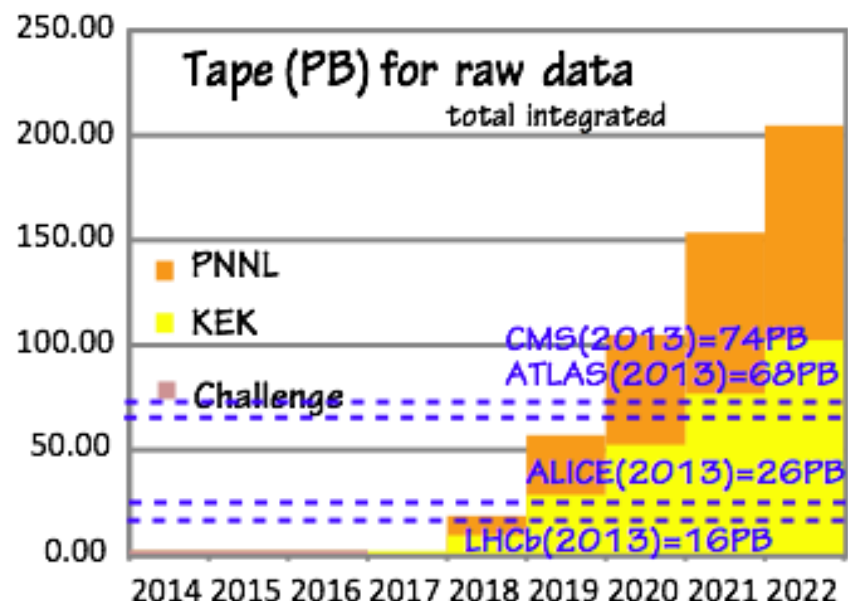
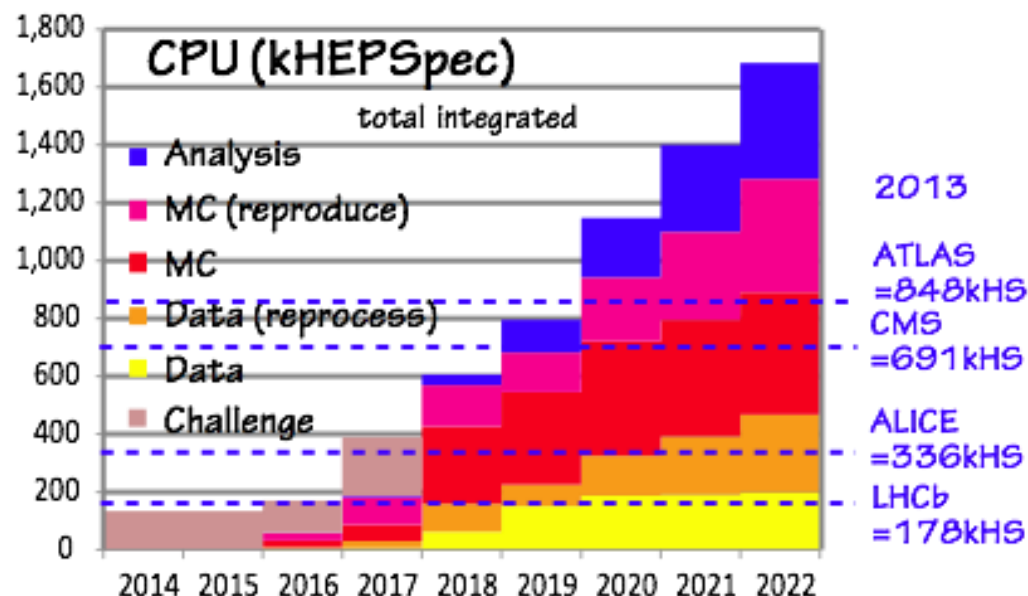
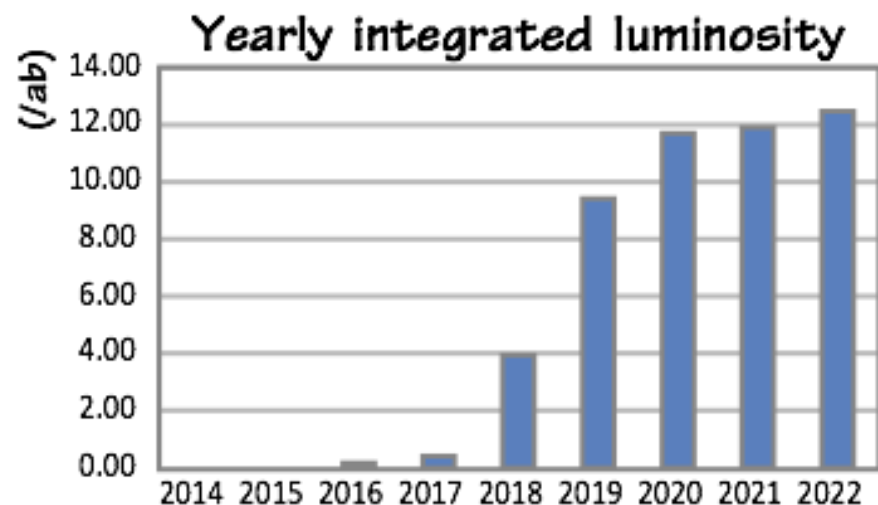
“Tape”



Some Considerations

- Putting a large computing farm into the detector hall would probably lead to a significant cost.
- Planning for the Network needs to happen early. (Negotiations with local govts)
- Expect ~ 1 hadronic Z / train
- Belle-II data rate: 1.8 GB/s (300 kB @ 6 kHz)
 - For full SiD train, processing would be at ~ 6.5 kHz)

Hardware Resources for Belle II



Status

- Raw data for SiD as discussed is about 10% of ATLAS disk in 2013 and 15% of ATLAS raw data in 2013.
- Personal take: It will be hard to justify requesting resources to store a full copy of the raw data. (If we're serious, need to request twice the space for redundancy)
- Resources for simulation still to be estimated.
- Computing resources still to be estimated.