February 7, 1997
Hera-B Meeting
DESY-HH

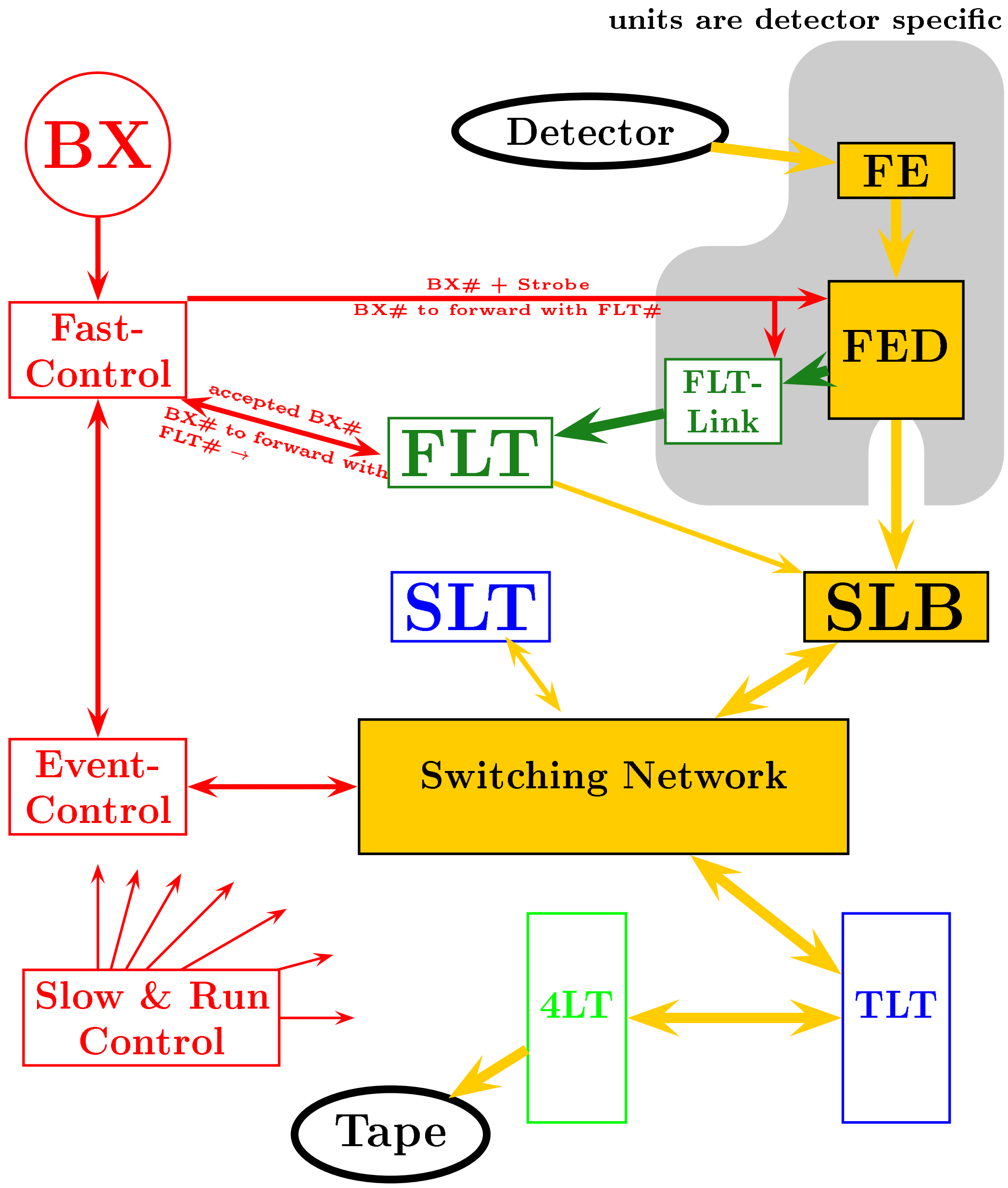
Second Level Trigger Status

M. Medinnis
DESY IfH Zeuthen

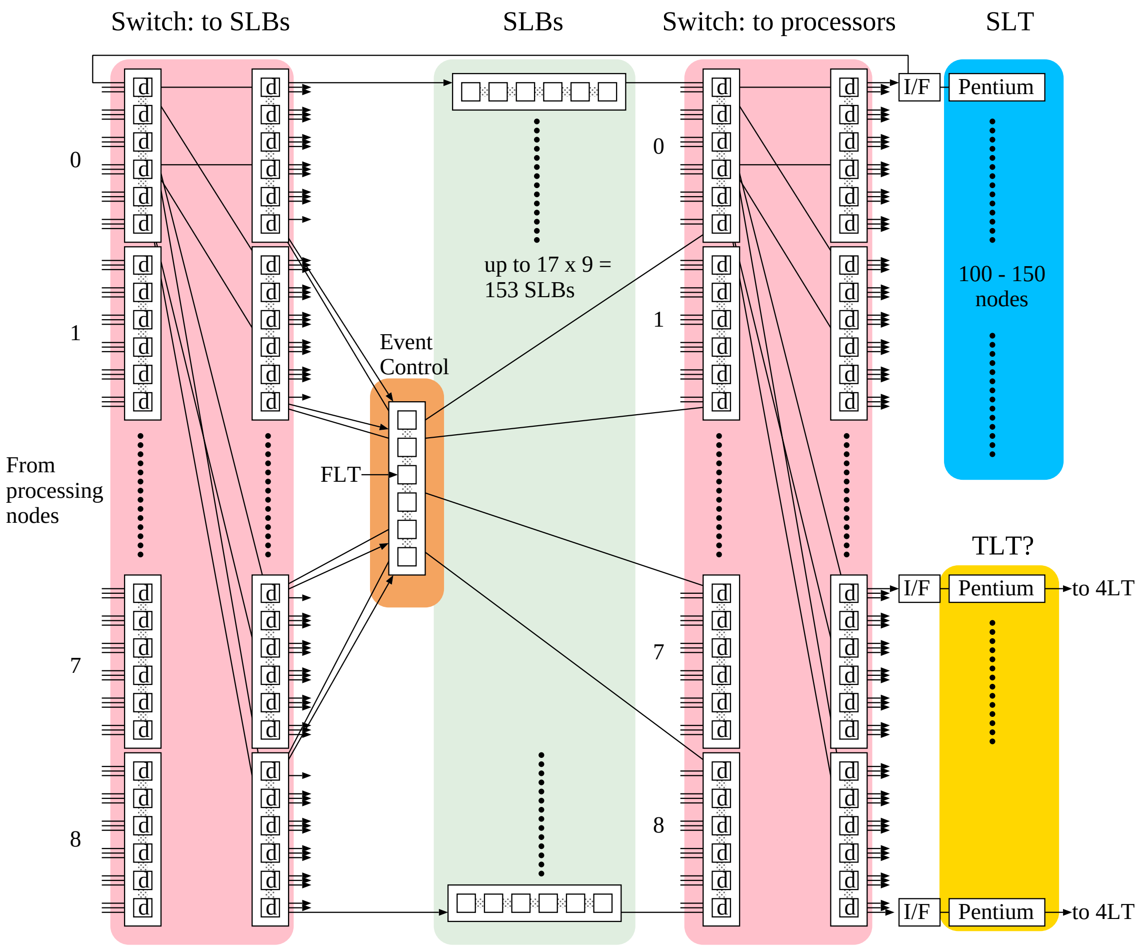
Baseline: Level 2

- **Task:** Event filtering using SLB-resident event data within the $\approx$ 7.5 msec average latency limit of the SLB
- **data buffer:** SLB (HH SHARC board)
- **SLB–SLT connection:** HH SHARC board (global "2-column" topology)
- **SHARC/PCI interface:** IfH board
- **processor:** PentiumPro 200 MHz / Linux
- **location:** near SLBs
- **housing:** Desktop boxes
- **number of nodes:** 100 - 150

DAQ/Trigger Architecture



2-column topology



Work Organization I

- DESY HH:
  - SHARC hardware
  - SHARC software coordination/development
- DESY Zeuthen:
  - SHARC/PCI interface card
  - Linux software interface ("driver")
  - (SHARC software)
  - L2simu development
  - Algorithm development
- NBI:
  - Processor hardware
  - Processor farm management
  - Algorithm development
  - (SHARC software)
- UCLA:
  - L2simu development
  - Algorithm development

Work Organization II

L2simu & Algorithm development

- DESY Zeuthen:
  - L2simu development, maintenance
  - Slicer
  - Hit request & retrieval, interactions with event control and DAQ
- NBI:
  - Magnet tracking
  - Silicon tracking
- UCLA:
  - L2simu development, maintenance
  - Refit behind magnet

- Later: vertexing algorithms.
- On the "back burner": possible use of Muon system, calorimeter, Hi-p_t chambers, TRD

SLT '97

Goals:

- Exercise SLB $\leftrightarrow$ SLT communication
- Exercise Event Controller
- Support tests of higher level triggering

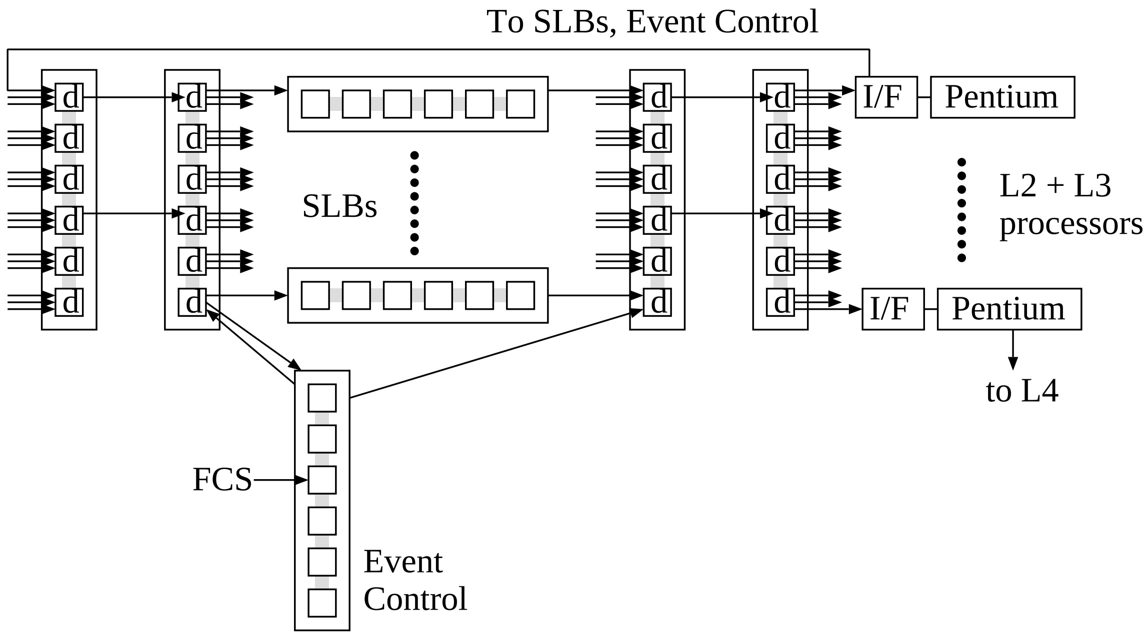
The test (essential):

- Trigger from FCS.
- Define an arbitrary RoI covering PC1 - PC3 (no coupling to FLT).
- Find events with (high momentum) tracks.

The test (desirable):

- Project track through magnet to MC1.
- Follow track through silicon.
- Maybe even physics?

'97 Demonstration system



Simulation status I

- Arte integration (P. Kreuzer): Refit algorithm (H. Thurn) now available in Arte (see P. Kreuzer).
- Performance (S. Scharein): Efficiencies for B $\rightarrow J/\psi K^o$ now uniformly lower (e.g. 85.5% vs. 90.8%). Under investigation.
- Developments from NBI (S. Xella):
  - A 20-node Pentium Pro farm recently installed for M.C. production.
  - Arte recently installed on NBI Alpha.
  - Development of magnet tracking: Now 2x better resolution for projection to silicon. Hampered by lack of simulation.

Simulation status II

Migration from pipelined topology to global topology (& other needed improvements) is forcing a substantial reworking of L2simu. A new version is under development.

Status:

- Framework is written.
- The Slicer algorithm is incorporated but not fully tested.
- A full implementation of “essential” SLT algorithm for June ’97.
- Simultaneously: develop communications with SLB, Event control.