Trigger Bandwidth Planning meeting

- What are the issues?
  - Review current performance – already see ~2.5% dead time @16kHz
  - Where does deadtime come from?
  - What can we hope to change?

- What amount of dead time is acceptable?
How can we get dead time?

- Dead time occurs when the TS sends a L1R when FRED says L1A because none of the four L2 buffers are free.
- We have 5 (7) causes of dead time (ignore WAIT/BUSY, INHIBIT here)
  - See CDF 4480 for full info.

- L1DONE
  - L2 decision held off by L1DONE from SRC
- L2
  - All full, waiting for L2 decision
- READOUT
  - All either pending or busy
- L2_or_READOUT
  - Can't decide btw L2 & READOUT
- TS
  - Due to deadtime book-keeping
Current performance

- Peter Wilson's cartoon shows the basic data flow
  - Some #'s have changed, but generally correct

- Complete timing flow with interconnects on web
  - See L2 review 8/2002

- L2 processing can be thought of as having two pipelined components:
  - Data arrival in alpha
  - Data processing in alpha
Where can we gain?

- Two SRC's
  - Allow next event into SVT sooner
- SVX readout speed-up
  - 7 vs 8 bit digitization & other super-secret things.
- L2 speedup
  - Tails of algorithm time
  - Remove DMA reads
- SVT speedups (?)
- Your bright idea here...

Trigger Bandwidth Planning meeting
Tools at our disposal

- The real system
  - With Si now allowing high L1A, we are probing real dead time
- ModSim
  - Michael's talk, with input from many of you
- L2 Torture ???
  - Tortured mainly trigger experts – real system too complicated for test stand
    - Sparky, wedgy, ...

Trigger Bandwidth Planning meeting
Goals

• Given the list of possible changes, what is most important from trigger bandwidth point-of-view?
  – Want a prioritized list of tasks for system experts to attack to improve bandwidth.
  – Modsim tells us this

• What is timeline for these tasks?
  – Input from experts

• What do we do in the meantime?
How much dead time is acceptable?

• TDR and ancient runes say: 5%
  - Random sample in control room gives answers between 0-10%

• Probably wrong question to ask
  - It's easy to make trigger have 0% dead time

• How do we best maximize our physics to tape for all physics groups?