Trigger, DAQ and Online Closeout

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What's New?

- We shared the parallel session with electronics
  - Useful conversation about system architecture
  - Clarified some requirements
    - DIRC timing, possible need for 10ps resolution
    - SVT
      - backgrounds and data volume potentially higher than we have been assuming
      - readout may (at least internally) be data driven
      - Possibility of computation of SVT track information in "hardware"
    - Significant concerns about front-end FEX in high-radiation environment

FCTS Design Issues

- A 100kHz virtually dead-time free readout system is very different from BaBar
  - Not an incremental update!
  - Likely requires new paradigms at the frontend level
  - Per-event dead-time can’t exceed ~100ns for comparable total dead-time to BaBar today
    - May well design a system without fixed per-event dead-time

Trigger Issues

- Not much work has been done on real trigger studies for and since the CDR
  - Hand-waving trigger rate extrapolations from BaBar
  - What can really be done at Level 1?
  - Interrelation between detector and electronics design and trigger (esp. Level 1)
    - Timing, jitter, latency, trigger data path, …
    - Virtually dead-time free system
- Need to form a trigger group!

Issues to settle soon

- FCTS architecture and front-end protocol have profound consequences for subsystem electronics
  - Must be settled during TDR period in order to avoid expensive redesigns or major compromises
- Significantly larger data volumes might require an entirely different design
  - Would require robust R&D effort very soon
  - LHC-style development process not feasible with current SuperB resources

How to proceed?

- Need a more formal process to determine channel requirements and data volumes
  - Goal: Summary in a common format by Elba
  - Will send out a questionnaire soon
- Need to firm up the architecture
  - Start out with a draft frontend←→DAQ protocol proposal
  - May seem provocative
  - Goal: Have subsystem groups respond by Elba