Discussion on notes for ID's, Hits & Digits

- Logical Identifiers
  - Since the last software week, a draft note has been circulated (to offline coordinators and DB task leaders) with a proposal for structure of logical hierarchical identifiers for each detector subsystem
  - Proposed conventions
    - Follow PBS for system and subsystem
    - Numbering should increase with spherical coordinates: radius, eta, phi
    - Numbering in general should begin with 0
    - eta is special: start from 1 and allow +/- numbering, reserve 0 for elements straddling eta = 0

Logical Identifiers (2)

- There was some discussion on the eta convention
  - eta = 0 works well for special Muon stations
  - while pixels would have -1, 0, 1, SCT's would have -1, 1
  - ➔ propose to apply convention across all systems
    - use helper classes to find neighboring ID's
    - don't rely on adding 1 for neighbors
- Otherwise, there was general agreement on the id hierarchies
- Received feedback to include ids for Level 1 trigger towers
- Next steps:
  - include explicit value ranges for ids of each subsystem
  - circulate note widely for comments
  - submit to CSG for final approval
- Time scale: end of June have circulated a complete note

Hits and Digits note

- Along with the ID note, there was circulated a draft note which will eventually define
  - hits and digits for Geant4
  - description of hit to digit transformation
  - pileup procedure
- Included in the note was a compilation of the current definition of hits and digits use for Geant3

Hits and Digits note (2)

- In the discussions so far, Dario has proposed a unique form for hits for tracking detectors
  - Eloss segments: start/end points, eloss, time, kine: 36 bytes
  - Should be OK for pixels and SCT
  - Would like feedback from TRT and Muons
  - I expect that more work is needed on how to deal with "kine" or associations to the truth tracks
- Hits for LAr will be summed by readout channel
  - May want finer than cell granularity
  - Some discussion on what sort of kine information is needed
- TileCal hits will sum in finer granularity than readout

Hits and Digits note (3)

- Digits should be what is "read out"
  - Normally, this should mean what comes out of the RODs
  - Some exceptions:
    - Simulation of the functioning of the LAr RODs - must simulation input to RODs from Hits
- Finally, there will be input coming from the Level 1 trigger for simulation of trigger tower response
  - There are some constraints to be able to study correlation between trigger tower response and standard readout
    - adding of noise, signal shaping
  - Will include needs for Level 1 in note

Hits and Digits note (4)

- Time scale and planning
  - Would like to see a more complete note with proposal for end June
    - hits and digits for all systems and level 1
    - hits to digit description
    - pileup description
  - Will then need to discuss how to proceed
    - get feedback and approve proposal
    - understand whether we can migrate the G3 hits and digits to new definition
    - set up infrastructure for Geant4