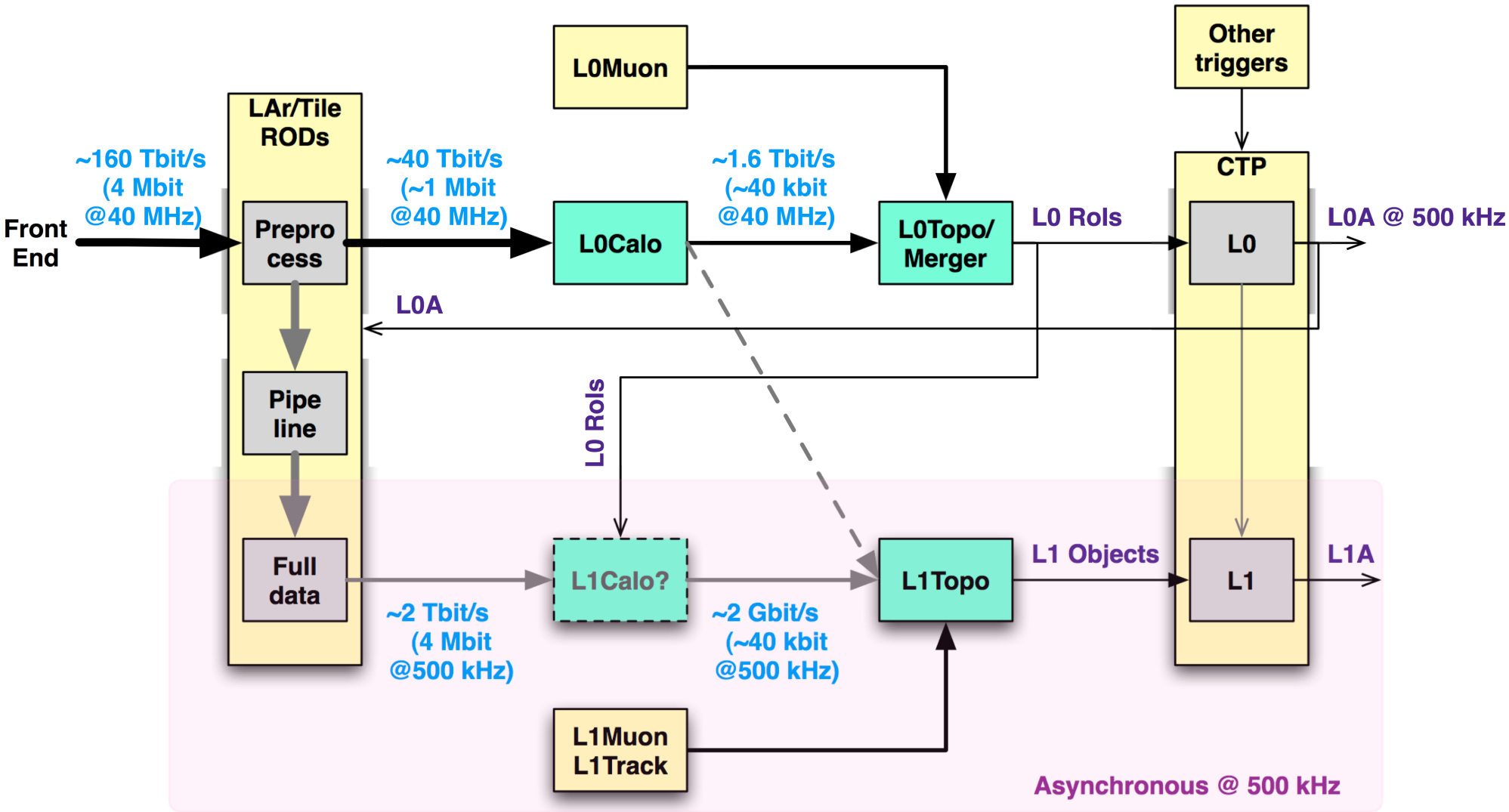
L1 Technical Proposal: Phase 2

Murrough Landon
19 April 2011

- Slow progress on writing TP phase 2
  - Distractions with beam and calibration
  - Also some things are still unclear
    - Hence some questions here…
- NB evolving TP document at
  https://svnweb.cern.ch/trac/atlasgrp/browser/Trigger/TriggerNotes/L1UpgradeTP/L1UpgradeTP.pdf

Baseline Phase 2 L1Calo Architecture



In the low latency scenario, only the L0 blocks are possible

L0Calo

- Default option: single module for EM/Tau and Jets
  - Mention option of separate EM/Tau and Jet processors
- Demonstrator proposal has "A" and "B" processors
- How consistent do we need to be?
  - Should we interpret A and B as EM/Tau and Jet?
    - If not, what?
  - Rationale for separation?
    - Technical (links, FPGAs etc)
    - Institute responsibilities
    - Other?
    - NB separate systems probably increase the total cost
- How much detail do we need?
  - Eg suggestions for contents of data on links?

LOTopo & L1Calo

- LOTopo:
  - Assumed to be similar to phase 1 TP
    - Though different numbers of links and data content
    - Might share crate with CTP?
  - Not much extra to say?
- L1Calo
  - Just use proposal from Dave Sankey

L1Topo

- Very little work on this
  - Any ideas for topological algorithms including L1Track?
    - We only have some simulation of L1Track/Calo matching for electrons (in a way that would veto gammas)
- Architecture?
  - Guess some crossbreed between L0Topo and L1Calo
  - Few modules each getting all the information but running different algorithms
  - Possibly using CPUs and/or graphics processors
  - Little idea of data volume from L1Track
    - Can guess L1Calo/L1Muon similar to L0Topo, scaled by L1A/L0A rate
- Overlap/integration with CTP?
  - Also question for L0Topo

ROD

- Default assumption
  - One common ROD for L0Calo/L0Topo/L1Calo/L1Topo
    - One ROD per crate?
  - Separate ROD crate with fibre links from source modules
    - Probably would fit better with future DAQ upgrade
    - No room in L0Calo crates (in Sams proposal)
    - Abandon any idea of RODs in same crate?
  - Handle both L0 and L1 readout?
    - Only L1 would be simpler and less bandwidth
    - But L0 readout of L0Calo/L0Topo would allow more monitoring
      - Not that we used monitoring features in the present ROD
- Any comments?

Institute Responsibilities

- Difficult subject!
  - Especially if we are not yet sure about L0/L1 split
- Does the TP need to define this?
  - If so, impact on architecture is needed now

Miscellaneous Thoughts

- TCM
  - Ian proposes no TCM for demonstrator but adding one later
  - My recollection is that the TCM added delay to the project
    - We never had the right TCM in the right institute at the right time
    - Tests regularly delayed with consequent impact on the schedule
  - If we can have a TCM-less demonstrator why not stay like that?
- ETSI (23") crates
  - Extra wide crates appealing for Sams L0Calo architecture and also favoured by Daves L1Calo proposal
  - But incompatible with present USA15 infrastructure
  - Can probably be installed as part of a major long shutdown
  - But hard to add one for parasitic tests with the real system
    - Argument to try to stick with 19" crates if at all possible?