Trigger Issues for Simulation

Ricardo Gonçalo (RHUL) on behalf of the Trigger Simulation Steering – 24 May 2011

- Current thinking about trigger simulation options in ATL-COM-DAQ-2010-082 : http://cdsweb.cern.ch/record/1273160/files/ATL-COM-DAQ-2010-082.pdf
- Below just a list of current concerns and ideas

Trigger Simulation Options

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With thanks to the trigger experts whose ideas are represented in this document.

Abstract

This document describes a number of options for simulating the trigger as part of simulation production. The pros and cons of each are evaluated. The purpose of this document is to inform a discussion of the options leading to a decision on which to support. The conclusion is a baseline proposal and outline of the next steps.

Fast Simulation

- Running the entire menu without prescales in fast simulation takes too long
- Possible solution: to be able to select a subset of triggers
  - Needs a post-exec in RecExCommon
  - Savannah request posted by Simon George
- E.g. producing a sample for H->gamma gamma only 2g20 g40 etc are needed
- Would save AOD space and computer time.

Following trigger menus with conditions data

- How to simulate old menus – or changing menus – during a year by using the conditions database?
  - Idea would be to get an approximation of the menus used earlier
  - E.g. will we need to re-do MC samples for analysis including 2010 data? (What about in 2015?)
  - E.g. if we have a slow luminosity increase – then one can imagine a slow evolution that we would like to follow in the MC production (as with other conditions data)

- We only keep two copies of the simulation
  - E.g. release 17 (MC11) should have good approximation of the current P1 menu
  - When we get to MC13 then the MC11 Monte Carlo will be deleted and we will no longer have MC with the 2011 menu

- Can we keep some intermediate format containing the HITS plus trigger decision? (Would this solve problems?)

Parametrized Efficiency Curves

- Still trying to get this going from Trigger side…
- Efficiencies with respect to the offline selections
- With each new release the efficiencies for all menus will have to be re-determined

Other Issues

- Simulation is that the MC10A and MC10B MC was done with pileup suppression switched on, but no pileup suppression online
- LAr FEB hole and ramping HV LAr supplies, etc.
  - L1Calo simulation doesn't take this into account
- Perhaps more under data preparation than under simulation…