Trigger Data Quality Assurance Workshop

Offline Monitoring, Diagnostics and Validation session

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Some questions:

- How do we make sure that the trigger behaves as expected?
  - If something is wrong, how do we find where the problem happened?

- What tools do we need? What tools do we have?
  - In offline trigger monitoring, validation and offline reconstruction monitoring: what overlaps? Where can we save work?

- How do we organize to make sure this happens?
  - What is done online during run? (previous session)
  - What is done offline?
  - What should be done at CERN and what should be done remotely?
  - What computing and human resources will be needed at CERN/remotely?
  - Where does software validation fit?

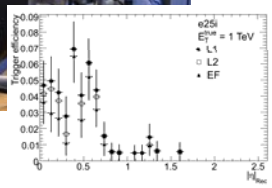
- Manpower: how many people and what skills are needed?
  - How are they organised?
    - Single team for offline and online monitoring tasks? Shifts? On-call experts?
  - How many people can we count on?
  - What training/skills are needed?
    - Documentation; general Atlas member/trigger expert

- The session aims are:
  - To assess our readiness to:
    - Verify the quality of the online trigger decision
    - Verify the trigger data saved in the event
  - To understand how we should organise ourselves to:
    - Increase the chances of finding and fixing problems
    - Minimising the effort needed to verify new data
    - What extra information is useful?
      - Where do we need specific information/histograms from each detector?
      - Where do others need information from us?
    - Avoid duplication of efforts
      - Understand the offline data quality plans

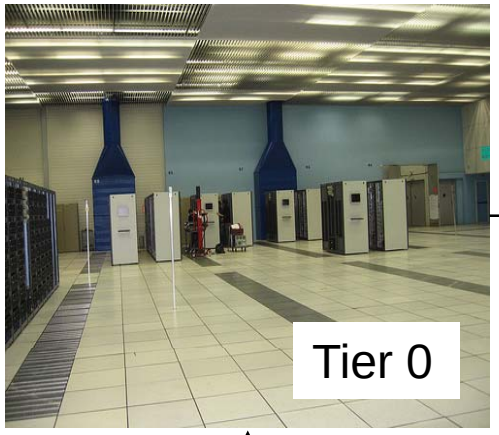
- Our objective for data taking should be to:
  - Find problems *fast* and *reliably*
  - Be able to certify all steps in the chain
  - Have coherent approach between online and offline (in trigger and reco) whenever possible

The story so far…

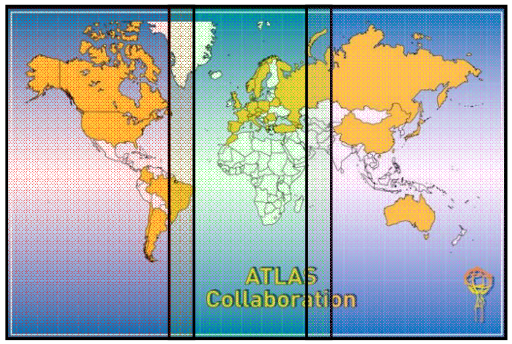
- Online monitoring:
  - Immediate access to rates and monitoring histos
  - Needs to react rapidly and talk to run control: main weapons are “Darth Vader” prescaling together with masking cells/turning off channels
- Offline monitoring:
  - Just starting: initial plan is to have remote DQM shift around the world
- Castor:
  - Online monitoring histos stored in Castor
- Tier 0:
  - Runs offline reconstruction (TrigDecisionMaker runs during reconstruction)
  - Latency of ~24 hours until data is reconstructed (with updated calibration&alignment)
- The CAF:
  - Can run over a few % of data to monitor data quality
  - Can run L1 simulation/re-run HLT on raw data (see talk by Christiane in this session)
- Software validation:
  - Uses same histograms as monitoring (configurable)



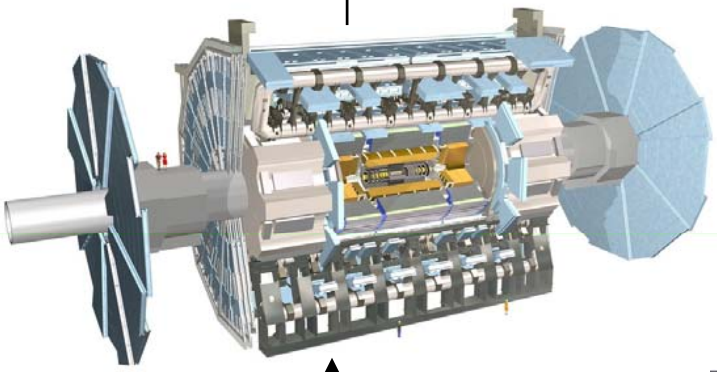
Online monitoring

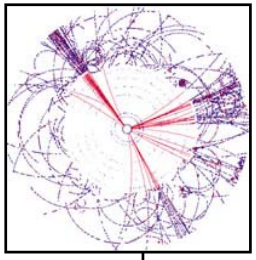


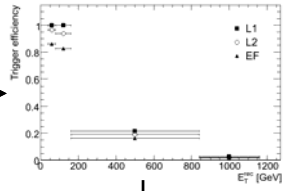
Tier 0



Offline monitoring







~10%

CAF

Diagnostics & validation