



# DB Readiness for Calibration?

Murrough Landon

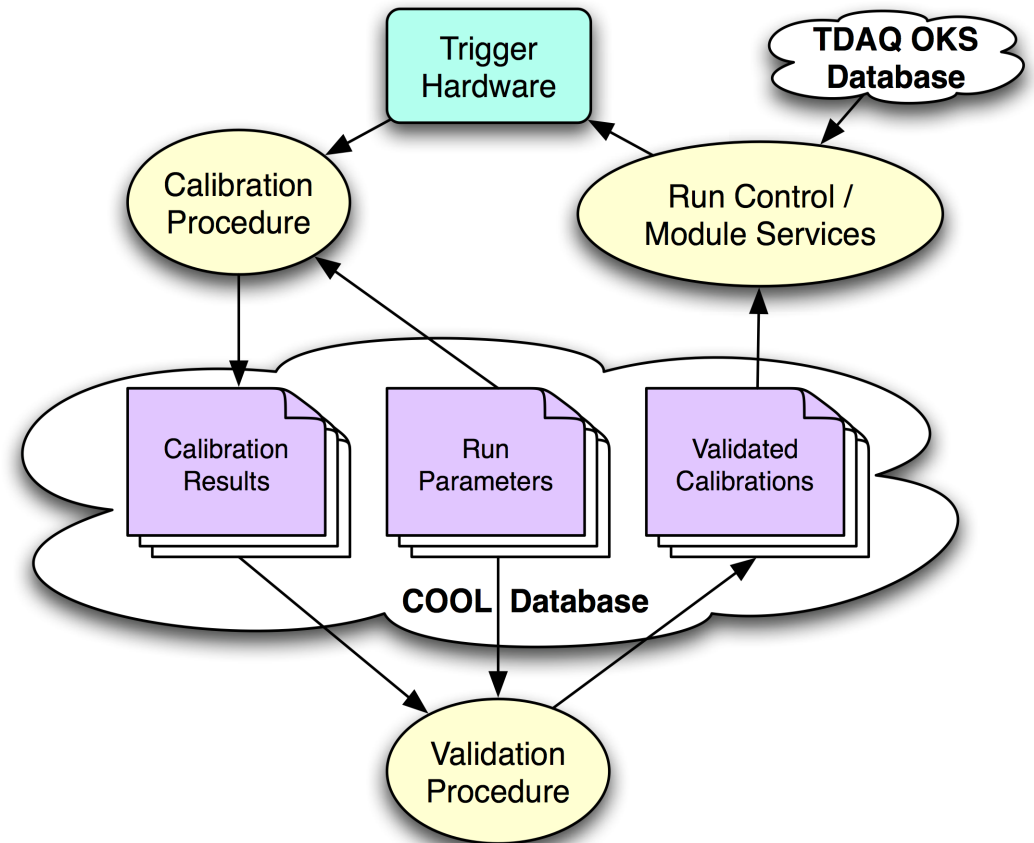
29 June 2009

- Introduction
- L1Calo databases
- Receiver database
- Validation and Tools
- Selecting run types and settings
- Archiving run parameters
- Offline DB requirements
- Conclusions



# Introduction

- Database reminder:
  - TDAQ OKS database to configure the online SW
  - COOL database (tables with history) for run parameters, results of all calibrations, sets of validated calibrations and (one day) some of our "conditions" data.





# L1Calo Calibration DB (1)

- Existing COOL folders for
  - validated calibrations
  - results of all calibrations
  - lists of dead/noisy channels
  - run parameters
  - global configuration
- Additionally (but not yet used)
  - conditions for each run
    - set of towers disabled via resources
- To be added
  - record of user choices for each run
    - ie what kind of (L1Calo) calibration



## L1Calo Calibration DB (2)

- To be changed?
  - Separate pedestal measurement from noise cut
    - Measure pedestals with receiver gain zero
    - Measure noise with nominal receiver gains
    - Different runs => different results folders
- Still missing
  - Separate noise cuts for cosmics vs physics?
  - Trigger tower timing for cosmics
- Untested
  - Pulse shape, energy scans, saturated BCID settings
  - Not sure if we have the right folder schemas for these



# L1Calo Calibration DB (3)

- Database update procedures
  - DAC and pedestal runs can be analysed online
    - Though typically done offline with online SW
    - Can easily be updated to online databases
  - PHOS4 and energy scans analysed offline (CAF)
    - Need to transfer new results back to online DB
      - Both to L1Calo COOL database and DB for receivers
    - Not yet tried this



# L1Calo Calibration DB (4)

- Database location
  - Currently still using private SQLite file
    - Still unsure about some folder schemas
      - Eg some calibration results, some run parameters
  - Non trivial to change schema once production COOL DB has replicated them to all tier1s
- To do
  - Move to production Oracle server
    - Tested move to “integration” server (INTR)
    - 1.5 hours to copy 1.2 million COOL folder rows
      - About 60 PPr calibrations
    - Still need to test performance from point 1 (if possible)
  - With some SW work we could split up the current DB
    - Configuration and validated calibrations to Oracle
    - Unvalidated results and run parameters (?) left in SQLite



# Receiver Gain Database

- Database folder(s)
  - Currently a single COOL folder with DAC setting per channel
  - Proposed to split into several folders (not yet done?)
    - Et conversion (Tile only!) [constant]
    - Electronics calibration factor from pulser runs
    - Physics object calibration factor [constant?]
    - Correction factor for dead layers, missing cells
  - DAC setting derived from (selective) multiple of these
- Database location
  - Currently a private COOL database on chaouki@devdb10
  - Should be moved to production Oracle DB
- Database updates
  - Still need to develop mechanism for updating with new results
    - and the algorithms for deriving them



# (Missing) Tools

- **Validation**
  - Still missing sophisticated validation procedures
  - Validation basically manual check of histograms
    - Though we have nice tools to produce these
  - Started work on comparison with previous calibrations
  - Database is only updated for whole system at once
    - Option to update by calorimeter partition (for PPr calibrations)
- **Other**
  - Noise adjustment via rate metering





# Specifying Runs (1)

- Different mechanisms evolved in each system
- L1Calo
  - Different run types described by parameters in sets of COOL folders (one folder per run type)
  - A few additional parameters set only in IS
    - Mainly choices of which COOL folder and which group of OKS objects
- LAr/Tile
  - IGUI panels to update OKS database and publish to IS
  - Settings stored in files or scripts
  - LArShifter IGUI panel to control LAr standalone runs



## Specifying Runs (2)

- For combined L1Calo + LAr/Tile runs
  - Separate partitions for LAr, Tile and L1Calo master modes
    - Should be no need to change OKS configurations
      - Except enabling/disabling LAr/Tile in L1Calo master mode
  - Currently need to use L1Calo and separate Calo panels
    - OK for shifters (if we provide documentation)?



## Specifying Runs (3)

- **Receivers**

- Segment currently under the LAr segment
  - And normally disabled => gains not set at Configure step
  - Not available for L1Calo+Tile standalone runs
- Better to move, eg into TDAQ segment, along with L1Calo
  - Still running LAr software
- We need to be able to (easily) specify the required gain
  - Flat gain (0 or 1) or pure Et for L1Calo calibrations
  - Physics gains for normal running
  - Existing possibility via detailed LAr global parameters in IGUI
    - Would this still work if receivers were not in the LAr segment?
    - And its not that simple (eg separate for A and C side)



# Storing Information about Calibrations

- LAr/Tile:
  - Sequence definition stored with each event
- L1Calo:
  - Sequence number saved in the event
  - Still need to store which type of run...
    - Details to conditions DB
    - Also, ROD header could store sequence type (number 0-15)



# Offline Requirements

- Access to the L1Calo DB!
  - Current calibration, dead towers, etc
  - Tools exist in Athena
    - Updates required for recent online schema changes
  - Can read SQLite DB but really needs Oracle
- Readily digestible information from LAr/Tile
  - Eg dead cells for energy corrections



# Conclusions

- Still have work to do
  - Move L1Calo & Receiver DBs to production Oracle server
  - Validating calibrations and analysing trends
    - Useful service tasks?
  - Saving conditions