Recent Online SW/DB Changes

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- Trigger Configuration
- OKS Database
- COOL Database
- IGUI Panels
- Run Control /RCD
- Mapping Tool
- Module Services
- Usual Suspects

Trigger Configuration DB

- L1Calo Online SW can use Trigger Configuration DB
  - requires installation of offline DetCommon at test rigs
    - and extra link if you want to use i686-slc4-gcc34-dbg
    - additional L1Calo package "detcommonExternal" for CMT "glue"
  - list of possible selections in the IGUI can now include "trigconf-default"
  - this will use the default trigger configuration DB and "supermaster" key as defined in other objects in the OKS database:
    - Partition -> TriggerConfiguration object
    - TriggerConfiguration -> TriggerDBConnection object
    - TriggerDBConnection -> SuperMasterKey value
  - it is also possible to export a menu as (non-OKS) XML
    - a new set of such XML files may be useful for test rigs

OKS Database (1)

- Run types
  - removed most of the old complex run type structure
    - run parameters function now moved to COOL
  - what remains is only test vector related
    - thinking of renaming L1CaloRunType to something else
- DataGenRecipes
  - added (long planned) feature to apply to all modules of type
    - should make remaining run types more portable between systems
- New configuration objects
  - L1CaloDisabledRegions: disable parts of calo from trigger
  - L1CaloIguiConfiguration: select set of IGUI panels
  - L1CaloTtcConfiguration: set modes of TTCvi, LTP, LTPIs
    - probably needs a rethink: need run type dependent settings...

OKS Database (2)

- Further cleanups…
  - remove support for old OKS calibration files
    - still used by simulation tests?
    - could add generation of basic COOL DB in coolL1Calo package?
  - remove old OKS based trigger menus
  - when?

COOL Database (1)

- Various modest schema updates in last few months
  - attributes for JEM scans
  - bypass PPM LUT in playback
  - common error code attribute added
    - still needs a common implementation in a suitable package
- Audit trail
  - added time stamps when combined results folders into single validated folder
  - but ModuleId field can only be set at present by programs running online and reading VME directly
  - still need mechanism(s) for other calibration SW to assign the actual module ID for a logical channel at a given time

COOL Database (2)

- Discussion on PPM database suggests further changes
  - keep DAC scan results as floats
  - but store validated BCID coefficients as integers
  - add more generic, future proof, way of specifying LUT
  - need separate folder for dead PPM inputs
    - those not due to internal L1Calo calibration problems
  - more details at end of talk
- NB need stable schema before moving to use the production COOL database!
  - though we could try using non-production Oracle DB

IGUI Panels

- Added dedicated panel for overview of BUSY
  - all RODs on one panel, with busy from each ROD
  - separate indication of Slink full fraction (%) from DAQ and RoI links
    - useful to see if L1Calo busy is coming from RoIB/L2/Dataflow
- Other overviews may also be useful...?
  - Some detailed status now also available via mapping tool
- Meanwhile, tdaq-01-09-00 hit us
  - L1Calo IGUI panels need our IS servers
    - some initialisation of IS variables is done by our IGUI panels
  - But IS servers now started after new BOOT transition
    - need to prevent L1Calo panels appearing at the wrong time
    - hopefully will be better in tdaq-01-09-01

Run Control / RCD

- Old style run control API withdrawn in tdaq-01-09-00
  - Forced moved to something new
- First tried move to ROD Crate DAQ style controllers
  - Used by most other subdetectors (except LAr)
  - However RCD is based on ROS software which uses constant polling for new data
    - Effect is our CPUs run too hot (hotter than other peoples)
      - Maybe ventilation, especially in custom crates, not good enough?
- So used new style non-RCD API
  - So called "Controlled application"
    - Use OKS class L1CaloCtrlApplication so its also a Resource
- DB generation scripts updated
  - Can generate either RCD or controlled application style

Mapping Tool

- Not just mappings…
  - Some of which (JEM extreme eta) are still wrong, alas
- Also displays XML files with channel based data
  - extracts of our COOL calibrations
  - dumps of single events or averaged events
- Most recently also selected status from IS
  - Eg PPM phos4, CPM/JEM link status, etc
  - Intended as one way to show PPM rates

Module Services

- Added ltpiServices, removed obsolete modules
- Rates and "full statistics" to be supported
  - RC supports two frequencies for publishing data
    - so far we only use the faster one for module status
  - proposed new generic class for full statistics
    - allow arbitrary number of histograms or other known types of object to be exchanged between RC and module services
    - foreseen to be called at lower frequency
  - if we want rates (or other information) at high frequency, should probably pass full statistics object in additional module services method?
    - eg updateExtraStatus()
  - may want to publish standard IS variables for common modules (eg BUSY, LTP*, etc) as well as our own style

All the Usual Stuff!

- And no we didnt enable bus errors
- Or write much more documentation
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- But we did try hardware byteswapping in our CPUs!
  - and found some problems with FPGA loading code
  - reverted to SW byteswapping for the moment...
- And we did briefly try RCD run controllers
  - before reverting to cooler software
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- At least one new TDAQ version since last meeting
  - tdaq-01-09-01 is imminent (already used in CERN nightly)
  - remove support for tdaq-01-08-xx soon?

COOL Discussion (if desired)

- Next two slides show present and possible future version of PprChanCalib folder in COOL
  - this contains the validated settings for each PPM channel

COOL Folder: PprChanCalib [Now]

- Common
  - ModuleId [UInt32]
  - ErrorCode [UInt32]
  - *ResultsTimeStamp [UInt63]
  - Success [Bool]
  - Critical [Bool]
- DAC/Pedestal
  - Offset [Double]
  - Slope [Double]
  - CrossCor [Double]
  - PedMean [Double]
  - PedSigma [Double]
- Coarse Timing (R/O Ptr)
  - MaxDaqPtrDelayRaw [Uint32]
- Fine Timing (PHOS4)
  - InDataNegedge [UInt32]
  - Phos4Delay [UInt32]
  - MaxP4DelayRaw [UInt32]
  - SignalTag [Bool]
- Energy/LUT
  - Energies [String255]
  - MeanRaw_0 [String255]
  - MeanRaw_1 [String255]
  - MeanRaw_2 [String255]
  - MeanRaw_3 [String255]
  - MeanRaw_4 [String255]
  - SigmaRaw_0 [String255]
  - SigmaRaw_1 [String255]
  - SigmaRaw_2 [String255]
  - SigmaRaw_3 [String255]
  - SigmaRaw_4 [String255]
  - MeanBcid [String255]
  - SigmaBcid [String255]
  - MeanPedestal [Double]
  - SigmaPedestal [Double]
  - LutOffset [Double]
  - LutSlope [Double]

COOL Folder: PprChanCalib [New?]

- Common
  - ModuleId [UInt32]
  - ErrorCode [UInt32]
  - *ResultsTimeStamp [UInt63]
- DAC/Pedestal
  - Offset [Double]
  - Slope [Double]
  - CrossCor [Double]
  - PedMean [Double]
  - PedSigma [Double]
- Coarse Timing (R/O Ptr)
  - FifoDelay [Uint32]
- Fine Timing (PHOS4)
  - InDataNegedge [UInt32]
  - Phos4Delay [UInt32]
  - MaxP4DelayRaw [Uint32] ???
  - SignalTag [Bool]
- FIR/Energy/LUT
  - FirCoeff_0 [UInt32]
  - FirCoeff_1 [UInt32]
  - FirCoeff_2 [UInt32]
  - FirCoeff_3 [UInt32]
  - FirCoeff_4 [UInt32]
  - LutOffset [UInt32]
  - LutSlope [Uint32]
  - LutNoiseCut [Uint32]
  - LutStrategy [String255] ?
  - LutParameters [CLOB]
- Notes
  - Double values of pulse shape still stored in Results folder
  - Not sure what Results folder for energy calibrations should contain
    - want something for trends