

**AIDA**<sup>2020</sup>

Advanced European Infrastructures  
for Detectors at Accelerators

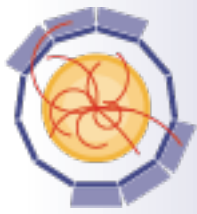
# WP5 Common DAQ Annual Meeting Parallel Session

D. Cussans

M. Wing



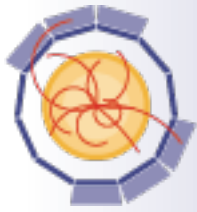
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654168.



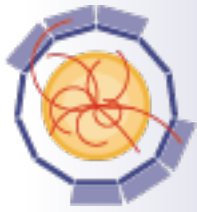
# AIDA<sup>2020</sup>

## Aims

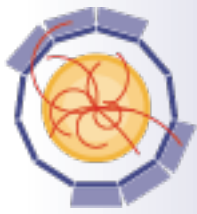
- Common DAQ work-package:
  - Making tools to make beam-tests easier and/or better
  - Hardware – TLU
  - DAQ software – EUDAQ2
    - Support provided by beam-line work-package
  - DQM software – Using DQM4HEP framework



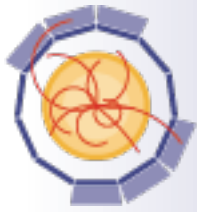
- How do know if we are succeeding?
  - Use as early as possible in beam tests (AHCAL)
  - Meetings
  - Milestones and Deliverables



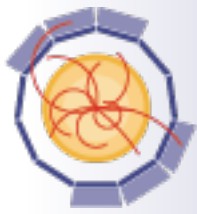
- How are we doing?
- Will we get things done in time?
  - A tool is only useful if it is available.
- Problems?
- Progress?
- Anything we need to change?



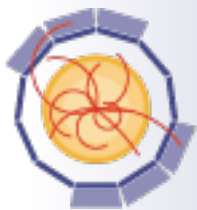
- D5.2 Trigger Logic Ready ( M30 ).
  - Testing prototypes
  - Will make modifications and produce TLUs for AIDA-2020 beam-lines.
    - Units are costing more than expected → Will have to have a tight definition of AIDA-2020 beam-line
    - Will manufacture TLUs for other users at “Cost price”
    - May add features to make TLU useful for DUNE as well → larger production run → Lower cost. (... and risk of design problems in final unit not borne by AIDA-2020 WP5 ... )
- D5.3 DAQ Software ( M30 ).
  - Basically, EUDAQ 2.0
- D5.4 , D5.5 Data acquisition hardware ( M30 )
  - Linked to D5.2
- D5.6 Common DAQ system used in combined beam tests ( M45 )
  - Already running combined beam tests between different Calo systems.
  - Integration of Silicon strip tracker progressing



- MS43 , M21 ( TLU Design ready ) reached.
  - Prototype TLU exists. Report written
- MS46 , M24 ( EUDAQ interfaces to other DAQs available. )
  - Expect progress after release of EUQDAQ 2.0
    - EUDAQ 2.0 release due next month.
    - Reaching milestone on time will be tight.
- MS62 , M27 ( Development of run control ready )
  - Basically reached when EUDAQ 2.0 is released ( Calorimeter groups already gaining experience integrating run control with EUDAQ )
- MS66 , M30 ( TLU ready hardware )
  - See D5.2
- MS67 , M30 ( Data quality tools ready )
  - Tom Coates ( Uni Sussex ) maintaining DAQ4HEP tools ( Ete, Mirabito IN2P3 ) and enhancing integration with EUDAQ
  - Looks OK.



- MS68 ( Slow control system ready ) , M30
  - Very little effort available
  - ... However, can use DQM4HEP framework, so little effort required
- MS80 (Common DAQ system ready for combined beam-tests) , M36
  - Already mounting common beam-tests between different ILC detector prototype DAQ systems.

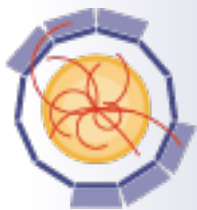


- EUDAQ already used by ATLAS pixel beam test community
- Looking likely that CMS HGCal will use EUDAQ for combined beam-test with Calice AHCAL:

The screenshot displays two windows from the EUDAQ software suite. The left window, titled 'eudaq Run Control v1.6.0+5-gf75fd6', shows the 'EUDAQ Log Collector' interface. It features a search bar and a table of log entries. The table has columns for 'Received', 'Sent', 'Level', 'Text', and 'From'. The log entries include connection messages from LogCollector and ProducerHGCal RPIs, as well as error messages such as 'Command to copy exited with error code 85280' and 'Command to execute script exited with error code 256'. The right window, also titled 'eudaq Run Control v1.6.0+5-gf75fd6', shows the 'Run Control' interface. It includes fields for 'Control' configuration, 'Run' status, 'Log' status, and 'GeoID'. Below these fields is a 'Connections' table with columns for 'type', 'name', 'state', and 'connection'. The connections table lists LogCollector, ProducerHGCal RPI1, RPI4, RPI3, and RPI2, with their respective states and connection details.

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- ... including DQM tool

The screenshot displays the EUDAQ Online-Monitor v1.6.0+14-g74dedc4 interface. It is divided into several sections:

- Control Panel:** Contains fields for 'Control Config' (set to /home/andreyzp/workspace/eudaq/sandbox/conf/RpiTestConfig.conf), 'Run' (Start/Stop buttons), 'Log' (Log button), and 'GeoID' (0). It also shows 'Status' (Run Number: 4, Events Built: 7, Rate: 996 B, File Bytes: 996 B, TLU Status: 0) and 'Connections' (DataCollector, LogCollector, and Producer RPI).
- EUDAQ Log Collector:** A table showing system logs with columns for Received, Sent, Level, Text, From, File, and Function.
- Hexa Hitmaps:** A grid of 12 heatmaps (Hexa 1 to Hexa 15) showing detector hit patterns. A tree view on the left lists various data points like Sensor 1-15, Raw Hitmap, Hitmap X/Y Projection, Clustersize, NumHits, NumBadHits, NumHotPixels, NumClusters, and HIT Occ.
- Terminal/Log Window:** Shows a sequence of messages including 'START RUN', 'submitting data 0-12', and 'The client socket is probably closed. break this thread'.

March 15, 2017

Andrey Pozdnyakov, CMS