

WP5 (Common DAQ):

Summary

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WP14 “Face to Face” Meeting , 10th Jan 19



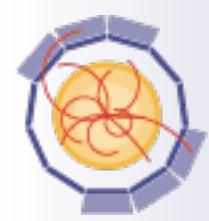
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 654168.

- Status Summary
 - Data Quality Monitoring Tool: DQM4HEP
 - EUDAQ2 “roll out”
 - Beam Telescope
- TLU



- AIDA-2020 WP5 (Common DAQ)
 - Passed all milestones, produced all deliverables, except:
 - D5.6 Common DAQ system used in combined beam tests
- Sufficient work has been done that this can be completed at any time. Pushed back to allow more common beam tests.
- Two production runs of TLUs.
 - Work ongoing to improve common DAQ tools
 - Limited effort





- DQM4HEP tool “adopted” by AIDA-2020 common DAQ
 - Architect: Remi Ete
 - Used in “near online” mode for CALICE Beam Tests. (Adrien Irles, Tom Coates)
 - Intention: use for beam-telescope DQM. Use in “real on-line” mode.
 - Issues:
 - Experienced problems trying to extend for “streaming” mode
 - Lack of staff effort – development stalled.



- EUDAQ2 in routine use
 - Calice AHCAL
 - Multiple data collectors
 - AHCAL + CMS HGICAL combined beam-test
 - With beam telescope at CERN PS
- Work to enhance EUDAQ2
 - e.g. Sohail Amjad (UCL)
 - I/O to Root
 - Stand-alone producers (like EUDAQ1)



- Beam Telescope
 - “Mixed mode” triggering for Mimosa + FE-I4
 - Rolling shutter Mimosa, 100us period, MAPS, small pixels, thinned sensors, high spatial resolution
 - “LHC Style” pixel detector FE-I4. Short pipeline in each pixel. 25ns clock. Larger pixels than Mimosa
 - Multiple triggers issued to FE-I4 for each Mimosa frame
 - High spatial resolution from Mimosa
 - Good timing from FE-I4
 - TLU can now issue multiple triggers in each Mimosa frame
 - Working at DESY – Jan Dreyling-Eschweiller
 - Integration with EU Telescope reconstruction software ongoing



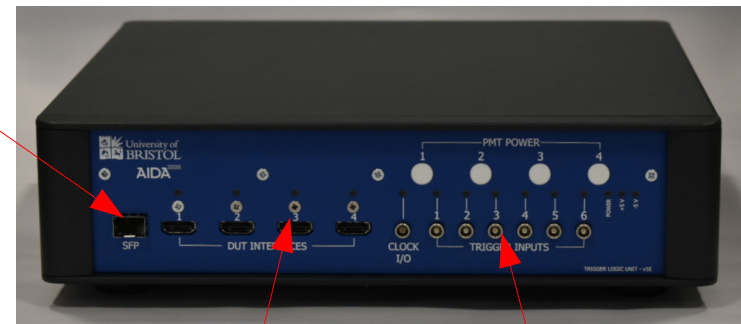
- Beam telescope analysis software
 - EUTelescope : Only support from user community (mainly Atlas)
 - New analysis frameworks being developed independently
 - For same hardware....



- AIDA-2020 Trigger/Timing Logic Unit (TLU)

- Supplied to all AIDA-2020 supported beam telescopes and also AIDA-2020 Si Strip tracker.
- A number of extra units manufactured for other users
 - At CERN, DESY, FNAL, LAL, Vienna
- Now available in 19-inch rack mount as well as desk-top enclosures

Serial optical connection for timing/sync/trigger I/O



“Calice style” HDMI connectors to “DUT”

Trigger inputs (scintillator, NIM, TTL)



Read out by 1Gbit/s UDP/IP “IPBus”



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 - Supplied to all AIDA-2020 supported beam telescopes and also AIDA-2020 Si Strip tracker.
 - A number of extra units manufactured for other users
 - At CERN, DESY, FNAL, LAL, Vienna
 - Same hardware used (with different firmware/software) for
 - protoDUNE-SP detector at CERN to receive accelerator signals and distribute timing to detector front end.
 - “Iceberg” DUNE test-stand at FNAL



- WP5 (Common DAQ) entering “maintenance” phase.
- Still work to do assisting integration of SiTRA
- Will continue to support other uses (e.g. CLIC)
- Work ongoing to improve common DAQ tools
 - Limited effort
 - DQM4HEP development “stalled”

