



SiTra DAQ integration into EUDAQ

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SiTra Job Description

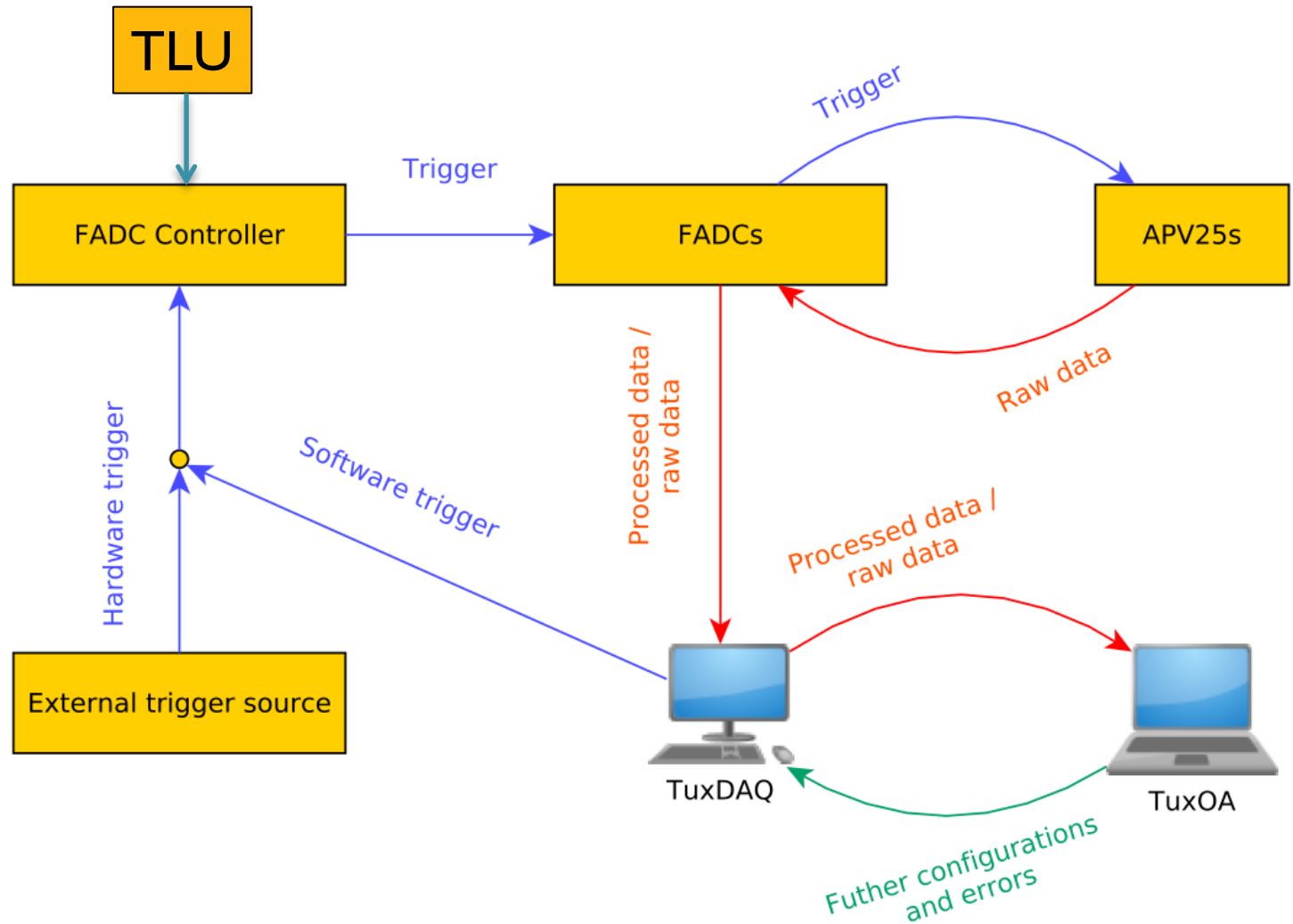
Short:

- Provide telescope information for users

Detailed:

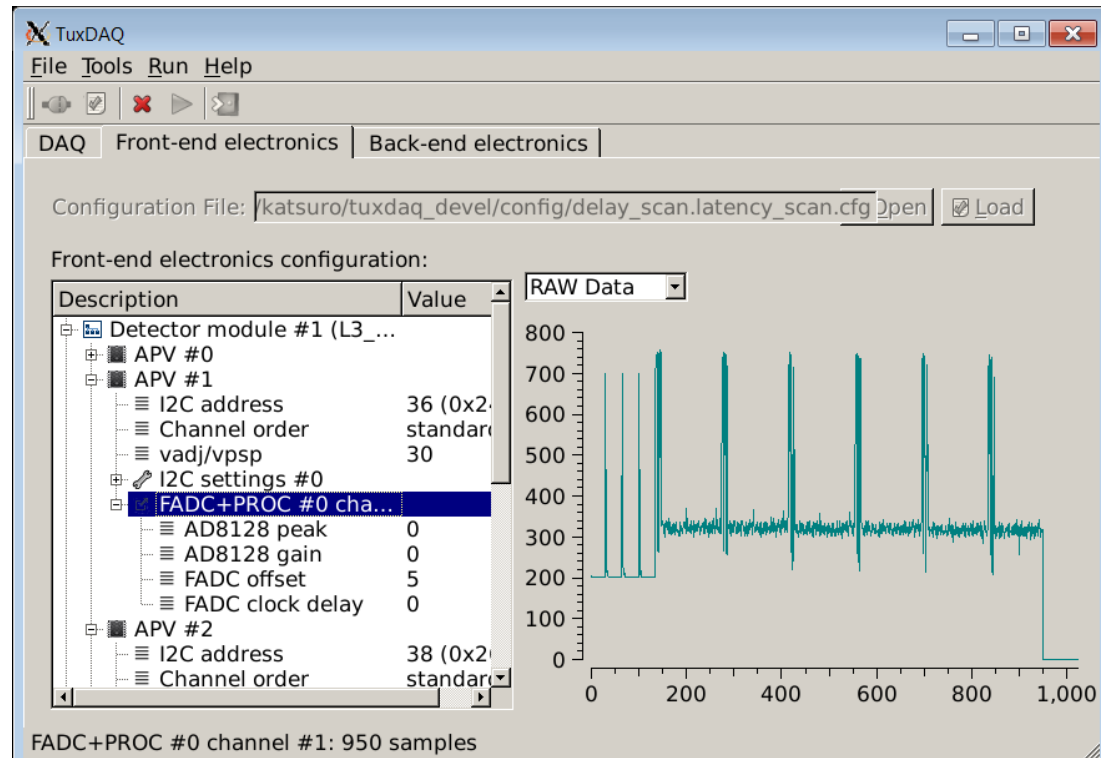
- measure particle position in N planes
- perform alignment
- perform tracking
- provide entry position and direction at the DUT
- ?provide full track info (+covariance...)?

SiTra Architecture



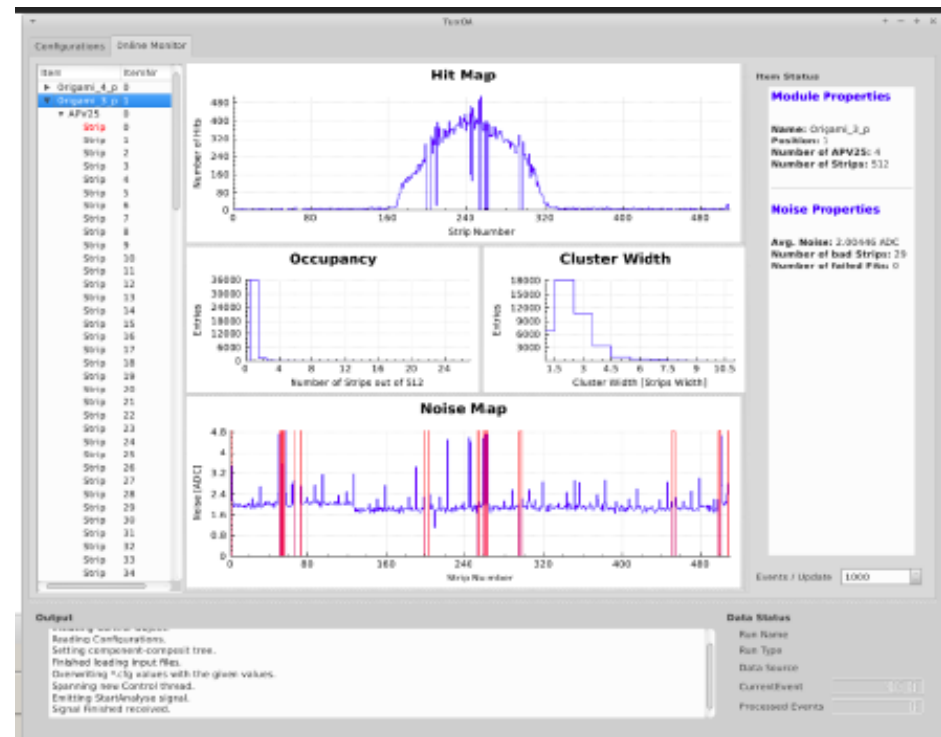
TuxDAQ

- DAQ system necessary to control the hardware
- I²C communication, flashing firmware, save calibration data (noise,..) into flash
- Run control, to be integrated in EPICS
- GUI or command line only mode



TuxOA

- Online Analysis, i.e. monitoring
- Provides live
 - signal/noise ratios
 - Cluster sizes
 - Hit map
- Communication between TuxDAQ/TuxOA via file (at the moment) and via TCP/IP socket (future)



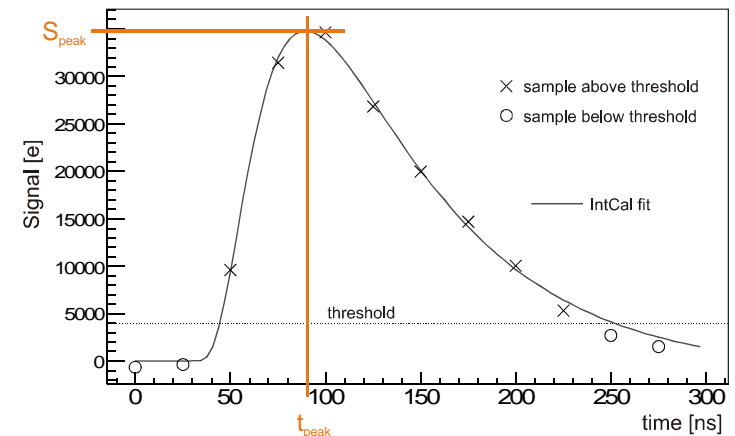
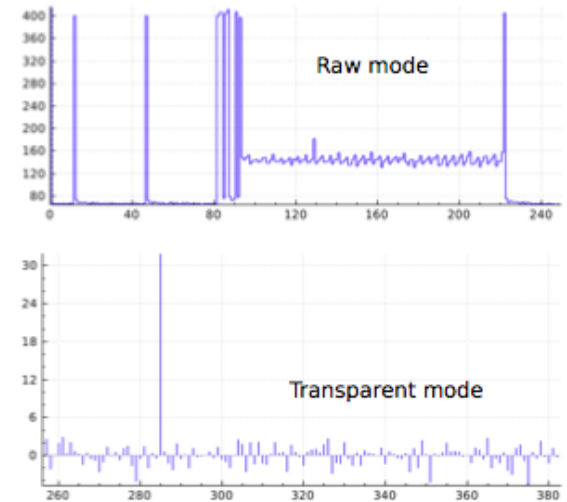
Data Contents/Formats: EUDAQ

- **RawDataEvent**
 - Generic container for unaltered, encapsulated detector response
 - Data input: raw block of memory or vector
 - Storage of additional information possible
- **Alternative: StandardEvent**
 - Decoded detector data
 - Can be read by e.g. the EUDAQ Online Monitor

Source: EUDET-Memo-2010-01

SiTra/TuxDAQ Run modes

- Raw Mode/transparent mode
 - Provides analog strip values
- Zero Suppressed Mode
(corresponds loosely to EUDAQ StandardEvent)
- Single/Multi peak mode
 - Single mode: provides the maximum of the shaping curve
 - Multi-peak mode: samples shaping curve for offline fitting (used by Belle II to reduce background/occupancy)



Data Analysis

What data is needed for which user:

CALICE

- Probably impact point and direction
- This can be sufficiently achieved with ‘simple’ reco
- Do we have ‘simple’ reco/align/tracking SW?

Generic user (TPC,...)

- Perhaps raw data to perform precision tracking with EU Telescope Analysis Framework
- Who does the analysis? AIDA SW experts?

EUDAQ SiTra Interface

2 modules running within TuxDAQ/OA needed:

- **Producer**
 - Configuration
 - Receiving Commands from RunControl
 - Sending Data to DataCollector
 - Communication via TCP/IP
- **Converter (RawData → StandardEvent)**

Further bits and pieces needed

- ?Test EUTelescope Analysis Framework applicability to analyse strip data (clustering, alignment, tracking)
- ?Tune EAF to perform the analysis
- For CALICE our 'simple' tools might do (to be studied)

Status

- TuxDAQ and TuxOA operational
- TuxOA ↔ TuxDAQ TCP/IP socket communication missing
- TCP/IP needed also for TuxDAQ ↔ EUDAQ
- First tests of TCP/IP communication performed by Daniel Scheirich (Prague CU)
 - Low-level C standard kernel functions (socket...)
 - ROOT TServerSocket and TSocket
- Implementation and test needed for both tasks (can we use ROOT Socket classes?)

Plans

- Need to clarify the job description
- Meeting with EUDAQ and ECAL DAQ people tomorrow | 4hrs
- Enough info/assumptions to start writing Producer
 - Daniel Scheirich with kind assistance of Hao et al. is in charge of this

Question to DAQ/SW group

- Do we need to provide more than simple track info?
- Can we provide StandardEvent instead of RawDataEvent?
- Can we use ROOT TSocket classes on the TuxDAQ side?