V5.3 wishlist based on EHN1 testing

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Features for next release

List of features and fixes for next release, based on the experiences of EHN1 running
<u>Timeline: by the end of November</u>

- Known items from previous discussions
- TPG related
- Performance activity related
- New explorations and discovered bugs

Known/planned enhancements

- **C++20 Concepts for TypeAdapters (& Detector data formats)**
  (Needs discussion)
  - What to enforce, what to drop (e.g.: keep keys, drop emulation requirements)
  - Concept categories and supersets (multiple concepts to reflect payload char.)
  - Not aiming for final solution, but something to conceptually work towards the start of the readout review

- Easy fixes
  - Buffer cleanup consolidation (correct parameters per datatype)
  - Re-enable recording functionality (fixes on schema and code)
  - Buffer's available "time-range" [minTS-maxTS] published to OpMon

- Best effort: Arena allocator for SkipList
  - Seems to be tricky, no obvious solution. More towards for DHlibs review

TPG related

- Algorithm changes
- High-low integral management
- **Trigger Primitive format change**
  - Reduce size overhead
  - Implications on dataflow and offline (Needs discussion)

Performance optimization specific

- **Introduce InputDataType (IDT) and transformation to ReadoutDataType (RDT)**
  - Reduces data copy rate and overhead - receiving something else than is stored -.
  - Transformation step is specialized based on data type
  - Code changes are validated, sitting on a feature branch (Trigger and TPG incl.!)
  - Leads to substantial performance gain on TP sending to TPHandlers
    (Which is backed-up by profiler runs, and perf. runs!)

- Data Move Callbacks consolidation
  - Seems to be tricky, no obvious fix for now
  - Prioritize other work before tackling this:
    - Delayed post-processing overhaul
      (Reduce obvious clashing block and functionality mixing.)
    - Testing facilities around SkipList and Callbacks
      (Ensure that we are not doing something obviously wrong.)

"New" anomalies, recent bugs

- **Trigger**
  - RandomTCMaker
  - TimestampEstimator silent errors

- Issues were reported to Trigger team
- Some aspects might involve just clarification on sensible configuration defaults

- **Readout - Dataflow**
  - From CoreSW Meeting ([30th October](#)), Wes' presentation includes several other anomalies. We need to distill those slides and see what we want/can tackle as target items for v5.3.

End

Thank you for your attention!