Slowcontrol Summary

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Since 2018 TRG/DAQ Workshop

- Organisation structure of B2 SLC was changed with the goal of creating a Slowcontrol Group

  – Lead by Nakao-san, OH deputy

  – Thanks to Konno-san for many years of hard work!

- Quite successful, a lot more contributions from collaboration members than before

daq_slc and CVMFS

- Cleaned up and updated daq_slc repository with local changes scattered throughout DAQ machines
- Fundamental changes to code management of the daq_slc repository
  - All code changes are now reviewed in pull requests
  - Very well accepted by all contributors
- We now provide reproducible build environments for all used daq_slc target architectures in docker containers
  - Pre-installed for use by everyone on build.daqnet.kek.jp
    (see confluence for usage documentation)
- Unified daq_slc software deployment in daqnet via CVMFS
  - Well documented (see confluence), almost no issues seen
  - We can add CVMFS repositories for your software as well!

Steps in Automation and Simplification

- New, easy to use restart scripts for both DAQ experts and detector slowcontrol users
  - user friendly CLI, detailed logging
- First steps towards an automated error diagnosis system
  - To help CR shifters to diagnose problems or at least tell on-call experts more details about possible problems
- Automated run STOP/START in case of HV trips
  - First time trying this in Belle II runcontrol
- Continuing efforts integrating full TTD functionality into slowcontrol system
  - Will enable further steps in automated error diagnosis and runcontrol

nsm2

- nsm2 is generally very stable
  - no "catastrophic failures" seen since Phase 2
  - some bugs are known and worked on, but relatively minor
- newest nsm2 version has minimum version requirement
  - older versions will refuse to start
  - no complaints yet, but I believe this will change soon
- nsm2cad: nsm/epics interface tool
  - Fundamental to archive detector slowcontrol data, but sometimes crashes for unknown reasons
  - Nobody in slowcontrol group knows epics well, so Yongkyu Kim is now learning about nsm2cad to add logging features

Open Questions and Discussions

- DAQ Database
  - Configuration database generally works with a very versatile interface
  - Performance issues in some (common) use cases: reading/writing thousands of values at the same time is slow!
  - No golden solution yet, discussion will continue (also consulting B2 DB experts)
- High Voltage logic / "safe for beam" scheme
  - The HV software interlock system maps detector high voltage states into "safe for beam", but this is (at least) not trivial
  - Lack of documentation of the current logic and exceptions
  - Several ideas for "HV logic" overhaul, but no comprehensive proposal

Slowcontrol for DAQ upgrade

- Test benches will run with minimally modified slowcontrol codes
  - Most changes prepared already, flexible in number of ports to quickly support all proposals
- DAQ upgrade is a great chance to overhaul some parts that are hard to change with the current system
  - Now is a good time to think of improvements deployed with the DAQ upgrade
    - e.g. structure of cprcontrold replacement
    - Job management on readout servers
  - Let's also ask subdetector slowcontrol developers for their opinions and proposals

Summary

- Generally, slowcontrol software is in a much better state than one year ago

  – Much easier to contribute nowadays

- Frequency of serious troubles and lost beam time due to slowcontrol issues has decreased dramatically

- Less effort on emergency fixing → more time to develop automation, usability improvements