

GUI for Configuration of COMPASS DAQ

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Current DAQ configuration tool

- Software support tool to view and alter configuration profiles
- Web application
- Using CMAD2012 database
- Functional
- Not very intuitive, not well-arranged
- Inability to filter or sort results
- Any change immediately reflected in the database
- Lack of user documentation
- For a new user really hard to understand it and work with this tool

Current DAQ configuration tool – screenshot

[Manage modules](#)[Manage processes](#)[Manage registers](#)[Manage port templates](#)[Manage firmware](#)[Manage runs](#)[Trigger settings](#)[Add new port register](#)

Name	XML name	Permission	Mode	Size
Current Spill Data	DataCurS	r	Undefined	4
Data in FIFO	FIFOData	r	Undefined	4
Error reg long	ERR2	rw	Undefined	4
Error Register	ERR	rw	Undefined	4
ErrorCounter	ErrCount	r	Undefined	4
Event Error FIFO	FIFOEvEr	r	non-incremental	512
Event size	ES	rw	Undefined	4
Fill level	FL	r	Undefined	4
Memory size	MemSize	rw	Undefined	4
Port status and control	PSC	rw	Undefined	4
Previous Spill Data	DataPreS	r	Undefined	4
Sequence number	SeqNum	rw	Undefined	4
Test001	TEST	rw	Undefined	4
Timeout	Timeout	rw	Undefined	4

[Add new general register](#)

Name	XML name	Permission	Mode	Size
Current Event Number	CurEvNum	r	Undefined	4
Current Event TT	CurEvTT	r	Undefined	4
debug0	D0	r	Undefined	4
debug1	D1	r	Undefined	4
debug2	D2	r	Undefined	4
debug3	D3	r	Undefined	4
debug4	D4	r	Undefined	4
debug5	D5	r	Undefined	4
debug6	D6	r	Undefined	4
debug7	D7	r	Undefined	4
Device Source ID	SourceID	rw	Undefined	4
Event info	EI	r	Undefined	4
FIFO1 Fill Level	FIFO1FL	r	Undefined	4
FIFO2 Fill Level	FIFO2FL	r	Undefined	4
FLASH_ADDR	FlashAdd	rw	Undefined	4
FLASH_DATA_READ	FLASH_DR	r	Undefined	4
FLASH_DATA_WRITE	FDW	rw	Undefined	4
FPGA Temperature Code	FPGATemp	r	Undefined	4
fw	fw	rw	Undefined	4
Header mem fill level	HMEM	r	Undefined	4
ID Register	IDReg	r	Undefined	4
IP	IP	rw	Undefined	4
Last Spill Event Number	LSpEvNum	r	Undefined	4
Last Spill Event TT	LSpEvTT	r	Undefined	4
MAC	MAC	rw	Undefined	4
MUX Output Bandwidth	BandW	rw	Undefined	4
Number of RES	IRE	rw	Undefined	4
OPEN_5	OPEN_5	rw	Undefined	4

















Current DAQ configuration tool – screenshot

Monitored equipment

 **900 R** **SPILL001** **SB01_CONTROL** Ports (1)
10.152.72.251 Spillbuffer SlaveControl on pccore15

 **921 R** **MUX12** **MUX12_CONTROL** Ports (16)
10.152.72.230 DAQ Module SlaveControl on pccore15


 **944 R** **SWITCH** **SWITCH_CONTROL** Ports (16)
10.152.72.234 DAQ Module SlaveControl on pccore15

 R Port 0: ← 945 MUX01 (Port 0)	Disconnect
 R Port 1: ← 946 MUX02 (Port 0)	Disconnect
 R Port 2: ← 947 MUX03 (Port 0)	Disconnect
 R Port 3: ← 948 MUX04 (Port 0)	Disconnect
 R Port 4: ← 949 MUX05 (Port 0)	Disconnect
 R Port 5: ← 950 MUX06 (Port 0)	Disconnect
 R Port 6: Not connected.	Connect
 R Port 7: Not connected.	Connect
 R Port 8: → 900 SPILL001 (Port 0)	Disconnect
 R Port 9: → 901 SPILL002 (Port 0)	Disconnect
 R Port 10: → 902 SPILL003 (Port 0)	Disconnect
 R Port 11: → 903 SPILL004 (Port 0)	Disconnect
 R Port 12: Not connected.	Connect
 R Port 13: Not connected.	Connect
 R Port 14: Not connected.	Connect
 R Port 15: Not connected.	Connect

Standalone equipment

Module name:


Src Id from: to:

 **546** **APV-RICH1_1** Ports (1)
0 HGeSiCa

 **547** **APV-RICH1_2** Ports (1)
0 HGeSiCa

 **548** **APV-RICH1_3** Ports (1)
0 HGeSiCa

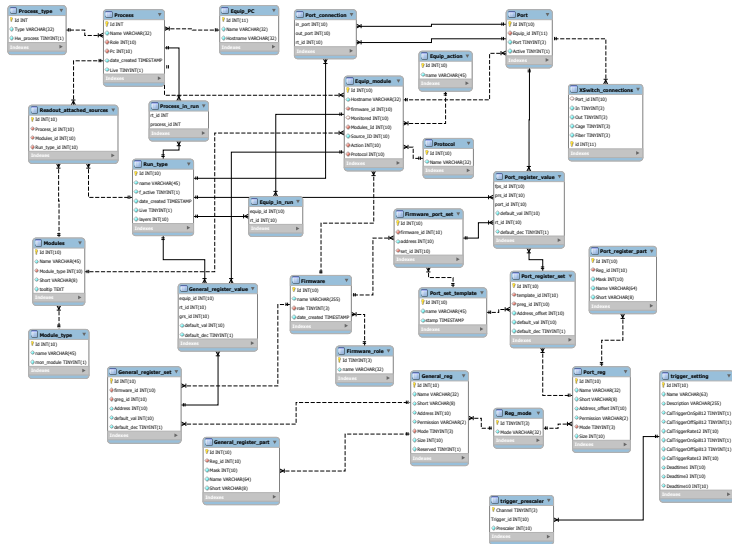
 **549** **APV-RICH1_4** Ports (1)
0 HGeSiCa

 **550** **APV-RICH1_5** Ports (1)
0 HGeSiCa

 **242** **BMS_1** Ports (1)
0 CATCH

 **243** **BMS_2** Ports (1)
0 CATCH

Relevant part of CMAD2012 database



Motivation for new solution

- Simple, user-friendly, intuitive and self-descriptive (even for non-experienced users)
- Use of graphics library for better understanding
- Transformation to a desktop application
- Use of C++ and Qt framework (drag and drop mechanism)
- Ability to use it "offline" and update the database when requested
- Possibility to extend its functionality
- More general – e.g. optional number of layers
- User documentation

- C++14 library
- Designed to display graphs and relational content in a Qt application
- Provides QML components and C++ classes
- Dynamic UI – DnD support, resizable content, visual connection of nodes

Link to QuickQanava website:

<http://cneben.github.io/QuickQanava/index.html>

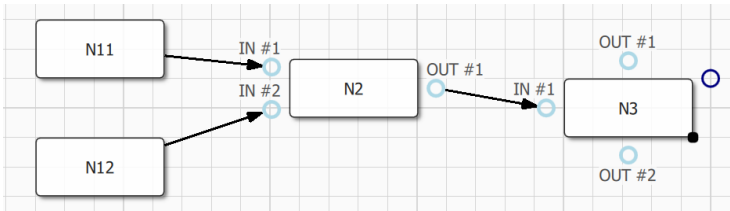


Figure: IN and OUT ports

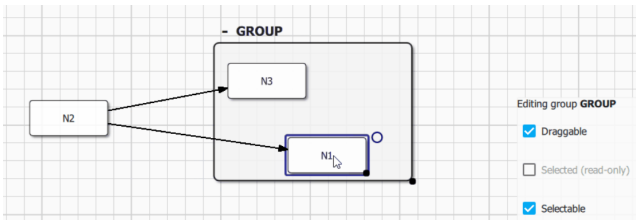


Figure: Editing groups

Current state of the project

- Analysis of current DAQ configuration tool
- Analysis of CMAD2012 database
- Summing up requirements for new solution
- Working on 2-3 prototypes

Prototype of new solution – screenshot

DAQ Configuration Tool

Open structure type New structure type View all... Save to database Save as new structure type

Name Source ID

- Processes
 - SlaveControl
 - SC_RE11 -
 - SWITCH_RE11 -
 - SMC01_RE11 -
 - XSWITCH -
 - SlaveReadout
 - SR_RE11 -
 - Master
 - Undefined
- Monitored equipment
 - Spillbuffer
 - SPILL001
 - DAQ Module
 - SWITCH 944
 - XSWITCH 999
 - MUX01 945
 - Standalone equipment
 - HGeSiCa
 - ECAL1_1 624
 - ECAL1_2 625
 - ECAL1_3 626
 - ECAL1_4 627

ADD

STRUCTURE TYPE: StructureType1



Properties for MUX01 945:

PROPERTIES:

Hostname: 10.152.72.238

Source ID: 945

Module: MUX01 (DAQ Module)

Firmware: MUXV007

Protocol: ipbusudp-1.3

Action: remove

Number of ports: 16

SlaveControl Process: SMC01_RE11

Buttons: Define new action, Detailed info, SAVE CHANGES, DELETE

Plans for near future

- Finalizing prototypes
- Usability testing (volunteers are welcome)
- Choosing the best design and adjusting according to comments
- Detailed description of the final proposal
- Implementation – C++, Qt framework
- To be deployed by the end of 2021
- Documentation

