AGATA WEEK 2025

Topology Manager

(Ijclab, Orsay, France)

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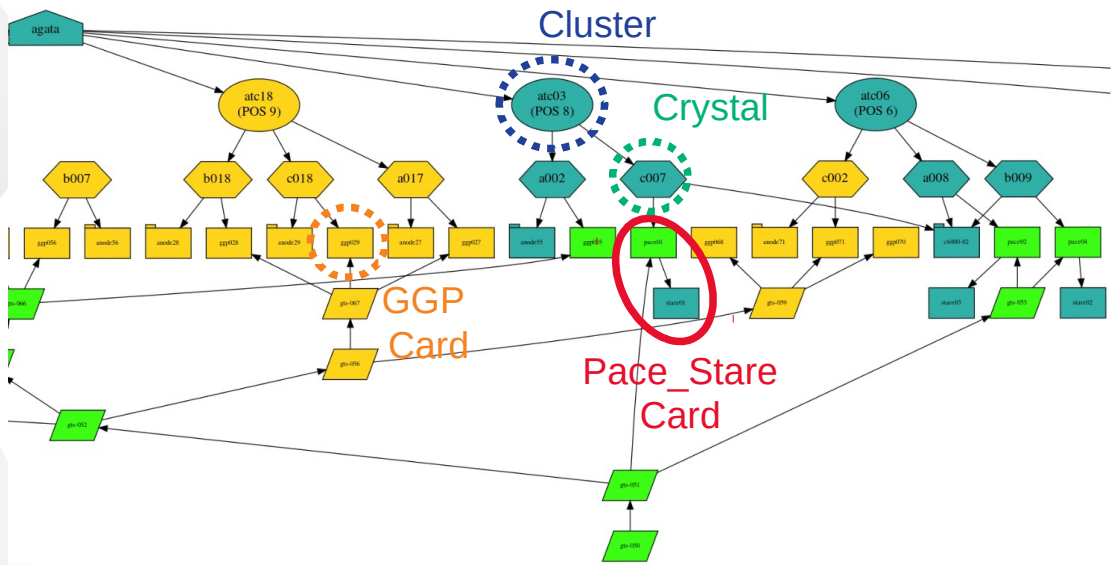
Definition of Topology Manager and its roles

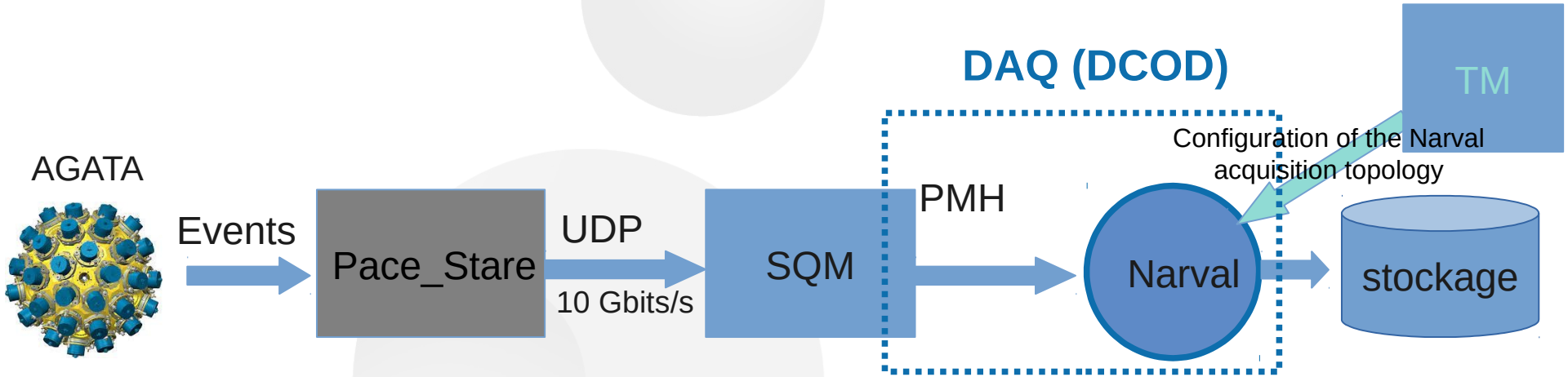
Topology Manager describe the structure of the electronics for a system

- Generate Acquisition Topology
- Generate Configuration files for the different slow control



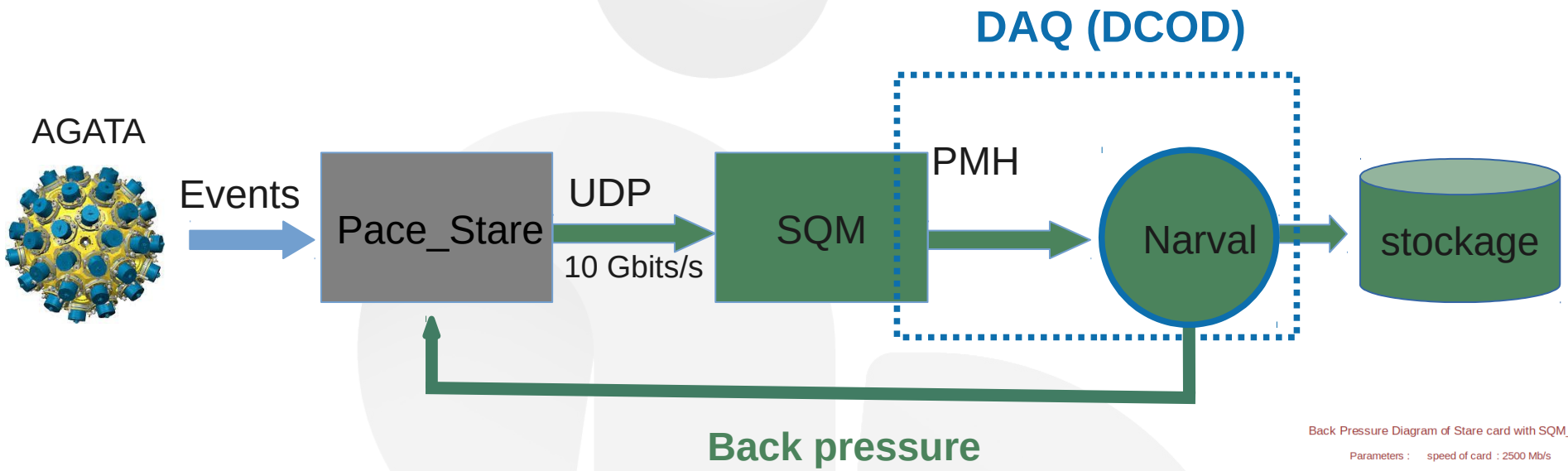
Example of TM architecture

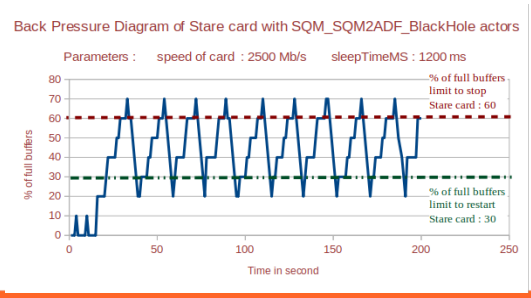
Acquisition Process



Back-pressure for Pace_Stare Card

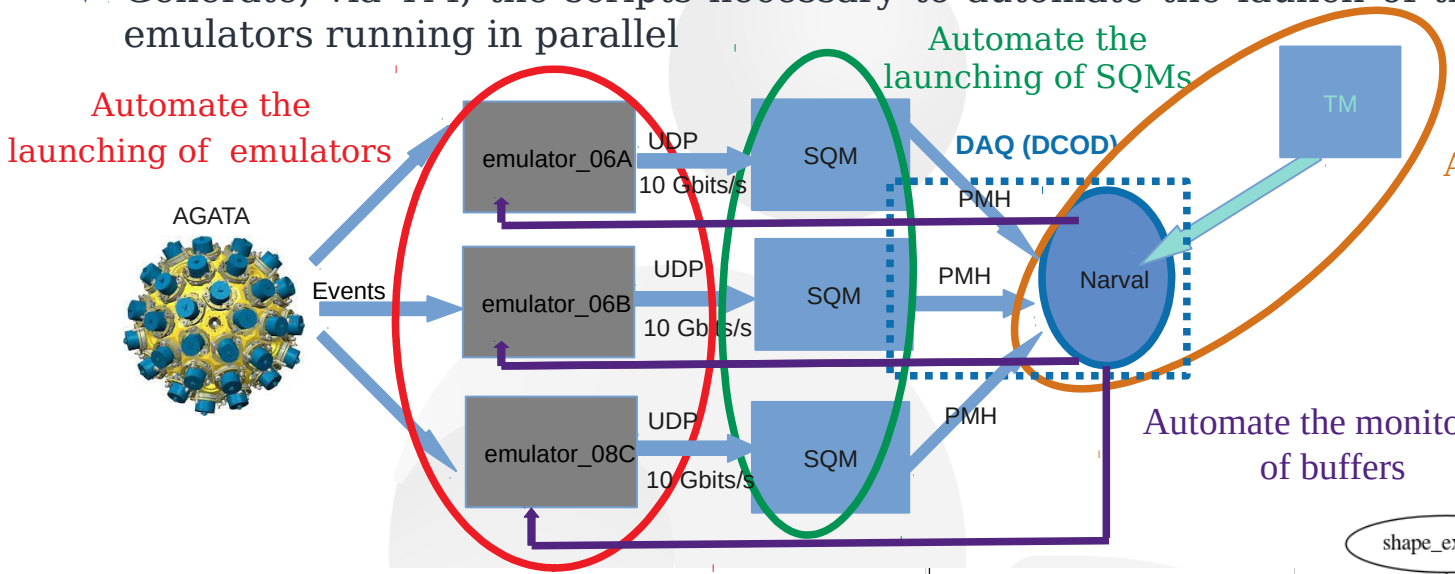
Manage sending start/stop messages to the electronics based on buffer occupancy.



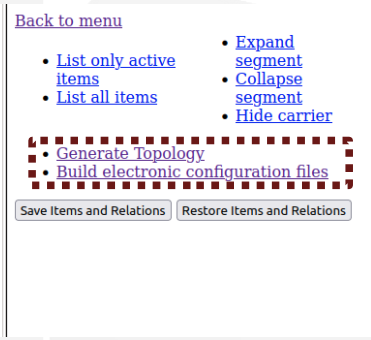


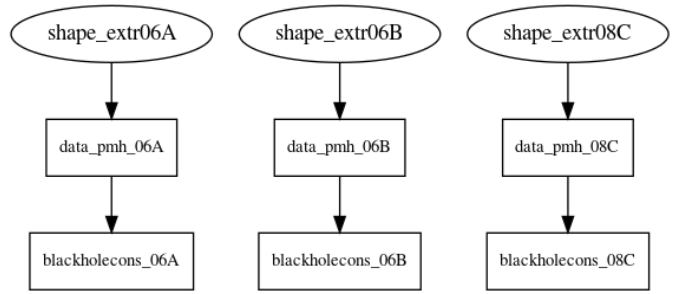
Automating the Acquisition Process

- Generate, via TM, the scripts necessary to automate the launch of the acquisition for many emulators running in parallel



Clusters	Position	Crystals	Color	Digitizer	GGP	Pace	Stare	Carrier Master	GTS	Carrier Slave	Anode
atc01	11	a010	A	xxx	ggp081	xxx	xxx	xxx	33	xxx	anode81
		b011	B	xxx	ggp082	xxx	xxx	xxx	34	xxx	anode82
		c009	C	xxx	ggp083	xxx	xxx	xxx	35	xxx	anode83
atc03	8	a002	A	xxx	xxx	xxx	xxx	carrier-005	gts-171	xxx	anode55
		b007	B	xxx	ggp056	xxx	xxx	xxx	25	xxx	anode56
		c007	C	xxx	xxx	pace01	stare001-1	xxx	151	xxx	c6400-05.1
atc06	6	a008	A	xxx	xxx	pace02	stare002-1	xxx	152	xxx	c6400-05.2
		b009	B	xxx	xxx	pace03	stare003-1	xxx	153	xxx	c6400-05.3
		c002	C	xxx	xxx	pace04	stare004-1	xxx	154	xxx	c6400-04.1
atc07	4	a015	A	xxx	ggp074	xxx	xxx	xxx	12	xxx	anode74
		b014	B	xxx	ggp073	xxx	xxx	xxx	13	xxx	anode73
		c008	C	xxx	ggp072	xxx	xxx	xxx	14	xxx	anode72





Narval topology

Automating the Acquisition Process

- Organize the new configuration files generated by TM by date of experiment

Configuration files generated with global trigger system :

- File **/home/gts/GTS/gts_tree/cfg/architecture.cfg** has been written
- File **/agata/tools/gts_client/bin/gts_in_gts_tree.conf** has been written
- File **/home/carrier/bin/agatavars** has been written.
- File **/home/carrier/carrierLSC/cry.cfg** has been written.
- File **/home/carrier/carrierLSC/cgui_db.cfg** hasn't been written, exception occurred
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/GGP_Conf_Dir** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/PACE_Conf_Dir** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/Slow_Control** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/Monitoring/Launch_Script** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/Emulator/Launch_Script** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/Emulator/Template_Creation** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/Screen** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/Dcod** have been created and populated
- Directories in **/datashare/agata/topology/Elec/2024-08-29_09-18-55/GTS_IP_BUS_Conf_Dir** have been created and populated

Done

Automating the Acquisition Process

- Generate, via TM, the scripts necessary to automate the launch of the acquisition for Stare and emulator running in parallel + adding an option « Data_From » to choose whether the data comes from the emulator, PACE, STARE, digitizer or crystal

Clusters	Position	Crystals	Color	Data_From	Digitizer	GGP	Pace	Stare	Carrier Master	GTS	Carrier Slave	Anode
atc01	11	a010	A	xxx	xxx	ggp081	xxx	xxx	xxx	33	xxx	anode81
		b011	B	xxx	xxx	ggp082	xxx	xxx	xxx	34	xxx	anode82
		c009	C	xxx	xxx	ggp083	xxx	xxx	xxx	35	xxx	anode83
atc03	8	a002	A	xxx	xxx	xxx	xxx	xxx	carrier-005	gts-171	xxx	anode55
		b007	B	xxx	xxx	ggp056	xxx	xxx	xxx	25	xxx	anode56
		c007	C	FROMSTARE	xxx	xxx	pace01	stare013-0	xxx	151	xxx	c6400-09.i1p1
atc06	6	a008	A	FROMSTARE	xxx	xxx	pace02	stare013-1	xxx	152	xxx	c6400-09.i2p1
		b009	B	FROMEMULATOR	xxx	xxx	pace03	stare003-0	xxx	153	xxx	c6400-04.i1p1
		c002	C	FROMSTARE	xxx	xxx	pace04	stare001-0	xxx	154	xxx	c6400-05.i3p1

Tests already completed

- Set up acquisition with the SQM2ADF actor and test the acquisition process :

  Emulateur -> SQM -> SQM2ADF -> BlackHole ok for 6400 !

  Stare -> SQM -> SQM2ADF -> BlackHole ok for 6400 !

  Stare -> SQM -> SQM2ADF -> BlackHole

  Emulateur -> SQM -> SQM2ADF -> BlackHole

  ⟩ Ok for a few minutes, then a problem with back pressure !

  Stare ┌ Eth0 -> SQM -> SQM2ADF -> BlackHole
  └ Eth1 -> SQM -> SQM2ADF -> BlackHole

  ⟩ Ok no packet loss for 6400!

- Implement an acquisition with full actors for snode servers :

  2 x Soft Emulator -> SQM -> SQM2ADF -> Preprocessing -> PSA -> BasicAFC ok !

  12 x Soft Emulators on 6 servers → 12 x Full Chains on 6 servers ok !

  24 x Soft Emulators on 6 servers → 24 x Full Chains on 12 servers problem with a crystal !

Tests already completed

Clusters	Position	Crystals	Color	Data_From	Digitizer	GGP	Pace	Stare	Carrier Master	GTS	Carrier Slave	Anode
atc01	3	a010	A	FROMEMULATOR	xxx	xxx	pace06	stare029-0	xxx	156	xxx	snode033.i1p1
		b011	B	FROMEMULATOR	xxx	xxx	pace07	stare030-0	xxx	157	xxx	snode033.i1p2
		c009	C	FROMEMULATOR	xxx	xxx	pace08	stare013-1	xxx	158	xxx	snode027.i1p1
atc03	5	a002	A	FROMEMULATOR	xxx	xxx	pace09	stare013-2	xxx	159	xxx	snode027.i1p2
		b007	B	FROMEMULATOR	xxx	xxx	pace18	stare020-1	xxx	168	xxx	snode035.i1p2
		c007	C	FROMEMULATOR	xxx	xxx	pace01	stare013-0	xxx	151	xxx	snode037.i1p1
atc06	6	a008	A	FROMEMULATOR	xxx	xxx	pace02	stare020-0	xxx	152	xxx	snode029.i1p1
		b009	B	FROMEMULATOR	xxx	xxx	pace03	stare003-0	xxx	153	xxx	snode029.i1p2
		c002	C	FROMEMULATOR	xxx	xxx	pace17	stare028-0	xxx	167	xxx	snode030.i1p1
atc07	4	a015	A	FROMEMULATOR	xxx	xxx	pace14	stare025-0	xxx	164	xxx	snode032.i1p2
		b014	B	FROMEMULATOR	xxx	xxx	pace15	stare026-0	xxx	165	xxx	snode028.i1p1
		c008	C	FROMEMULATOR	xxx	xxx	pace16	stare027-0	xxx	166	xxx	snode028.i1p2
atc10	12	a011	A	FROMEMULATOR	xxx	xxx	pace19	stare020-2	xxx	169	xxx	snode037.i1p2
		b006	B	FROMEMULATOR	xxx	xxx	pace20	stare021-1	xxx	170	xxx	snode038.i1p1
		c012	C	FROMEMULATOR	xxx	xxx	pace21	stare021-2	xxx	171	xxx	snode038.i1p2
atc12	0	a006	A	FROMEMULATOR	xxx	xxx	pace10	stare021-0	xxx	160	xxx	snode026.i1p1
		b005	B	FROMEMULATOR	xxx	xxx	pace11	stare022-0	xxx	161	xxx	snode026.i1p2
		c001	C	FROMEMULATOR	xxx	xxx	pace12	stare023-0	xxx	162	xxx	snode032.i1p1
atc14	14	a014	A	FROMEMULATOR	xxx	xxx	pace22	stare022-1	xxx	172	xxx	snode034.i1p1
		b010	B	FROMEMULATOR	xxx	xxx	pace23	stare022-2	xxx	173	xxx	snode034.i1p2
		c016	C	FROMEMULATOR	xxx	xxx	pace24	stare023-1	xxx	174	xxx	snode035.i1p1
atc15	10	a013	A	FROMEMULATOR	xxx	xxx	pace13	stare024-0	xxx	163	xxx	snode030.i1p2
		b015	B	FROMEMULATOR	xxx	xxx	pace05	stare002-0	xxx	155	xxx	snode031.i1p1
		c011	C	FROMEMULATOR	xxx	xxx	pace04	stare001-0	xxx	154	xxx	snode031.i1p2
atc17	2	a016	A	xxx	xxx	ggp080	xxx	xxx	xxx	6	xxx	anode80
		b017	B	xxx	xxx	ggp079	xxx	xxx	xxx	7	xxx	anode79
		c013	C	xxx	xxx	ggp078	xxx	xxx	xxx	8	xxx	anode78
atc18	9	a017	A	xxx	xxx	ggp027	xxx	xxx	xxx	27	xxx	anode27
		b018	B	xxx	xxx	ggp028	xxx	xxx	xxx	28	xxx	anode28
		c018	C	xxx	xxx	ggp029	xxx	xxx	xxx	29	xxx	anode29

In conclusion, TM can handle the acquisition and automatically run all the necessary scripts according to the needs of the experiment

Next Steps

- Correct the Behavior of acquisition in case of back pressure

- Continue the tests and use the Stare cards

Thank you for your attention