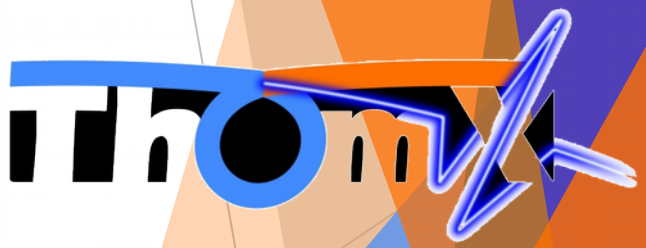
Control-Command



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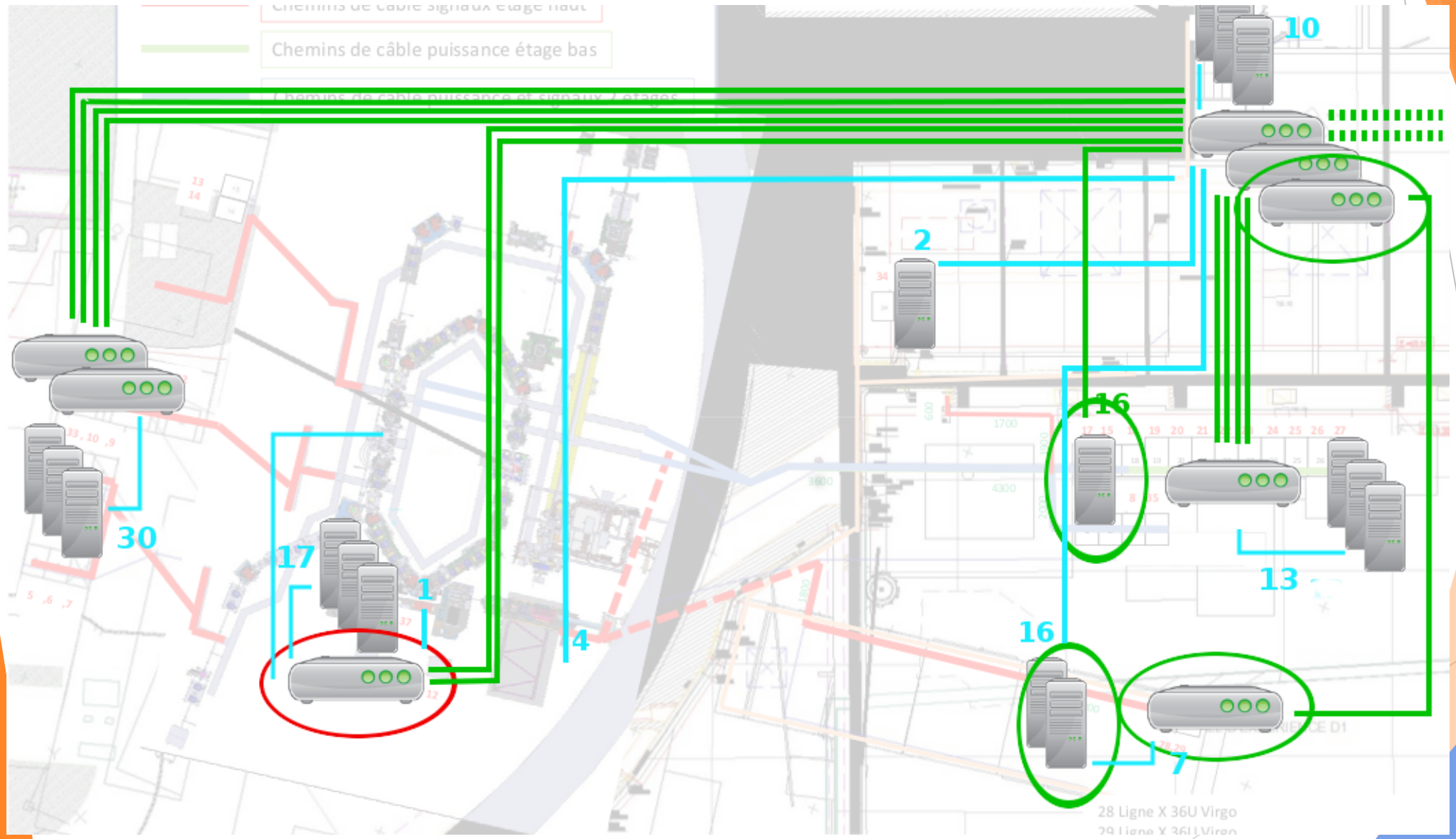
LAL

Programme Investissements d'avenir de l'Etat ANR-10-EQPX-51. Financé également par la Région Ile-de-France. *Program « Investing in the future » ANR-10-EQOX-51. Work also supported by grants from Région Ile-de-France.*

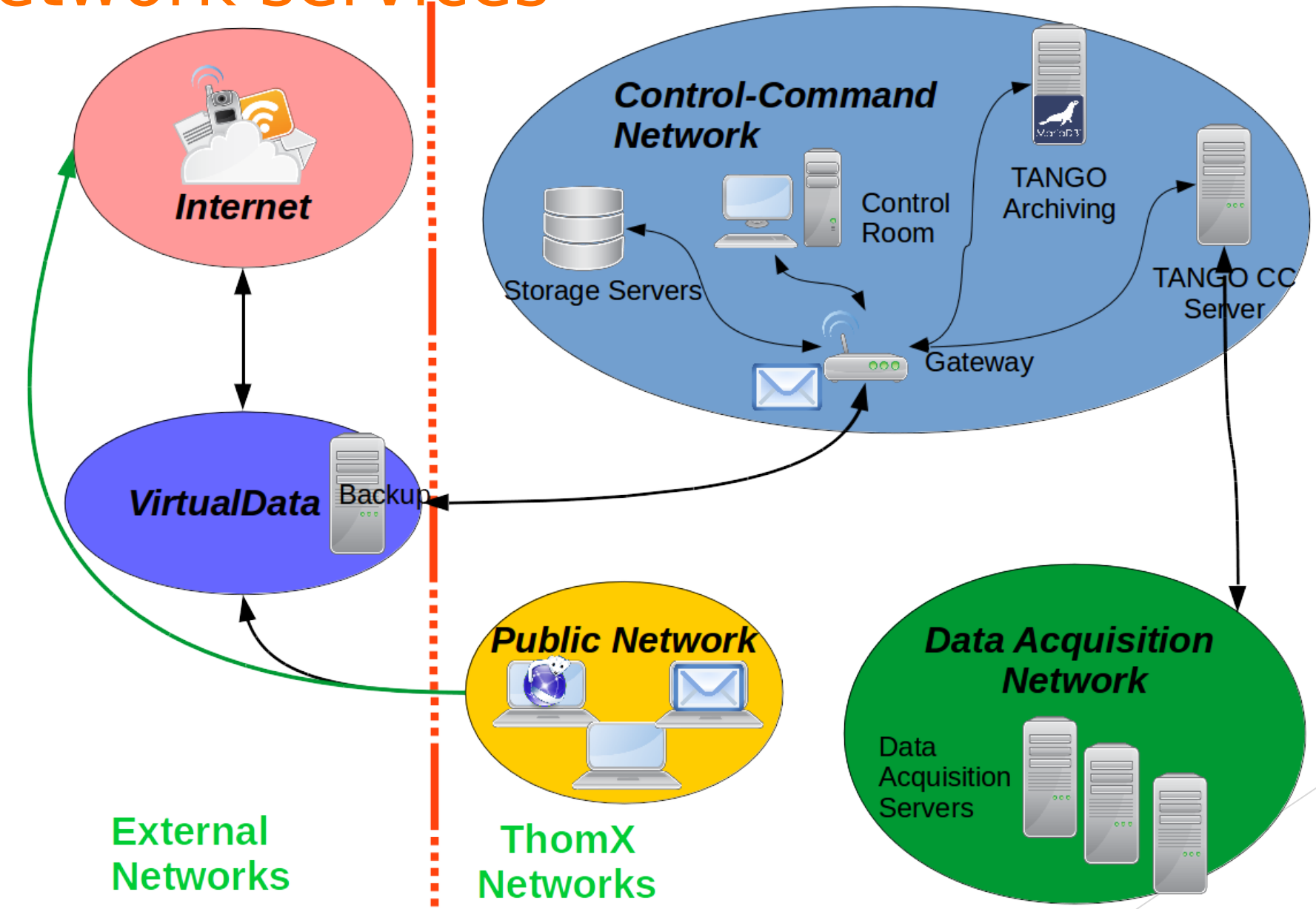
Control-command team organisation

- Control team : 4 people (4 C++, 1 Java developper, 1 Labview, 2 python, 1 sysadmin) with support of laboratory IT group for system & network administration
- Responsability area : DS development, acquisition PLC development, commissioning GUI, TANGO services, system & network infrastructure
- Development reference repositories on IN2P3 Gitlab through Mercurial
- Documentation : Atrium (content management system), trac (CC internal doc), gitlab (Markdown doc about code)

Network Interconnection



Network services



Network services access for users

Service	Description	Read	Write
eLog	User logs	everywhere	everywhere
ArchivingRoot	Archiving	everywhere	inside
Machine status		everywhere	inside
SMTP from hardware	Sending error mail	-	inside
Atrium	Project documentation	everywhere	everywhere
Gitlab	Source code	everywhere	everywhere
Matlab token	High-level GUI	yes	-
GLPI ticket	Ticket management	everywhere	everywhere

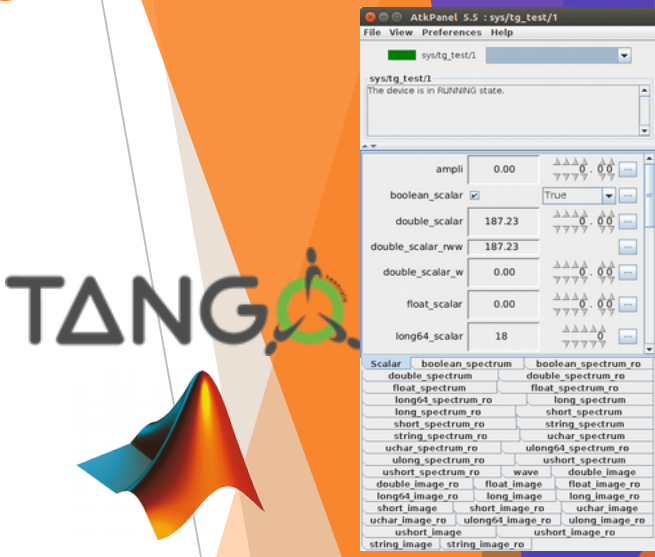
Control-command software

- Tests : hardware device servers are configured and tested on hardware, with equipment responsible if possible

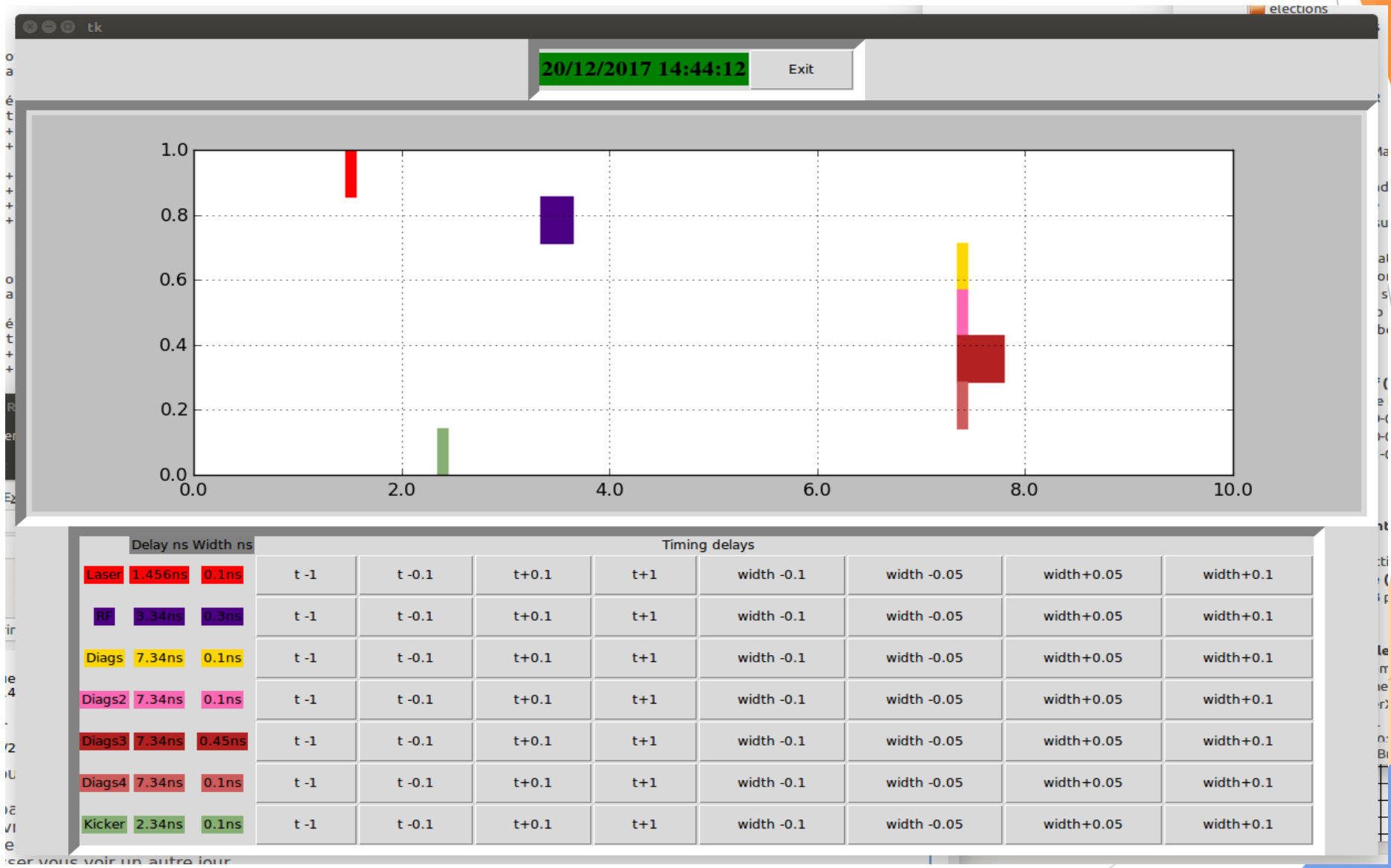
- GUI specified with commissioning team and developed by CC group with 1 commissioning delegate, state: 80 % done, to validate
  - GUI developped in Taurus (Qt+TANGO) : Laser, RF-Canon, Power supply, RF-section
  - GUI RF-modulator in Java
  - GUI developped in Labview for Vacuum, RF feedback motor
  - GUI for synchro done by users, diag to be done

Test environment for commissioning team

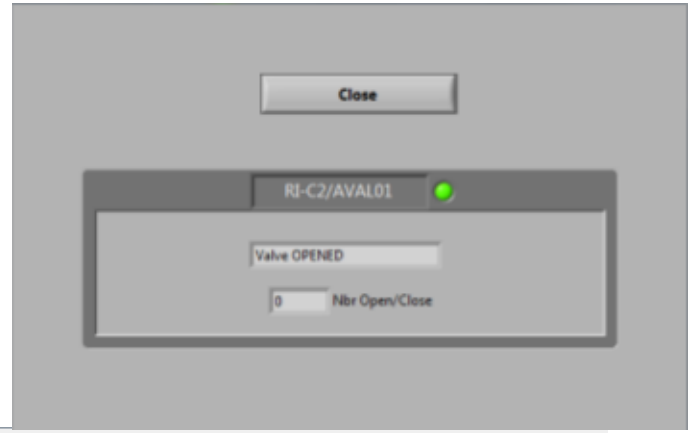
- Several test environment have been provided forcommisioning tests
  - Commissioning team has Access to TANGO server, distinct from the real hardware, to allow test with MML and random values attributes through a TangoTest Device Server
  - Current installation of SimulatorDS simulating the real device servers TANGO attributes & commands
  - Commissioning laptops & testbed installed to test hardware with Device servers and validate them

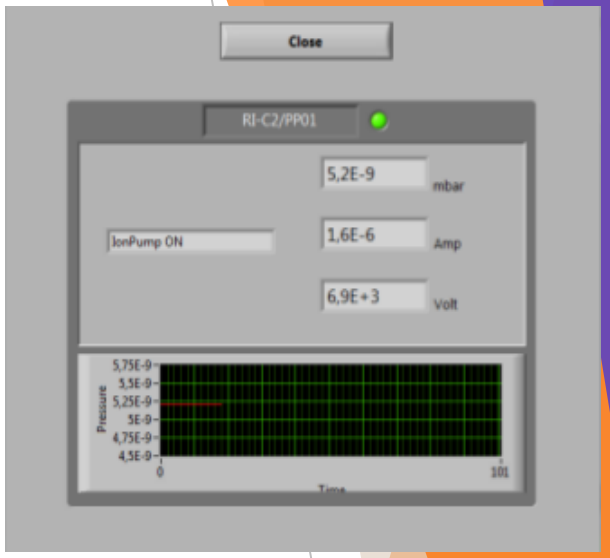


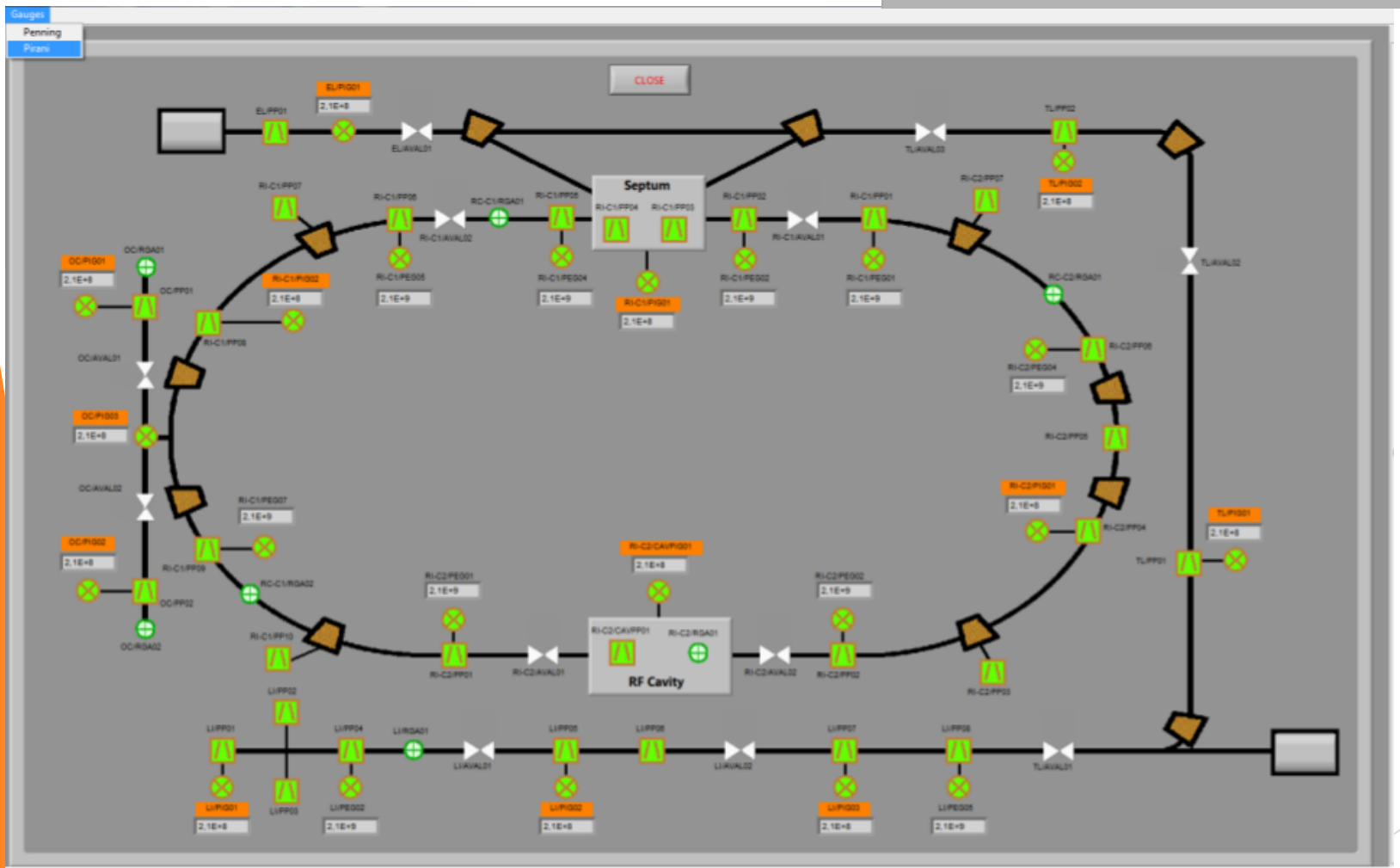
Commissioning GUI: Synchro

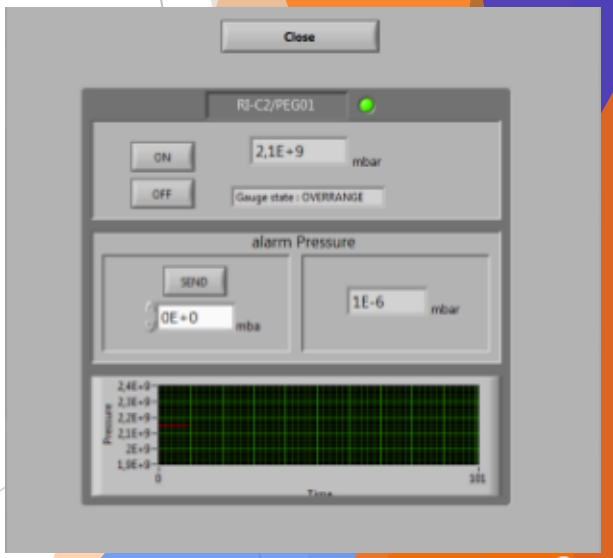


Commissioning GUI: Vacuum

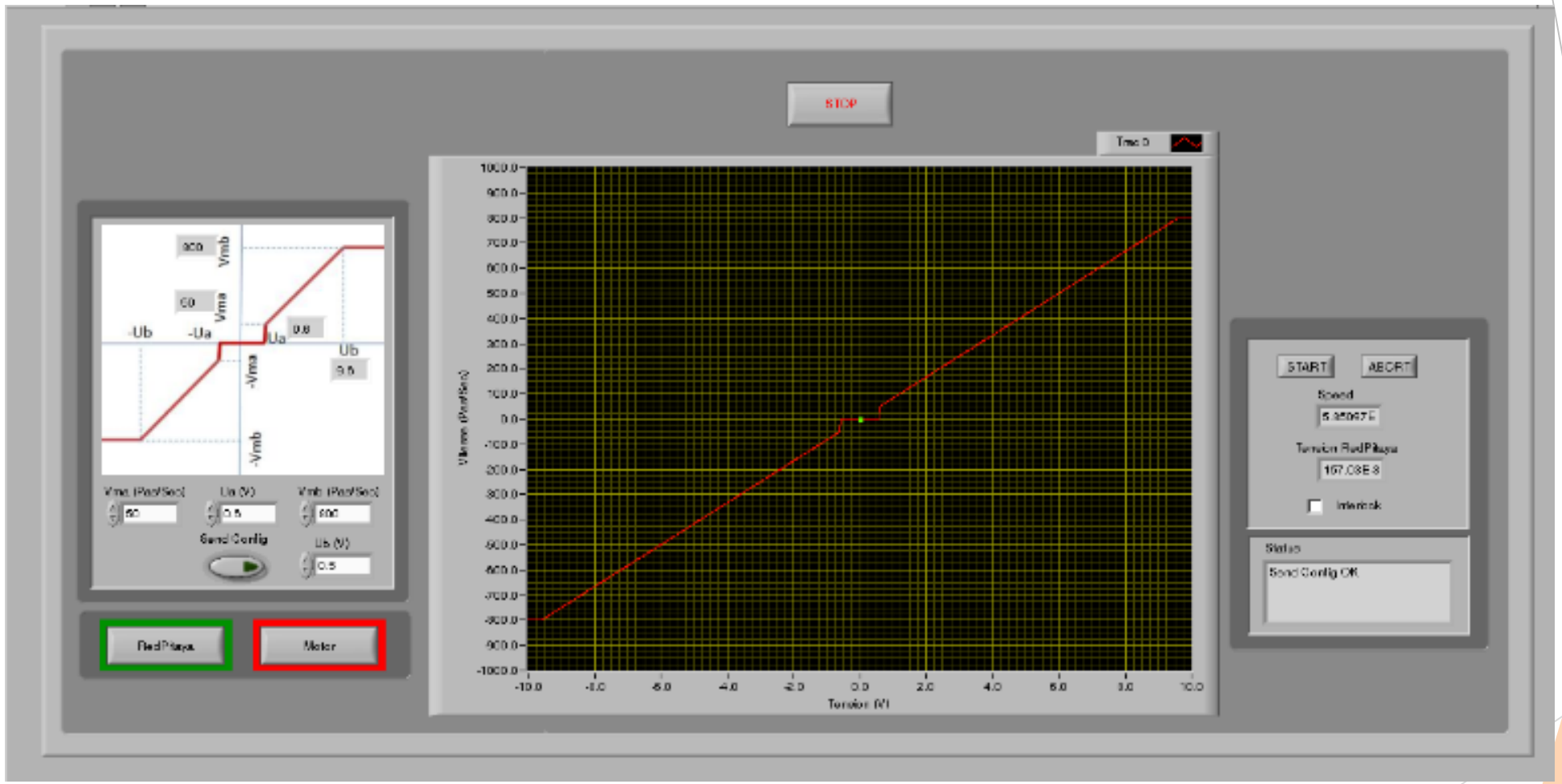




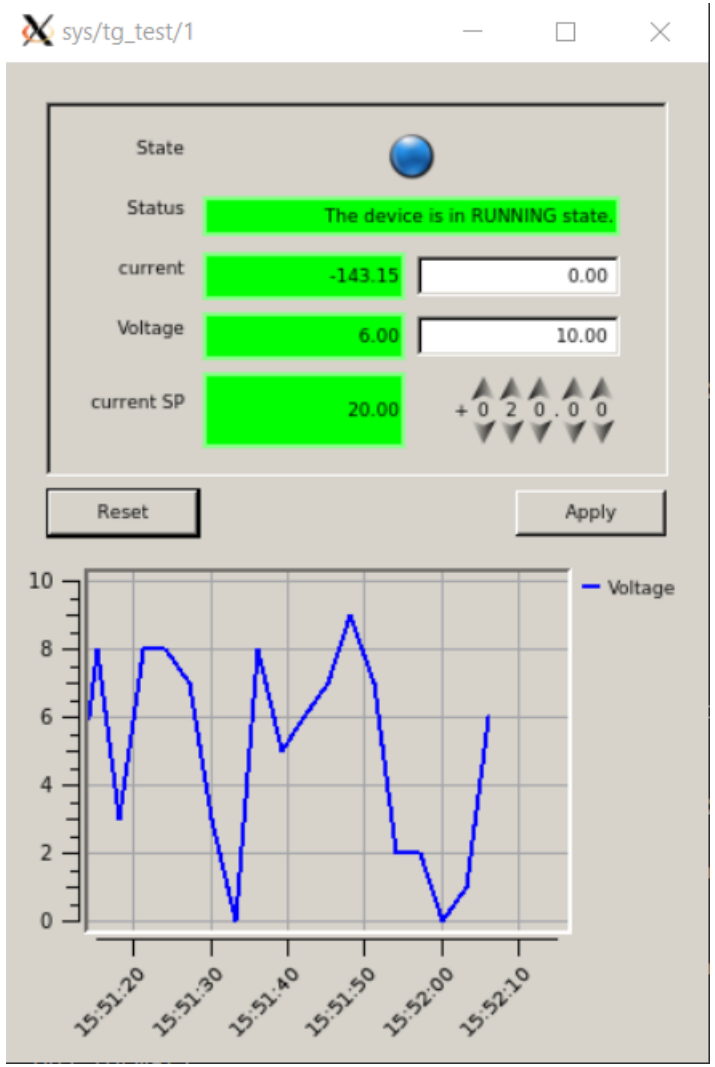


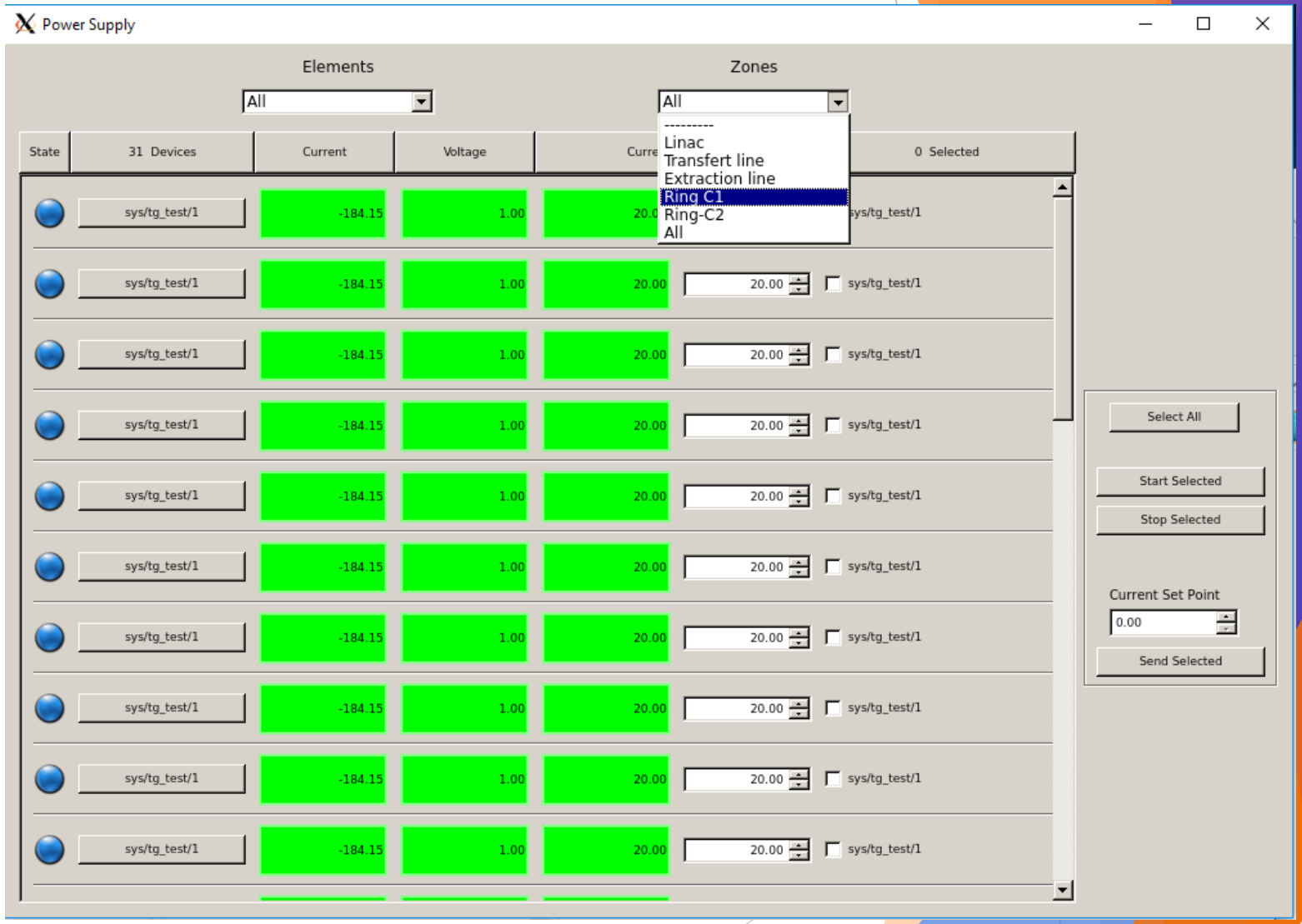


Commissioning GUI: RF Feedback Motor

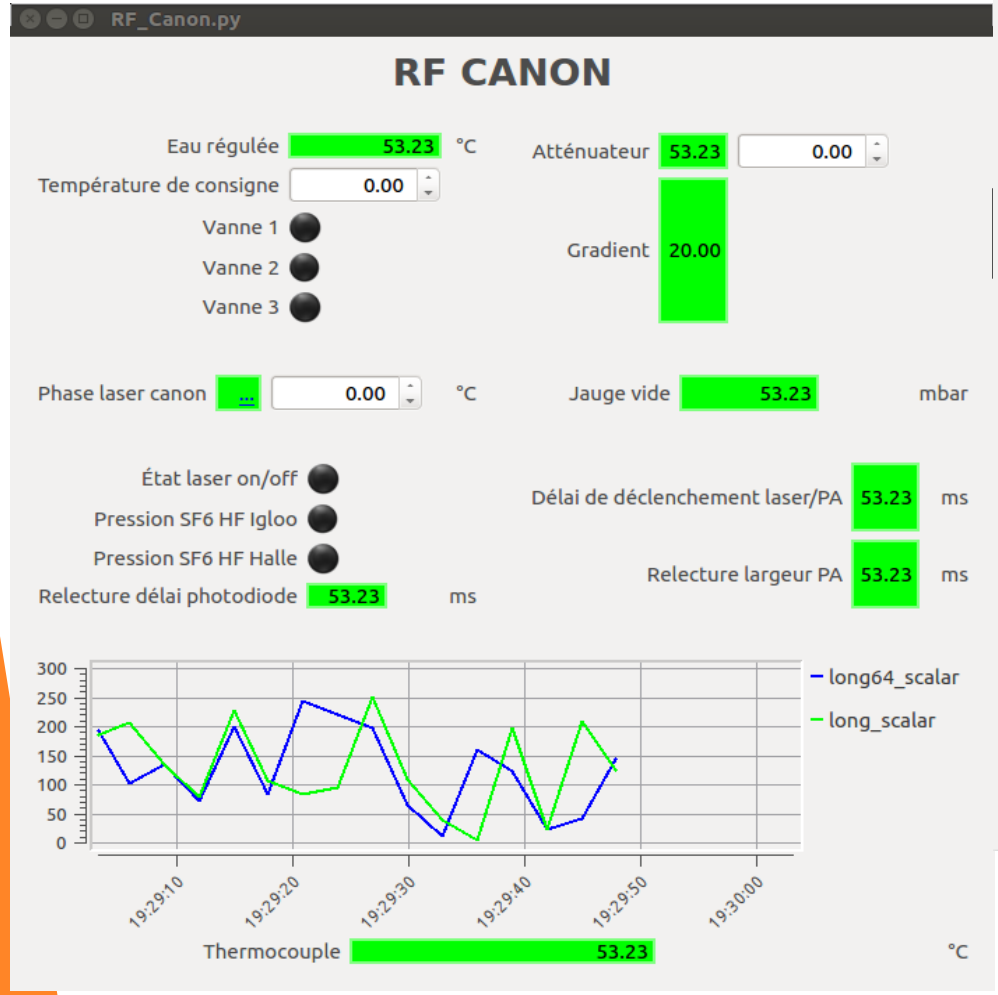


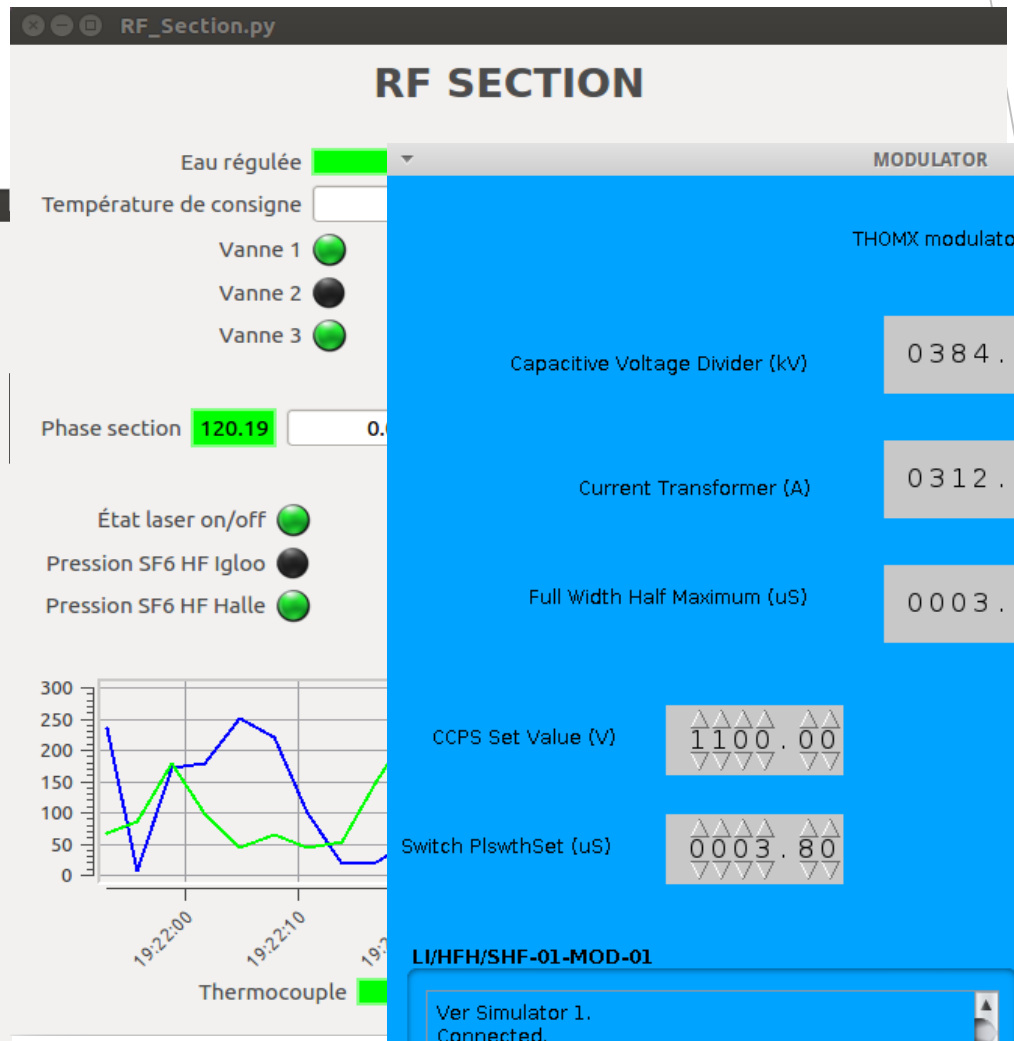
Commissioning GUI: Power supply



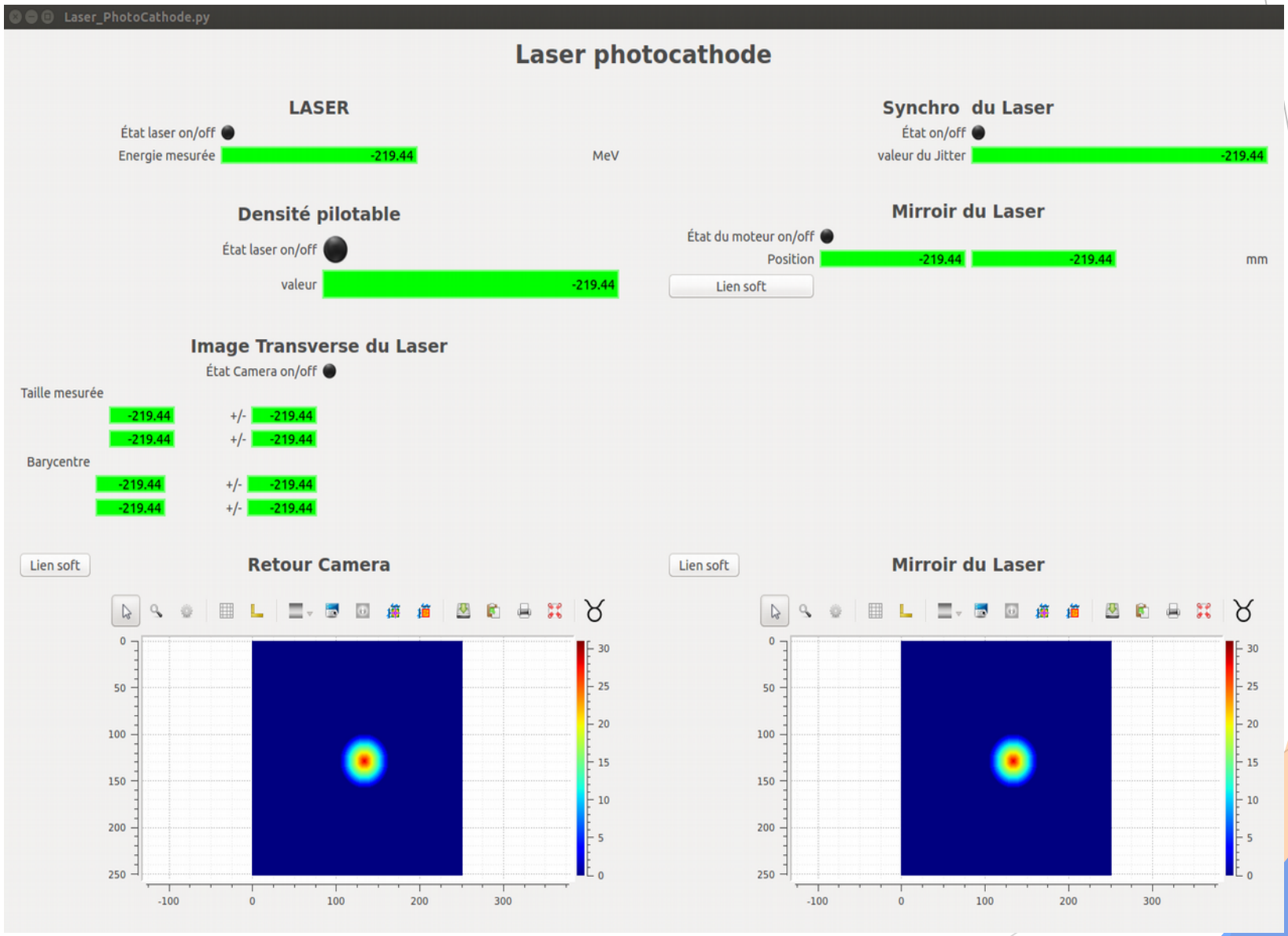


Commissioning GUI: RF Canon/Section, Modulator

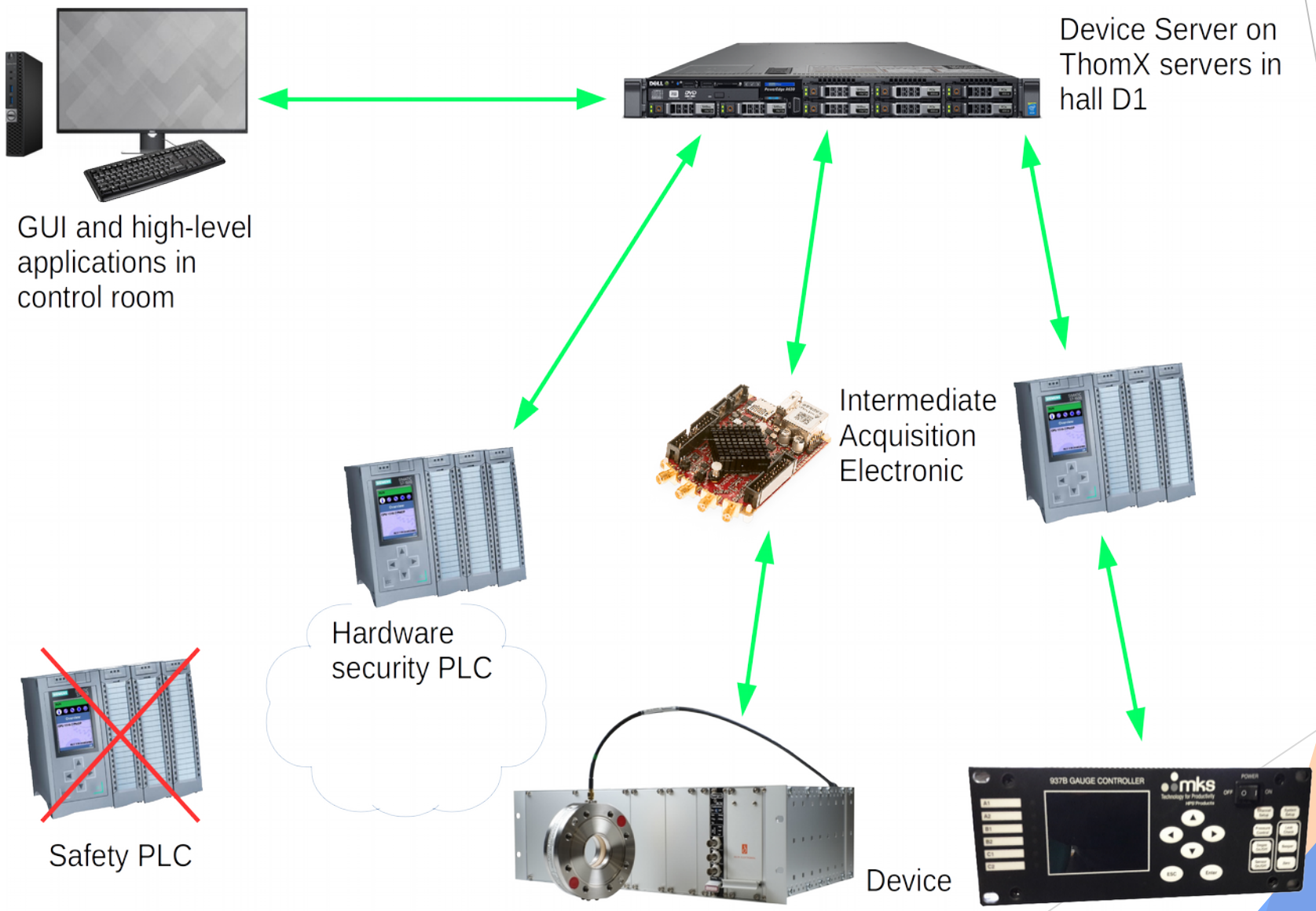




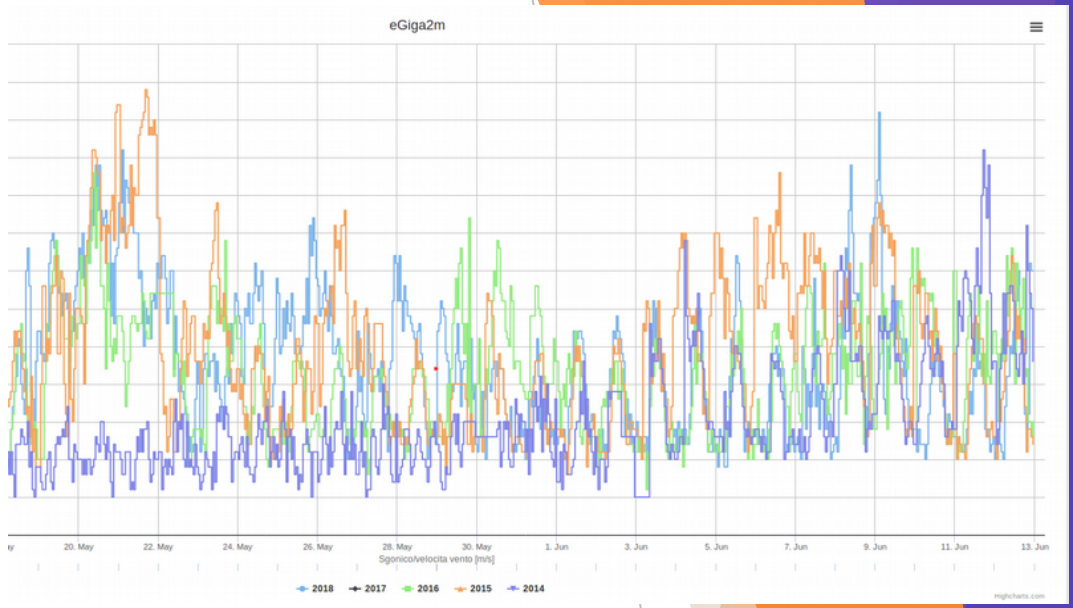
Commissioning GUI: Photocathod Laser



Data path from device to user



Data Management



- Archiving
  - For machine ‘administration’: slow control (t°, current)
  - Uses ArchivingRoot with PyTangoArchiving (Archiving management) and egiga2m (web visualisation)
  - Tested, to validate
- Data Acquisition (high rate)
  - Device servers will directly provide data
  - Data will be accessible for High-level applications
- Space disk estimation
  - Archiving: 46 Gb
  - Analysis: 5 Tb
  - X line: 40 Tb

Postmortem organisation

- For control part
  - For the control part, this will be based on ArchivingRoot Snap to capture the machine state
  - PyAlarm Device Servers to evaluate conditions states
- Upside control part
  - PANIC alarm system : need to define the condition to enter postmortem
  - ArchivingRoot Snap : need to define device attributes to snap

Commissioning schedule

SubSystem	End of installation	CC commissioning
System and network	July 2018	-
Control room	September 2018	-
LINAC, Extraction Line, Transfert Line	October 2018	February 2019
Ring	February 2019	May 2019
FP cavity	July 2019	October 2019
X line table 1	November 2018	January 2019
X line table 2	July 2019	October 2019

- Identified risks
  - Disk space evaluation
  - GUI needs

Conclusion

- Commissioning GUI : 80 % done, to validate, 20 % (diag) to be done (users)
- Current development on first commissioning step (LI+EL+TL):
  - 119 controlled devices
  - 1 device to provide for commissioning (UV camera)
  - 1 device to be delivered by supplier (laser)

Status	#devices	#DS level1	#DS level2	ThomX dev.	External dev.
Unchoosen	10	5	0	5	0
To develop	12	8	1	7	2
To validate	34	9	6	5+5	5
Tested	378	10	8	1+2	15

Conclusion

- To be defined, depending on commissioning team needs:
  - discussion for synoptics needs & machine security
  - training on GUI and applications
  - Definition on alarm/warning threshold

Thank you for your attention and my acknowledgements to the CC team