

Beam Transport System of ALPI-PIAVE Accelerator's Complex at LNL EPICS Based



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The beam transport system of ALPI-PIAVE accelerators has been recently upgraded by migrating the control software to EPICS. The field systems is based on diagnostic and magnets. To reduce the upgrade costs the first system re-use the existing VME hardware used for data acquisition, while the motor controllers only have been replaced by new units developed in house. The second system is based on embedded linux boxes. The control software has been rebuilt from scratch using EPICS tools. The operator interface is based on CSS; a Channel Archiver Appliance has been installed to support the analysis of transport setup during tests of new beams. The whole Epics network is monitored using open sources tools, either various services, like deploy, automatic backup, log centralization relay on open sources linux project customized as necessary to our requirements.

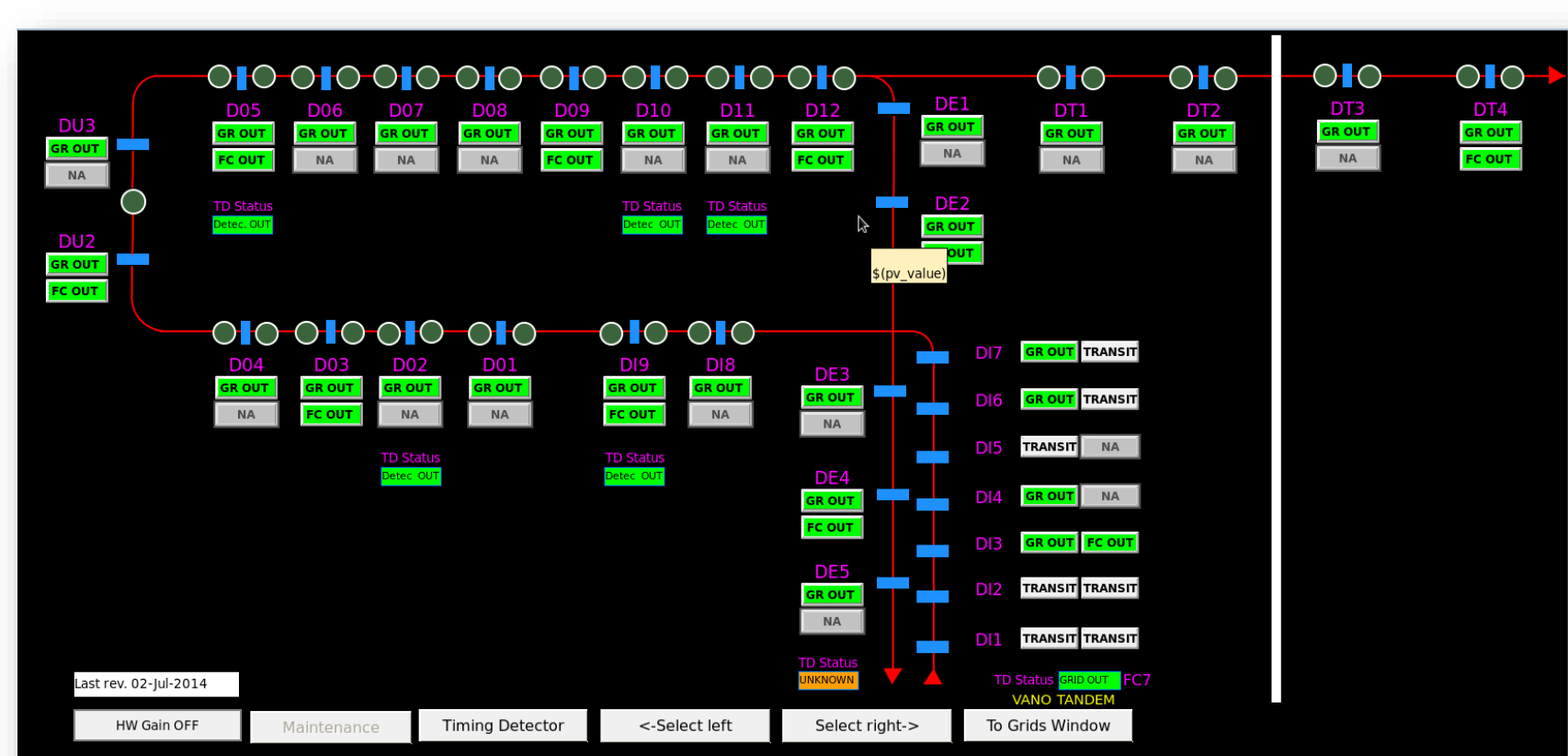


Figure 2: Diagnostics Graphical User Interface

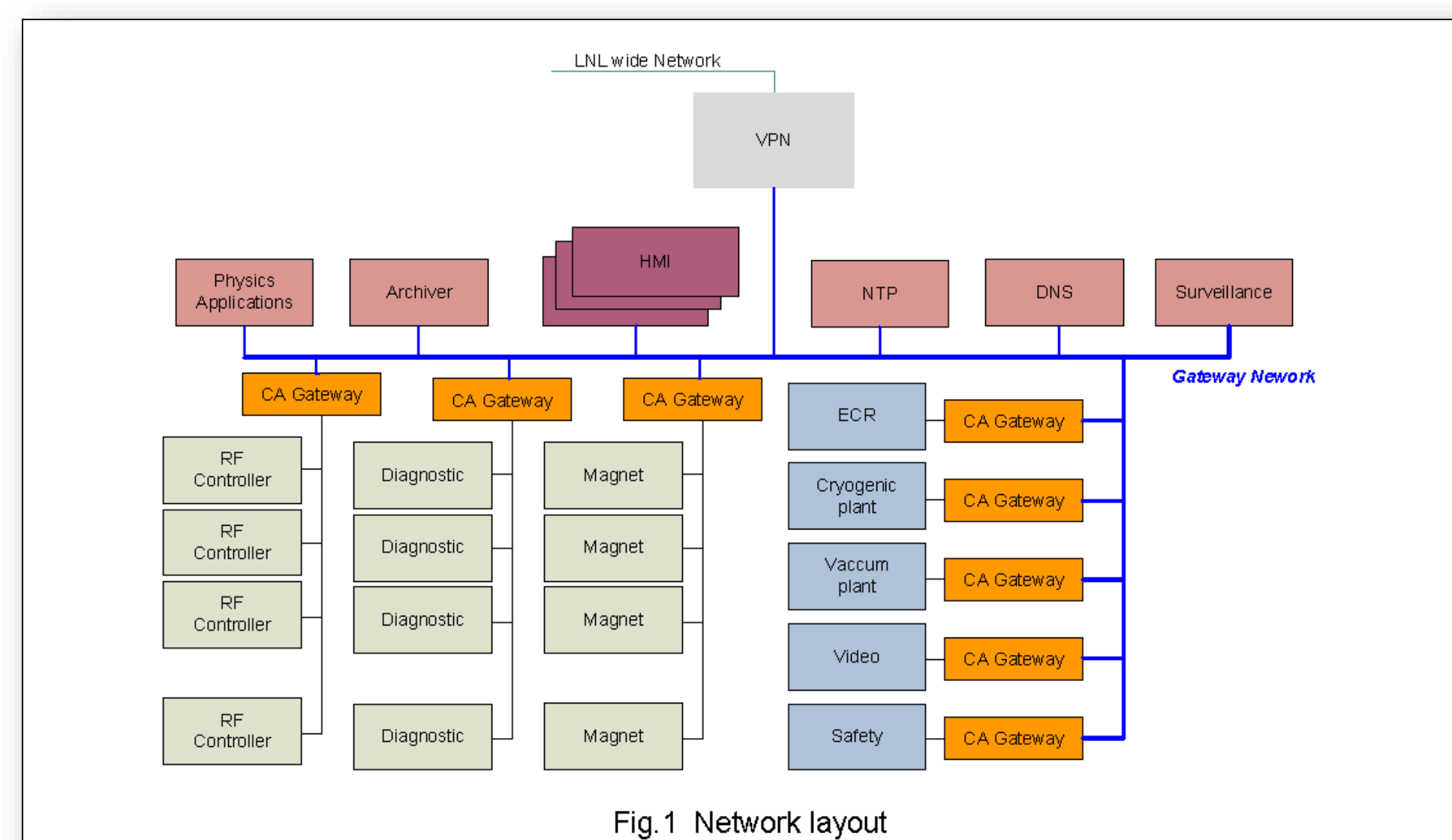


Figure 1: SPES Control System Architecture

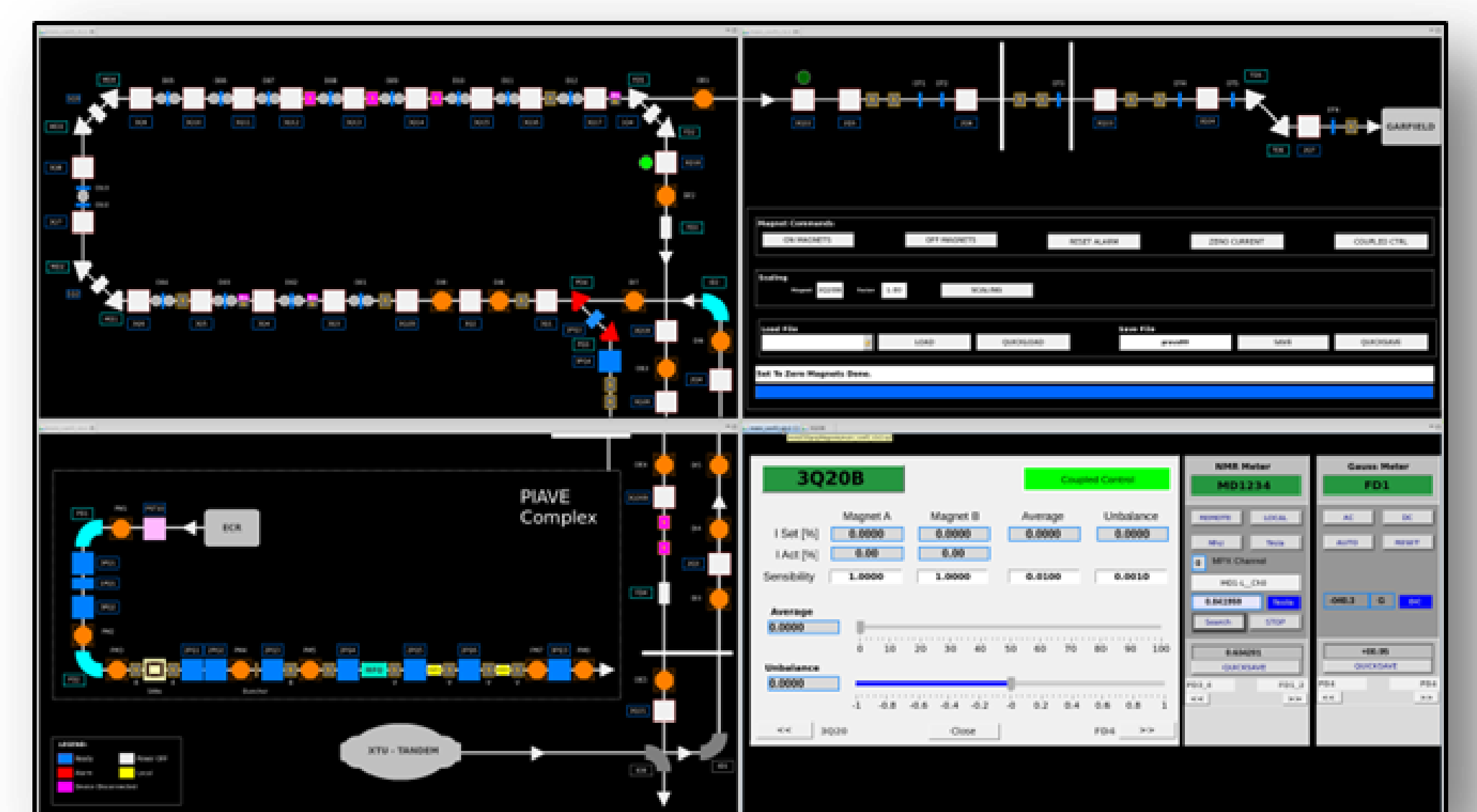


Figure 3: Lenses Graphical User Interface

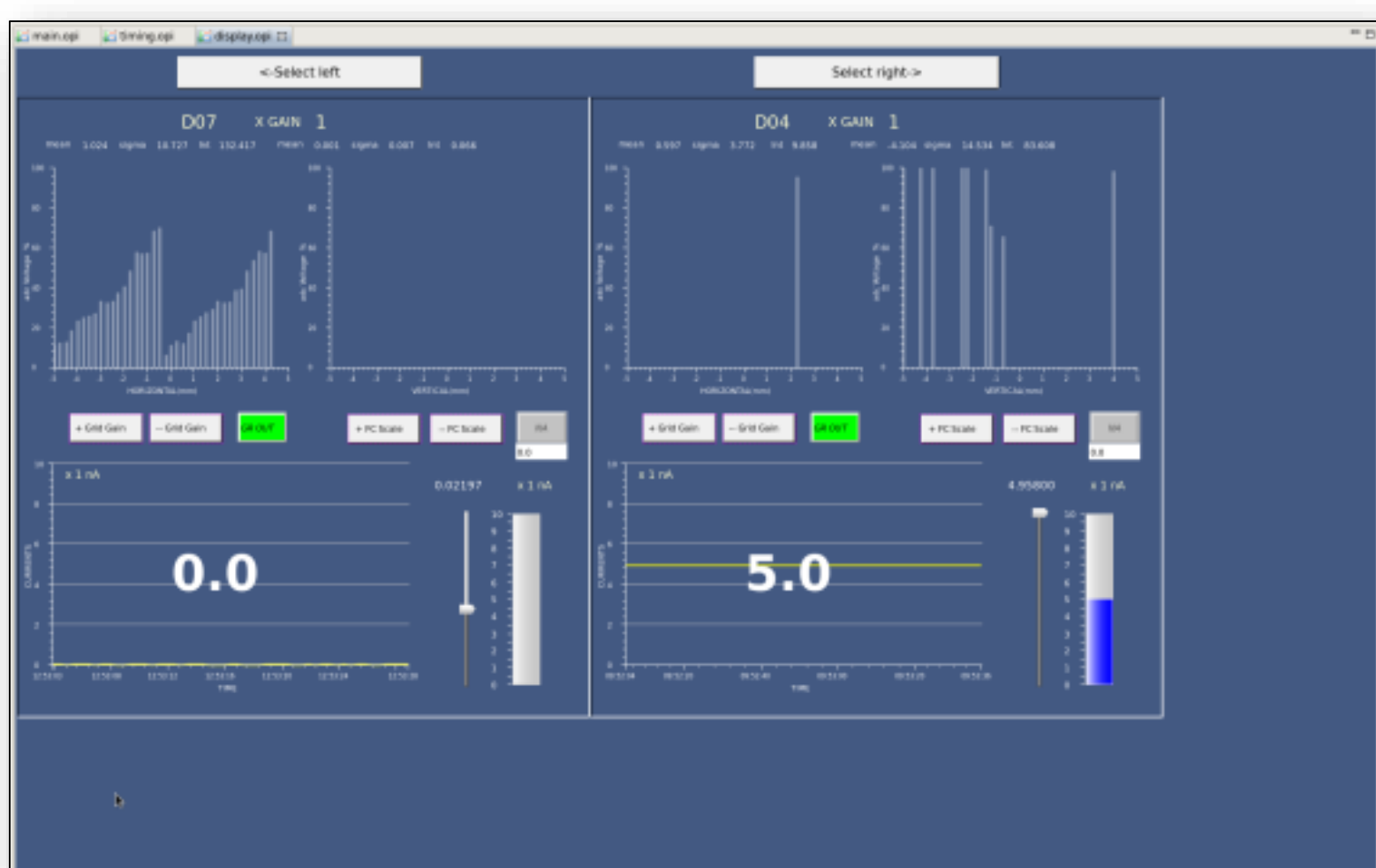


Figure 4: Diagnostics Box Interface



Figure 5: ALPI-PIAVE Accelerator

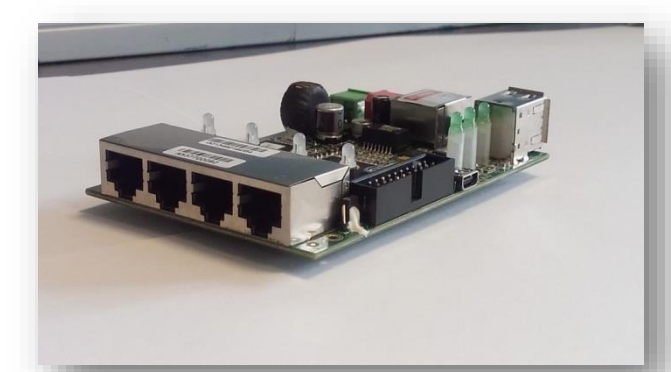


Figure 6: Embedded ARM Hardware for Lens Control System

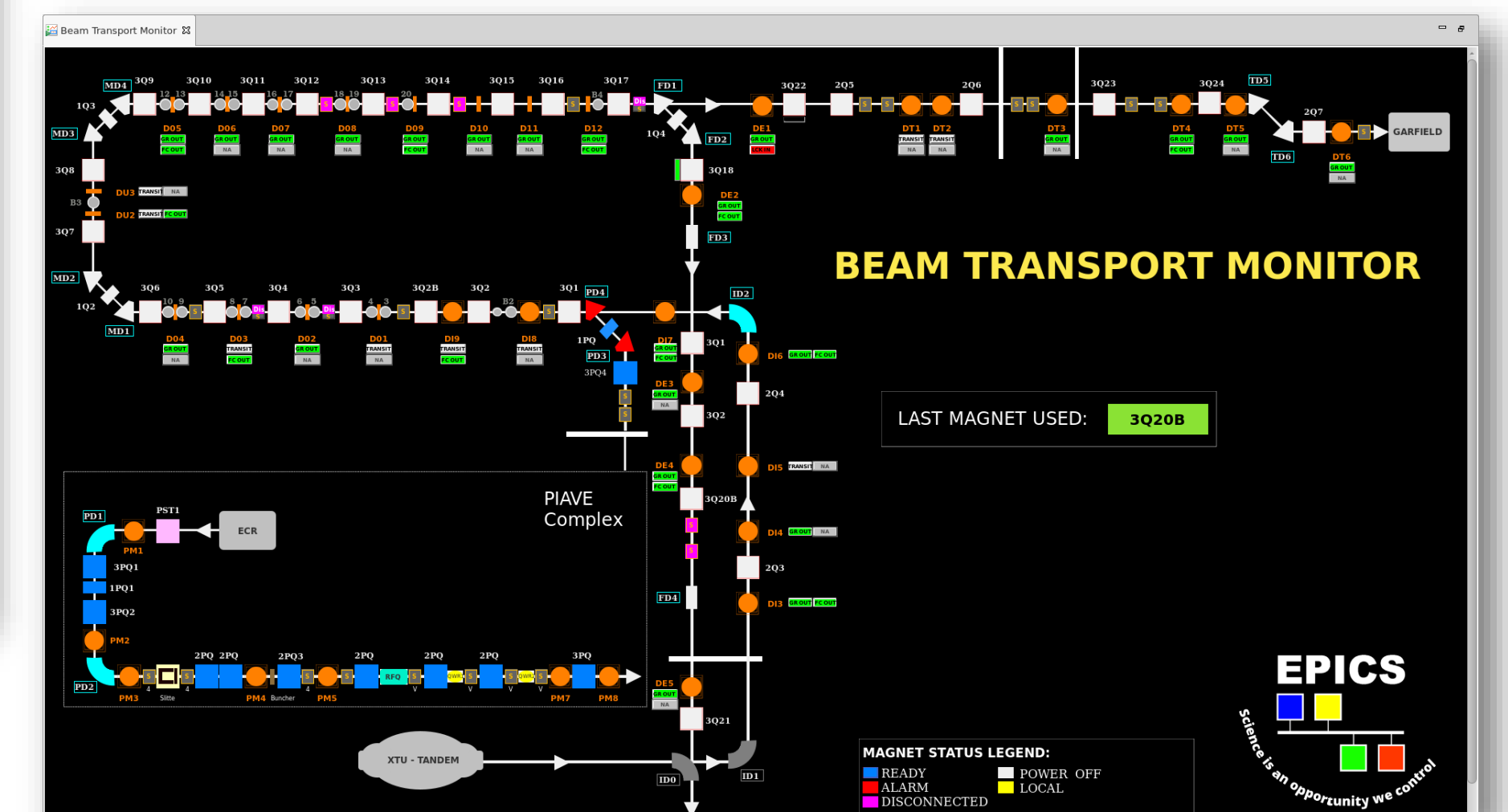


Figure 7: Gian Monitor TV

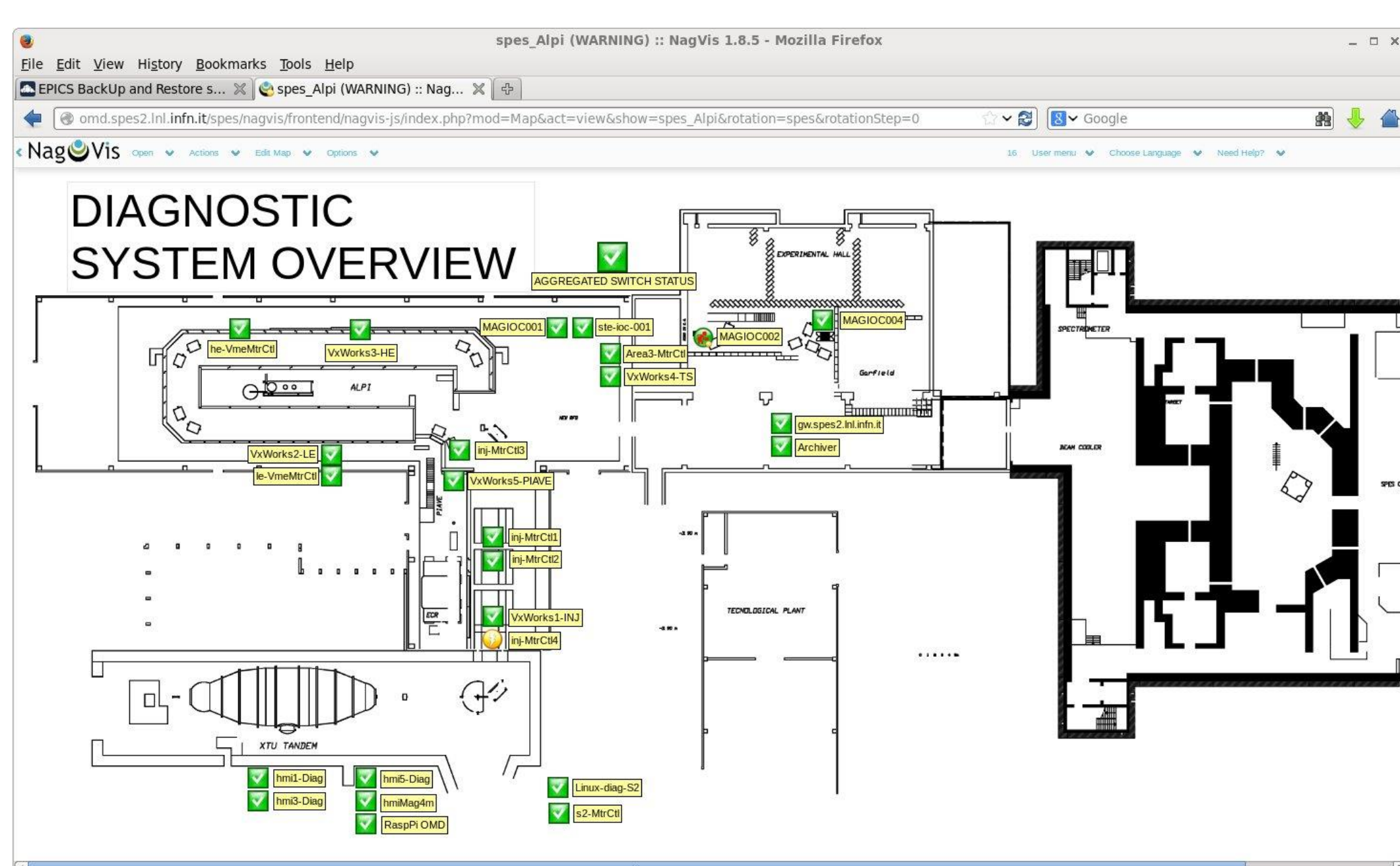


Figure 8: SPES Control System Monitoring service

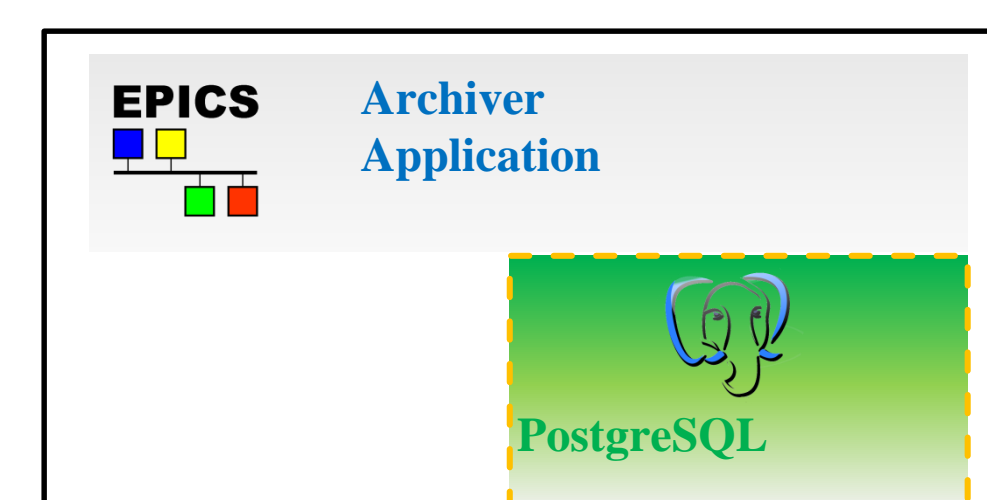
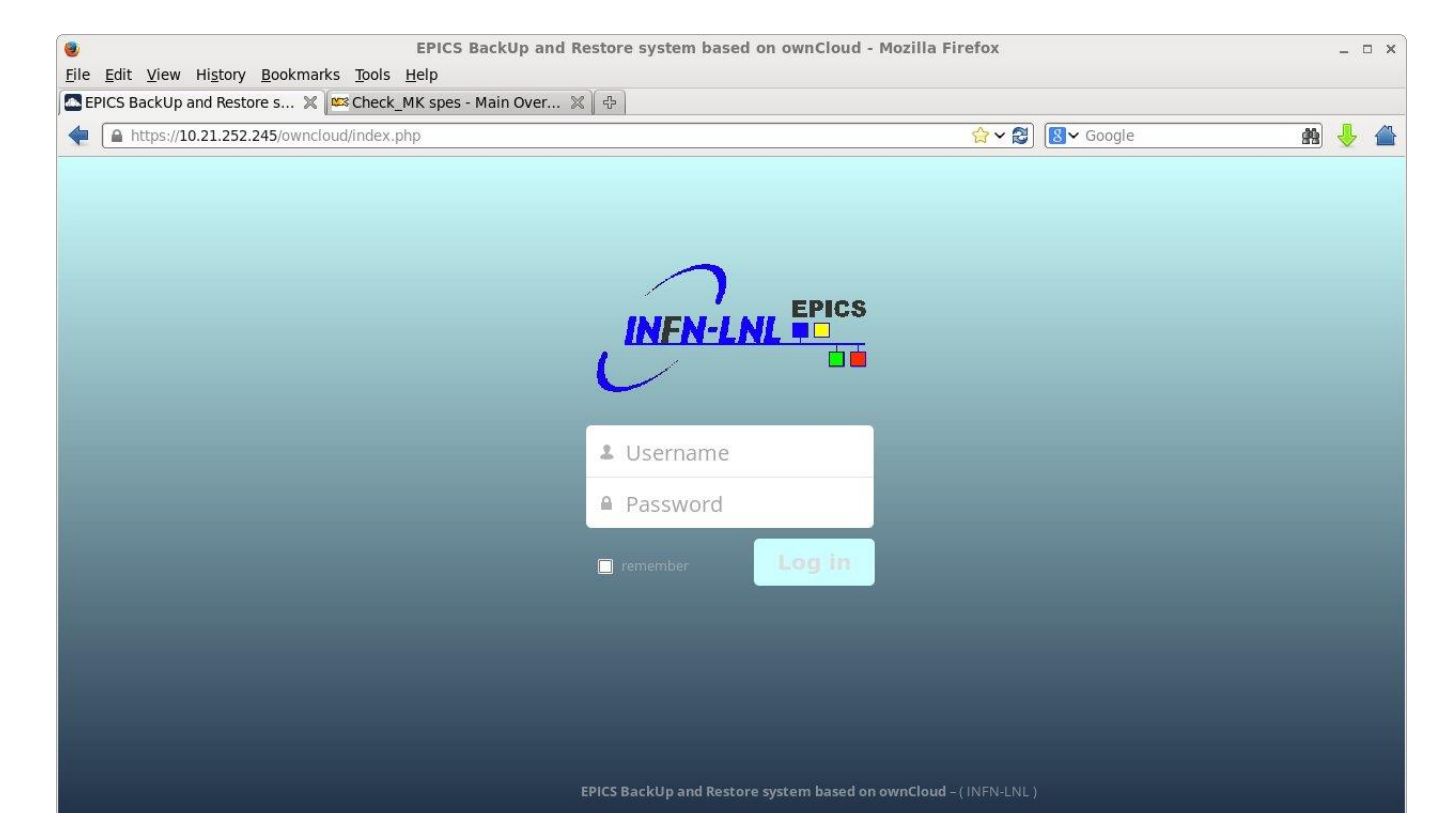


Figure 9: SPES Control System Services: EPICS RDB Archiver and Owncloud Save&Restore



Status Report

The beam transport system has been a great playground to verify and improve the initial design and overall architecture. After a first archiving system based on PostgreSQL we are moving on most powerful and simple to maintenance new Appliance archiving control system. A good backup and restore system has been realized using the cloud

technology.

All this architecture should be the base environment to move on and integrate other control systems composing the machine in the next future, in order to provide a real distributed control system for the SPES project.

Acknowledgments

This works leveraged of years of experience on EPICS use from good engineers of other laboratories around the world: great acknowledgments to them.