

GUIs at ALBA Synchrotron Light Source

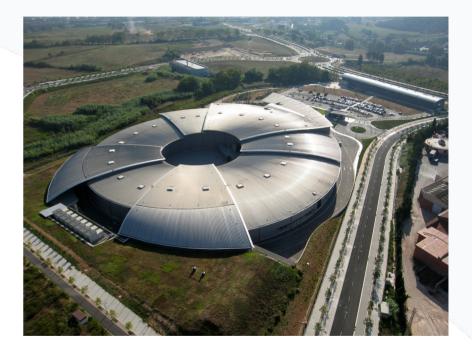
Guifré Cuní on behalf of ALBA Controls Section

14-15/03/2023



OUTLINE

- ALBA Synchrotron Light Source
- ALBA Control System
- ALBA GUIs Catalog
- ALBA II
- ALBA GUI Strategy



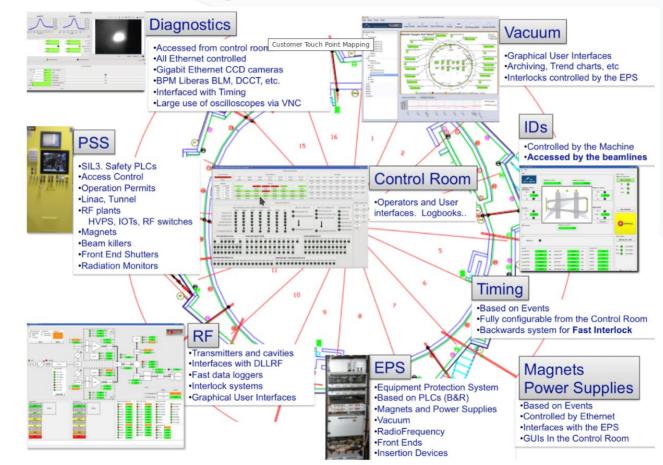


ALBA Synchrotron Ligh Source

- 3rd generation Synchrotron Light Source
 - Accelerator: Linac, Booster and Storage Ring
 - Beamlines: 10 in operation; 4 in construction
 - Laboratories with users: Optics and ID
 - JEMCA: Joint Electron Microscopy Center at ALBA
- Operation mode(s):
 - Top-Up mode, Multi Bunch (440 buckets), eventualy Hybrid Filling Pattern
 - 24/6 & 184 days of beam for BLs (6.5% reduction due to 37.5 h working week)
- System availability constraints
 - Target: > 98% of availability
- 14-15/03/2023- 3 on-call persons from Controls Taurus Workshop; ESRF



ALBA Control System - Accelerators





ALBA Control System - Beamlines



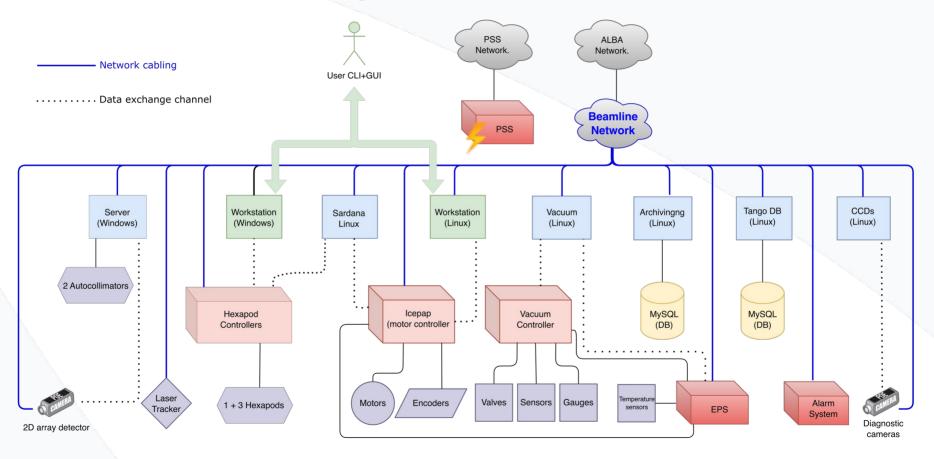


ALBA Control System - Beamlines

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ALBA Control System - Beamlines





ALBA Control System - numbers

- Accelerator
 - devices: 8k (defined) / 6.2k (exported)
 - device servers: 2.3k (defined) / 1.8k (exported)
 - attributes: 154k
 - databases: 1
- Beamlines
 - devices 251-1k (defined) / 217-1k (exported)
 - device servers: 58-125 (defined) / 42-112 (exported)
 - attributes: 4.5k-17k
 - databases: 1 per BL

14-15/03/20 aboratories: in average smaller than a Bthop; ESRF



ALBA GUI Catalog

- GUIs for ALBA accelerators operation (David's talk)
- GUIs for ALBA accelerators subsystem experts (Emilio's talk)
- GUIs for ALBA experiment control (Miquel's talk)
 - Non-Taurus specific GUIs:
 - Lavue, MXCuBE, TXM Zeiss, Prodigy, Cockpit CryoSim, Matlab, EPICS BBB etc.

ALBA II

- Upgrade planned for 2028 2029
 - PSS system to be upgraded, including hardware
 - Few BLs expected to be relocated
 - Most BLs to be upgraded
- Computing Preliminary Study WP08
 - DevOps
 - Distributed System & Events
 - GUIs
 - TANGO
- Project Plans under preparation



ALBA II Computing Preliminary Study
 General Documents & presentations
 WP01 - InputOutput Controller architecture
 WP02 - Power Supplies
 WP03 - Timing System
 WP04 - Equipment Protection System
 WP05 - Personnel Safety System
 WP06 - IT Architecture
 WP07 - Motion Control
 WP08 - Control System Stack
 WP09 - Configuration Management and Stock Management
 WP10 - Machine Learning
 WP11 - Realtime Processing needs



ALBA II GUI Strategy

- Considering desktop applications, a priori, we don't see a need to replace Taurus, but we should invest time in improving scalability and performance of Taurus GUIs.
- Web technologies needs to be explored as a **complementary solution** because of the cross-platform compatibility, reduced cost of maintenance and native remote access (concerning the security aspects).
- Regarding web application we selected: Taranta and Jupyter Lab because of their generic approach and a strong community (Taranta Community is gaining more popularity and is a lead Web project in Tango).
- In terms of the technology stack the most common within our community (ICALEPCS) is React (+Redux), Plotly, GraphQL and REST and we will follow this trend.



ALBA II GUI Strategy

- Actions in 2023
 - Taurus Performance Optimization
 - PoC: Grafana, IpyWidgets, JupyTango and Taranta



Thank You