

SOLARIS synchrotron control system upgrade: addressing challenges and implementing solutions

Michał Fałowski, Michał Piekarski
On behalf of CSIT Departament

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SOLARIS National Synchrotron Research Centre

michal.falowski@uj.edu.pl

Why Upgrade the SOLARIS Control System?

- SOLARIS is Poland's leading research facility, growing rapidly since 2015.
- Outdated software (Python 2.7/3.6, CentOS 6/7, old Tango/Taurus) and hardware compatibility issues led to higher maintenance costs and operational risks.
- The team needed a modern, scalable, and secure system to support ongoing research and future growth.

Modernization Strategy and Implementation

- Transitioned from CentOS to AlmaLinux 9, and upgraded Python, Tango, Taurus, and automation tools (Ansible, GitLab CI/CD).
- Introduced automation for deployments and standardized software packaging across 300+ virtual machines and 20+ workstations.
- Migrated some applications from traditional GUIs to web-based interfaces for better flexibility and maintainability.
- Collaboration with operators and scientists ensured the new system met real user needs.

Challenges, Solutions, and Outcomes

- Faced challenges: limited skilled personnel, legacy code, fragmented standards, and user adaptation to new tools.
- Solutions included automation, stricter coding standards, and proactive communication with users.
- The upgrade improved reliability, security, and maintainability, preparing SOLARIS for future upgrades and stable operations.
- The project demonstrates that systematic planning and teamwork can overcome legacy challenges in large research facilities.

Thank you for your attention.