ICALEPCS 2025 - The 20th International Conference on Accelerator and Large Experimental Physics Control Systems

Contribution ID: **357** Contribution code: **TUPD050** Type: **Poster Presentation**

Status of the control system for the DELTA synchrotron light source

Tuesday 23 September 2025 16:00 (1h 30m)

The 1.5 GeV electron storage ring DELTA, operated by the University of Dortmund in Germany, celebrated its 30th anniversary last fall. Over the past three decades, the control system has undergone many different IT infrastructure development cycles. It was commissioned between 1994 and 1998, utilizing a series of command-line-based in-house applications that operated on individual, low-performance networked HP workstations and VME-based real-time CPUs, initially without the support of graphical user interfaces (GUIs). These GUIs were gradually implemented later with the introduction of the EPICS software package (1999-2001). Based on a combination of EPICS and a newly installed Linux PC-based client/server architecture, a variety of software tools and hardware extensions were introduced in the following years. Today, the DELTA control system utilizes an open-source virtual environment with a server management platform that integrates kernel-based virtual machines (KVM), software-defined storage and network functions on a single platform. In addition, web-based user interfaces simplify the configuration of the integrated disaster recovery tool and enhance the management of high availability and redundancy within the server cluster. Furthermore, machine learning algorithms have been incorporated into the control and optimization of the storage ring. This report gives a historical review, summarizes the most important developments in recent years and provides an outlook on future projects.

Footnotes

Funding Agency

Author: SCHIRMER, Detlev (TU Dortmund University)

Co-authors: ERPELDING, Andreas (TU Dortmund University); ALTHAUS, André (TU Dortmund University)

Presenter: SCHIRMER, Detlev (TU Dortmund University)

Session Classification: TUPD Posters

Track Classification: MC02: Control System Upgrades in Existing Facilities