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Upgrade and modernization of the CSNS accelerator control system towards CSNS-II

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The CSNS-II project, launched on 1st January 2024, aims to significantly enhance the beam power from 100 kW to 500 kW. The current accelerator control system, commissioned in 2018, was designed based on hardware and software platforms finalized in 2012. Over time, these systems have begun to exhibit obsolescence issues. To meet the advanced requirements of CSNS-II, a comprehensive upgrade and modernization of the control system is essential. This presentation outlines the overall upgrade plan and design considerations for the control system. The key upgrades include: transitioning the EPICS framework from version 3 to the modern and feature-rich version 7, migrating the hardware platform from VME to MTCA, adopting the latest Phoebe as part of the Control System Studio suite, incorporating support for big data analytics and artificial intelligence capabilities to enhance system performance and diagnostics. These enhancements will ensure the control system meets the demanding operational requirements of CSNS-II while improving reliability, scalability, and future readiness.

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Author: Mr ZHANG, Yuliang (Institute of High Energy Physics)

Co-authors: XUE, Kang Jia (Institute of High Energy Physics); WANG, Lin (China Spallation Neutron Source); LI, Mingtao (Institute of High Energy Physics); ZHU, Peng (Institute of High Energy Physics); CHENG, Si Nong (Institute of High Energy Physics); LU, Xiaohan (Institute of High Energy Physics); WU, Xuan (Institute of High Energy Physics); HE, Yongcheng (Institute of High Energy Physics)

Presenter: Mr ZHANG, Yuliang (Institute of High Energy Physics)

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