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MicroTCA.4 for Industry and Research – Experiences with the Introduction of a New Crate Standard

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MicroTCA.4 is a novel electronic standard derived from the Telecommunication Computing Architecture (TCA) and rapidly evolved to become a viable standard for demanding applications in large-scale research facilities of the high-energy physics and photon science community. DESY has taken on a coordinating role in the further development of MicroTCA.4 components as well as the further advancement of the standard.

Summary

In 2011, the MicroTCA standard MicroTCA.4 was released as an official standard by the PCI Industrial Manufacturer Group (PICMG). Its main improvements over the preceding standards MicroTCA.0-MicroTCA.3 are enhanced rear I/O connectivity and provisions for improved precision timing. Because of DESY's ambitious standards regarding signal processing performance, redundancy options, remote management capabilities and timing stability it was one of the first institutes that helped developing this new crate standard. DESY received funding from the Helmholtz Association to validate the standard for industry applications and develop non-proprietary solutions to meet the different requirements at large research facilities and industry. We describe the on-going implementation of this time-limited validation project and highlight the challenges encountered so far.

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