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The xTCA for Physics Standard Hardware Extensions and Software Guidelines

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The accomplishments of the xTCA for Physics PICMG standards collaboration will be described since the group’ s inception in 2009. PICMG (PCI Industrial Computer Manufacturers Group) is a consortium of over 200 companies who invited the physics community to join in order to standardize extensions of their telecommunications standards called ATCA (Advanced Telecom Computing Architecture) and MicroTCA, an extension based on ATCA Mezzanine Cards, to new uses in physics. The physics extensions cover both hardware standards and new software guidelines.

Summary

The xTCA for Physics standards group was first announced at the IEEE Real Time Controls Conference at IHEP, Beijing in May 2009. Since that time the PICMG collaboration of laboratories and industry has completed three hardware extensions and two software guidelines with three more guidelines in process. This work is contributing significantly toward gaining acceptance of new modular electronics for Physics instrumentation and controls among laboratories and beyond to related fields. The ATCA and MicroTCA standard extensions are finding use in new accelerators and major detector upgrades especially where precision measurements and controls are most critical, such as in Low level RF and Beam Position Monitor systems. A unique system of classes of analog, digital and mixed signal Rear Transition Modules has great extended the utility of the architecture. The roadmap to complete the work still in hand will be discussed. The success of this effort depends entirely on the continuing interest and contributions of dedicated volunteers from physics and industry working in close collaboration since 2009.

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