

## **xTCA evaluation project status report and HPM modules development at CERN**

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MicroTCA and AdvancedTCA are the selected platforms for the upgrade of the back-end electronics of some Large Hadron Collider (LHC) experiments at CERN. In this context, the CERN PH-ESE group launched in 2011 to perform technical evaluations of xTCA equipment with the focus on infrastructure components. The aim is to issue technical recommendations to the experiments and provide support for selected equipment. Following the MicroTCA technical evaluation phase, specifications were written for a custom vertically cooled shelf and a power module. Finally an official price enquiry was launched. After manufacturer selection, qualification tests were carried out to assess the selected products characteristics: cooling and backplane quality of the MTCA shelves as well as regulation, efficiency, ripple/noise and standard compliance of the power modules. The same procedure has started for ATCA, with particular focus on the shelves in-rack cooling evaluation. In parallel to these activities CERN is implementing significant MMC code enhancements: xTCA standard compliance, user customization and multi-platform versatility. The MMC source code is now divided in 3 parts: an application core, containing the standardized features, a driver directory, implementing the MCU dependant low level functions and a user part easing the code customization. This new architecture allowed porting the program to a 32bit microcontroller used at CERN and will future-proof the code for upgrades. This presentation will give an overview of the xTCA evaluation project with the qualification test procedure and the results obtained with the selected MTCA equipment. It will also give a brief overview of the on-going activities on the ATCA front. Additionally, an overview of the hardware platform management modules developed at CERN will be given, including the new MMC open-source package.

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