Contribution ID: **103** Type: **Talk**

Michael Fenner - DESY MMC System-On-Module and its Applications

Wednesday 5 December 2018 17:45 (15 minutes)

Designing new hardware for MicroTCA comes with a significant challenge: Management functions required by the standard such as power and temperature control and supervision have to be implemented in hardware and in software. This takes resources away from the core development. Doing the management properly requires significant design time. Doing it on a too basic level (by i.e. not implementing temperature alerts, JTAG switch support or HPM update functionality) will lead to a lack of features that are required for maintenance and high reliability.
In the past, DESY offered complete MMC source code ("MMC V1.00") together with a complex hardware implementation proposal. This included a high number of features, but left the task of designing the MMC components into the target application plus customizing the management software on source-code level to the customer.
With DESY's small-footprint MMC System-On-Module (29 x 25mm) developers now have the option to solder a ready-to-use LGA module into the target board (top or bottom side) . The highly integrated module is based on an ARM Cortex-M4 processor and a Lattice MachXO2 CPLD. It contains all hardware and software components necessary for powering and managing the complete MicroTCA board. It includes FPGA-firmware update over IPMI, JTAG and FPGA SPI Flash arbitration; PMBUS power control, temperature and voltage supervision and RTM management. The module, along with the pre-programmed MMC code, will be made commercially available soon.
The talk presents details and the first two applications of the MMC module: It will be used on a ZYNQ Ultrascale+ FMC+ Carrier and a low-cost ZYNQ-7000 IO Board.

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Session Classification: Session 4