

# Video Acquisition Solution for High-Speed Imaging Based on MicroTCA

*Wednesday 12 December 2012 12:15 (15 minutes)*

High-speed low-latency cameras are used in various physics experiments and industrial processes. The imaging devices provide vast amount of data, that may be used for diagnostics, control and interlock systems. The highest speed video cameras require high bandwidth for data transmission and are usually equipped with Camera Link interface. Single imaging device can generate streams reaching up to 7.14 Gbps. The maximal throughput for raw image data for standard compliant devices is 5.44 Gbps and can be further extended to 6.80 Gbps with vendor-specific extensions.

The presentation outlines a system designed for image acquisition and streaming in the MTCA infrastructure. The video is captured from the ultra-fast camera, capable of capturing up to 180,000 frames per second. The data stream is transferred using the Full mode of Camera Link interface and captured using custom made deserializer board, designed according to FMC standard. The board is fitted on a commercial AMC module with Virtex-5 FPGA.

Data from frame grabber are send via PCIe x4 communication interface to CPU module using high performance DMA transfers. The resulting video stream is then sent for further processing and archiving. For diagnostic purposes, the stream may be also displayed with simple GUI application.

**Primary author:** Mr MIELCZAREK, Aleksander (Technical University of Lodz)

**Co-authors:** Dr MAKOWSKI, Dariusz (Technical University of Lodz); Dr JABŁOŃSKI, Grzegorz (Technical University of Lodz); Dr ORLIKOWSKI, Mariusz (Technical University of Lodz); Mr PEREK, Piotr (Technical University of Lodz)

**Presenter:** Mr MIELCZAREK, Aleksander (Technical University of Lodz)

**Session Classification:** MTCA Applications in research and industry

**Track Classification:** Session 4: MTCA applications in research and industry