Timing for MicroTCA

Integration of the x2Timer into a existing control system.

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DESY

Outline

> Connection to the control system

> System clock frequency

> Synchronization with the existing system

Connection to the control system

> IO- library placed between PCIe driver and DOOCS server

- C++ Class

- Interface to the universal PCIe device driver for Linux

- Interface to the DOOCS server (round about 40 functions)

- Includes all basic IO-functions to the x2timer module

- The IO-Lib can be used as an interface to other control systems

System clock frequency

> The x2Timer module is developed for a frequency of 1.3GHz

> Use of a frequency other than 1.3GHz

  - Adjustment parameters have to be determined (measured and calculated)
  - Proper functionality has to be checked previously

> Use of a higher frequency

  - FPGA is operating out of it's specification
  - Maximum useable frequency changes with each version of firmware
  - It can be necessary to change the firmware

> Use of a lower frequency

  - In principle no problem but should be checked previously

Synchronization with the existing system

> The x2timer operates as slave of the existing timing system

- Only the use of the same system clock is not enough
- An synchronization interface has to be developed

> The x2timer internal frequency

- System clock frequency / 120
- Existing system must be compatible to this frequency