IT-$\mu$DTC firmware development

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Supported by OTKA K124850
IT-$\mu$DTC Firmware Development Update

- Running development tasks in order
  - Porting DIO5 $\rightarrow$ Ready for pull request. Need to be tested...
  - Porting TLU $\rightarrow$ Ready for pull request. Need to be tested...
    - i2c multi-master problem with CERN, KSU and DIO5 FMCs $\rightarrow$ see description below...
  - Porting TTC Decoder $\rightarrow$ To do...
  - Porting AMC13 $\rightarrow$ To do...

New I2C master

- Basic concepts
  - should be such that a minimum change is required in the current firmware
  - should be able to communicate with all i2c slaves both in L8 and L12 FMCs
  - only one i2c master should be on the i2c bus

- Working on
  - I ported the system core’s i2c master to the user core
  - i2c bus scan for checking active slaves on the i2c bus
  - programming PLL through the IPBus with python script
IT-µDTC Firmware Development Update

IPBus registers -> settings 32 bit
-> command 32 bit
-> reply 32 bit

PLL FSM
Command set for PLL programming is stored in an array

DIO5 FSM
I2C slave is fed by a 8x2 bit FIFO

Other FSM
...

I2C Master

I2C bus
fmc_i2c_sda
fmc_i2c_scl

PLL I2C Slave
L8 / L12 FMC

DIO5 I2C Slave
L8 / L12 FMC

Other I2C Slave
L8 / L12 FMC

Implemented registers in the firmware

control registers

status registers

settings command reply

bypass

settings command reply

settings command reply

settings command reply