

INSIDE – Update meeting

PET DAQ

15 September 2014

Refresh from the last meetings

- Objectives of the PET DAQ
 - Provide a full in-beam (full-beam) PET system able to sustain annihilation and prompt photon rates during the beam irradiation
 - 30 kHz/cm² maximum sustainable single rate

Data acquisition flow

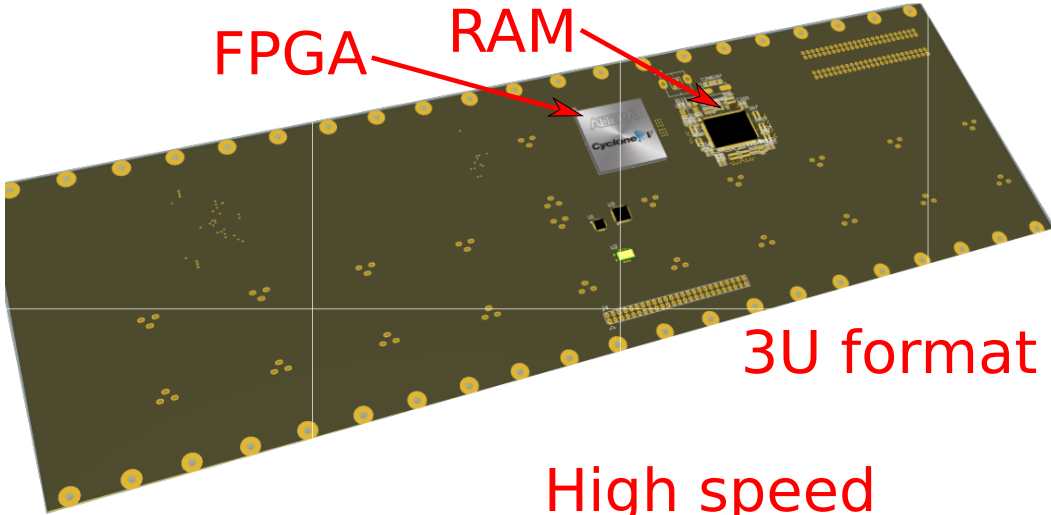
- Each SiPM/ASIC pair can handle single rates at 180 kHz
- The 5 cm x 5 cm module will acquire at 720 kHz
- Data collected by two FPGAs
 - TX, coupled to the ASIC
 - RX, plugged on the mainboard
 - TX-RX ethernet connection (RX uses Altera FPGA)
- Data packet is 10 B
- The expected module output bandwidth is 7.2 MB/s

Motherboard HW development

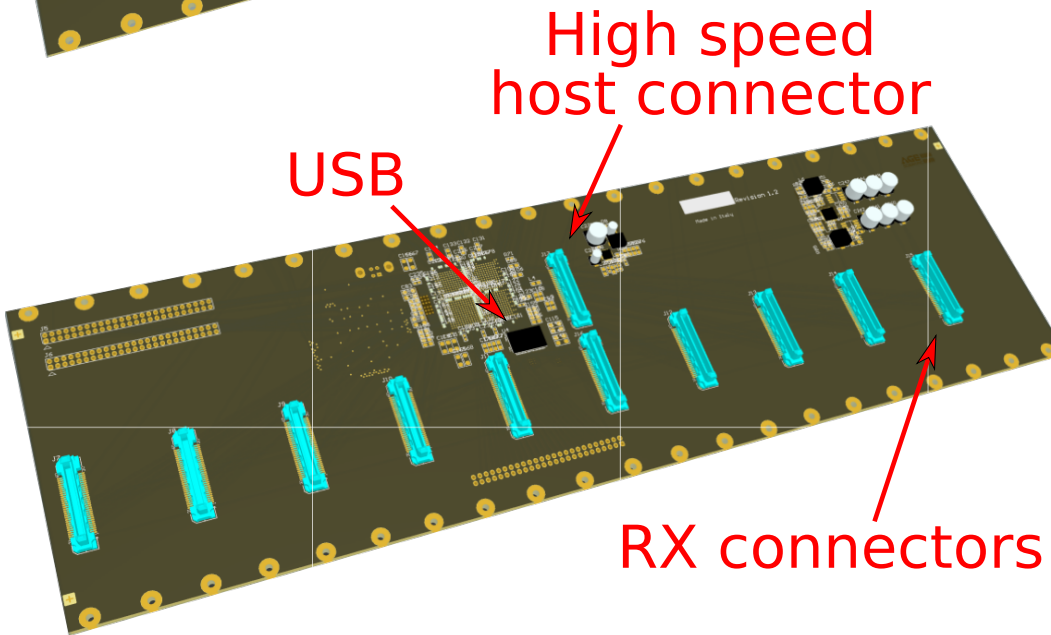
- Functional design ✓
- Schematic design ✓
- Mechanical design ✓
- PCB design (in progress)
- Construction and assembly ✗!!

- Initial delivery 12/2013, expected delivery ~~4/2014~~, 10/2014

Motherboard HW development



3U format



RX connectors

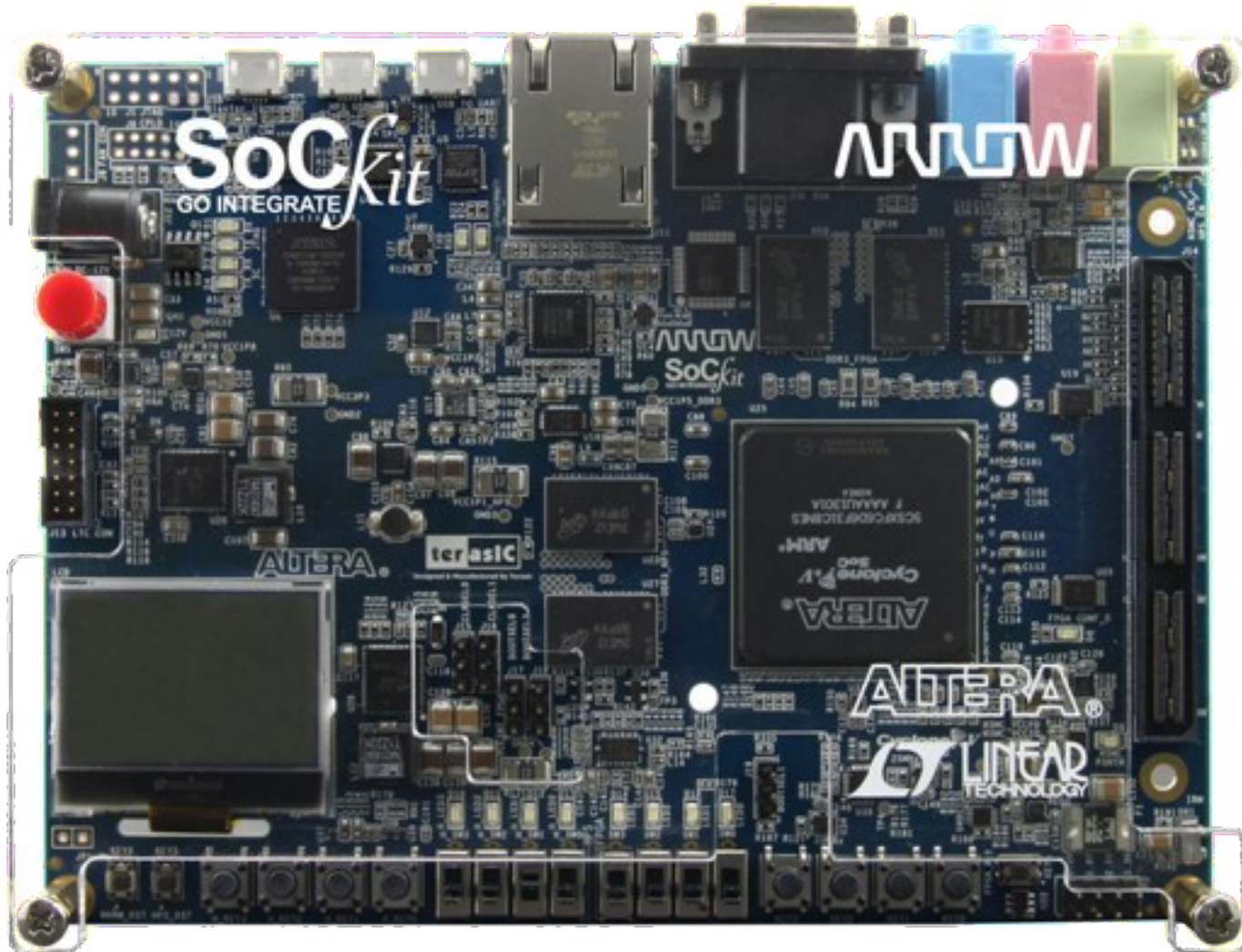
Motherboard FW development

- Functional architecture design ✓
 - USB interface (imported from DoPET) ✓
 - RX interface (SPI and LVDS) ✓
 - Coincidence sorter and processor ✗
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- Expected first version delivery 12/2014
(depending on HW status)

Motherboard SW development

- Largely imported from DoPET
- Server/client architecture, suitable for multi-modal integration (same as for IrisPET)
- No specific developments are being made at the moment

RX board prototype



RX board as standalone prototype

