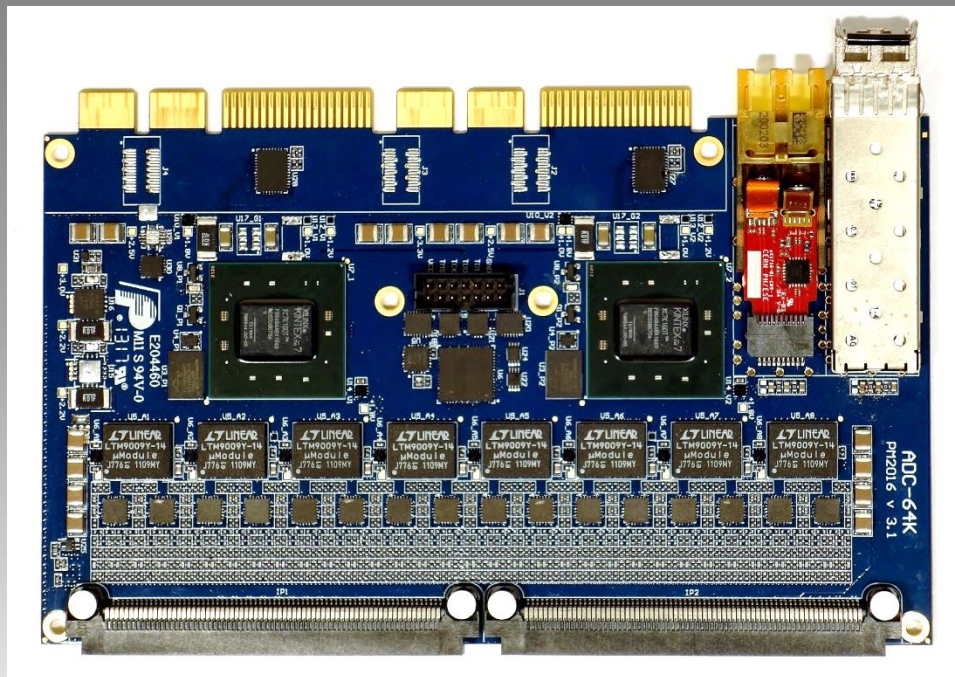
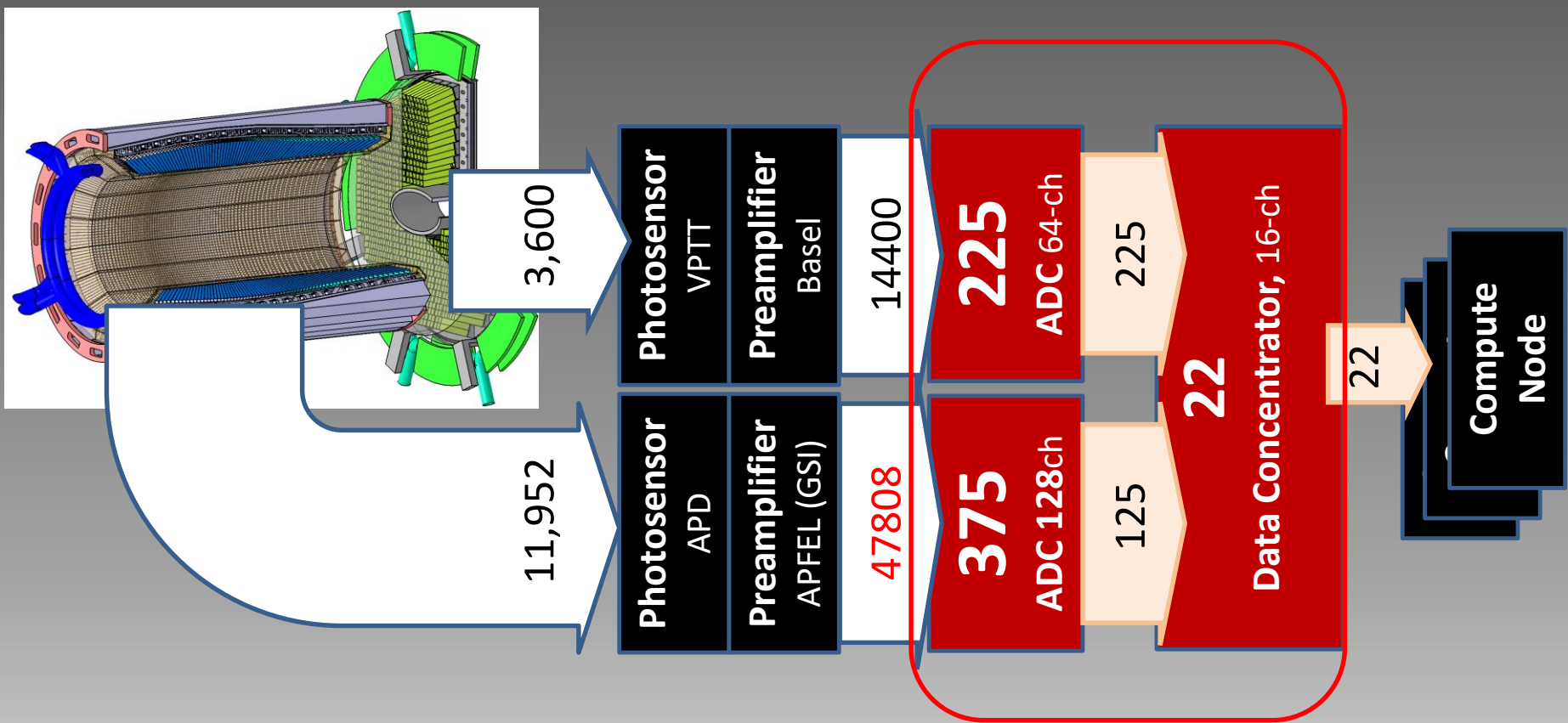


Production and test of 250 pcs of ADC for EMC Forward Endcap



- PANDA EMC Readout System



- 15000 crystals
- Dual photosensor readout
- Dual range



- High channel density



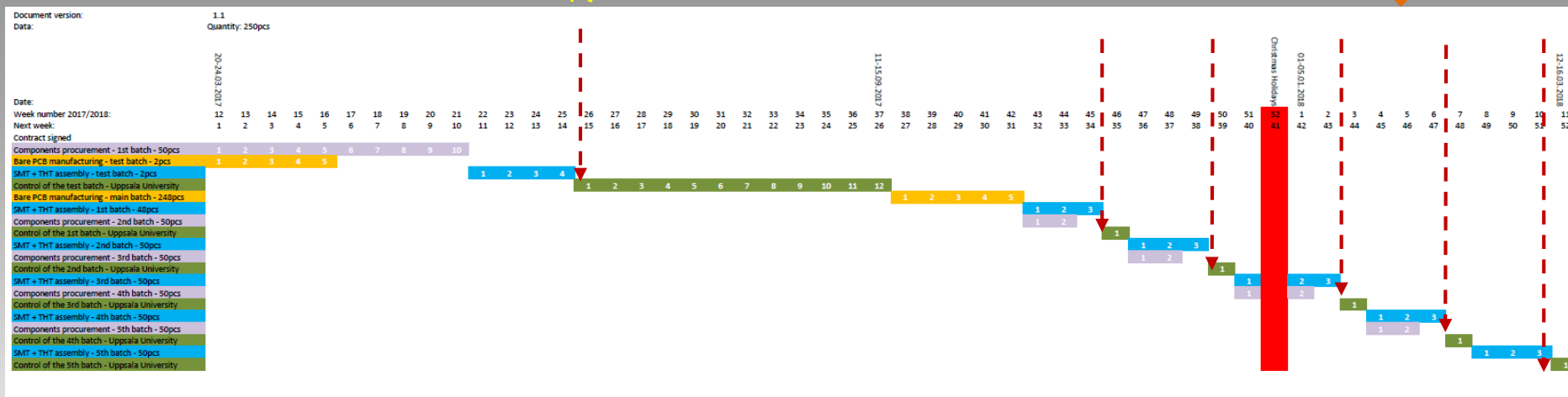
- Production of 250 pcs for EMC Forward Endcap

ADC Production

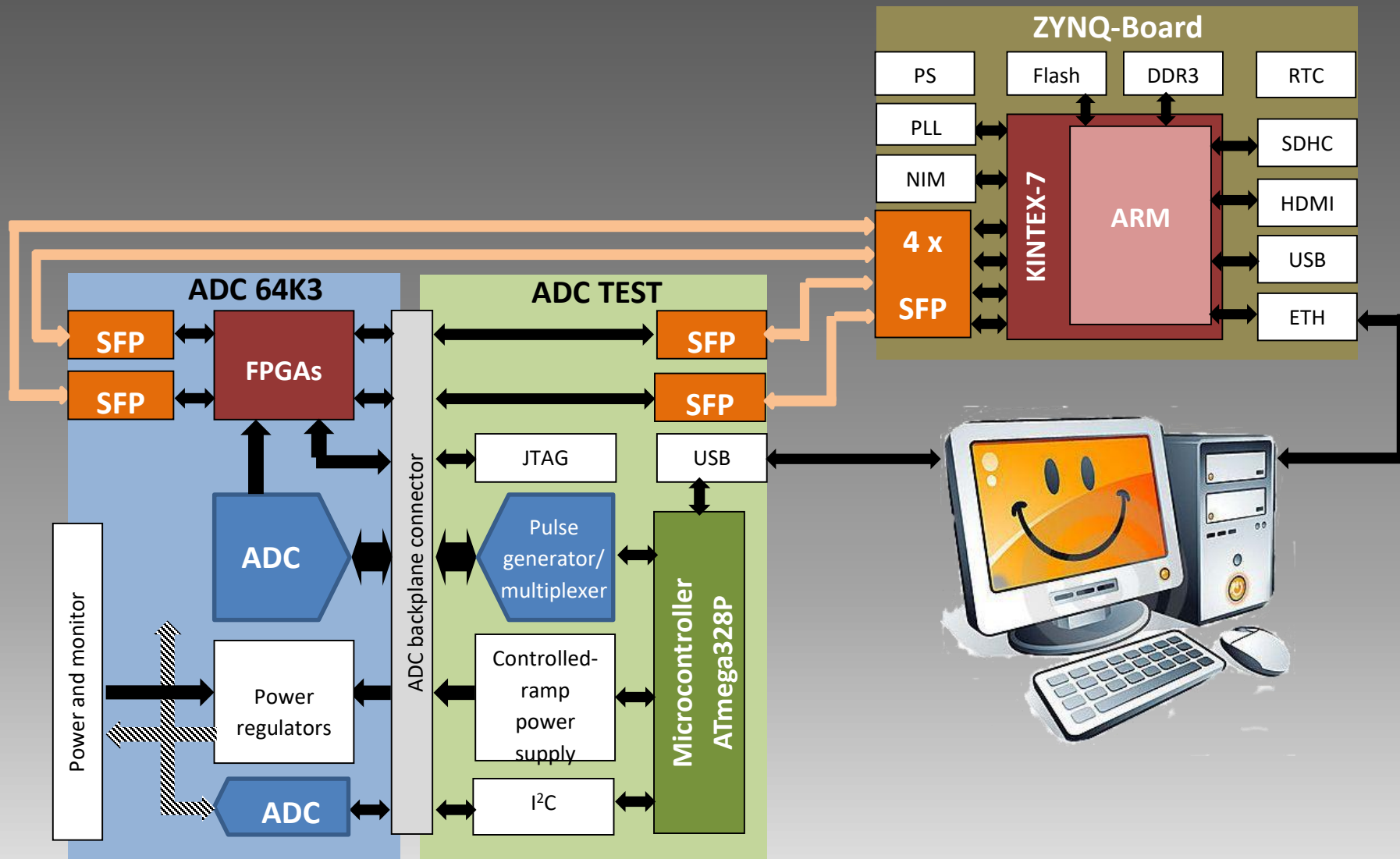
Batches of 50 pieces every 5 weeks

Payment for each batch is made after the successful test

The money are used for financing components for the next batch



- Post-production functional tests





- Production of 250 pcs for EMC Forward Endcap

Current pool

Pre-production

1 pc v.221 (64ch, 125 MSPS - Shashlyk)
2 pcs v.217 (64-ch, 80 MSPS – Giessen)

Production v.222 (32-ch. DR, 80 MSPS – Forward Endcap)

108 pcs produced and tested
40 pcs produced and in test
50 pcs in production
50 pcs pending

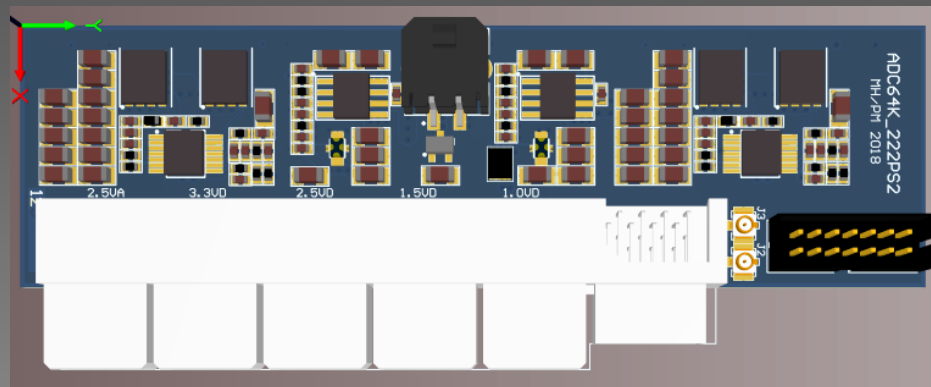
Tests:

- Start-up voltages and currents
- JTAG configuration and Flash boot
- PLL and clocks
- ADC calibration and functionality
- GTX, SFP and Versatile Link
- **102** tested OK
- **3** problems with 1 channel ADC each – to be investigated
- **3** problems with 1 ADC each – to be investigated

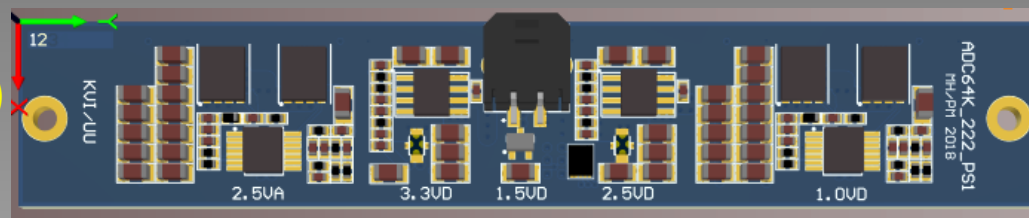
- Production of 250 pcs for EMC Forward Endcap

Current pool

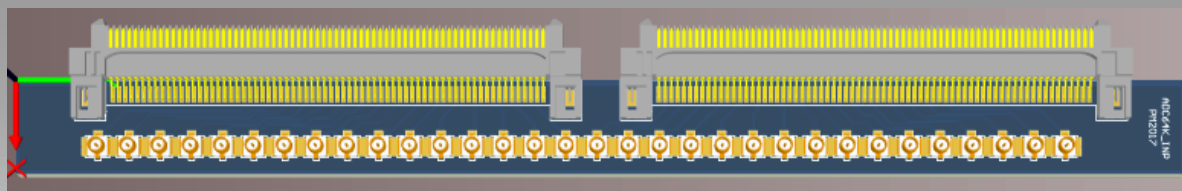
6 pcs Stand-alone power supply (v.222)



6 pcs Mezzanine power supply (v.222)



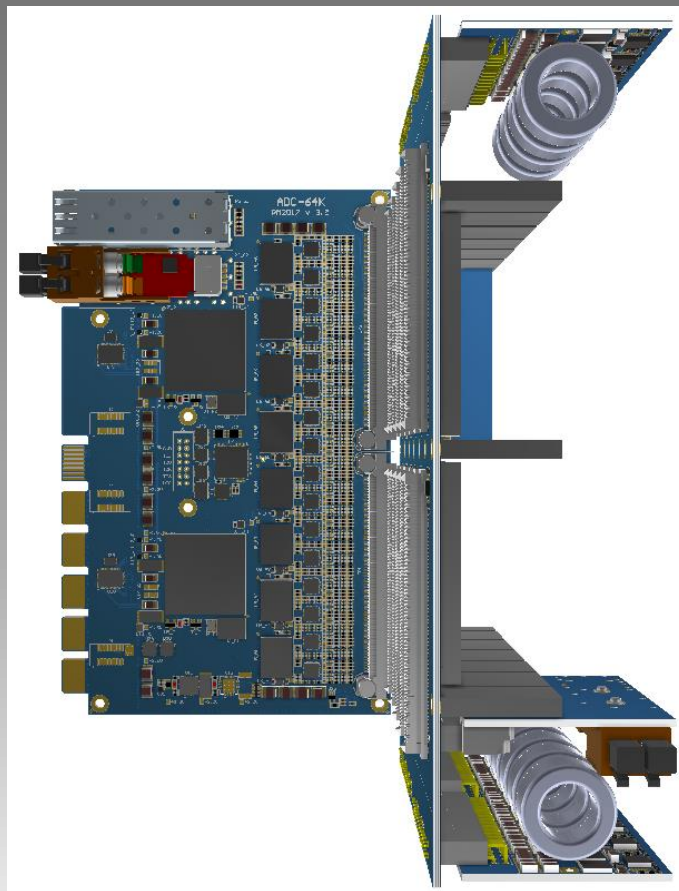
7 pcs Input patch panel u-FL (positive signal polarity)

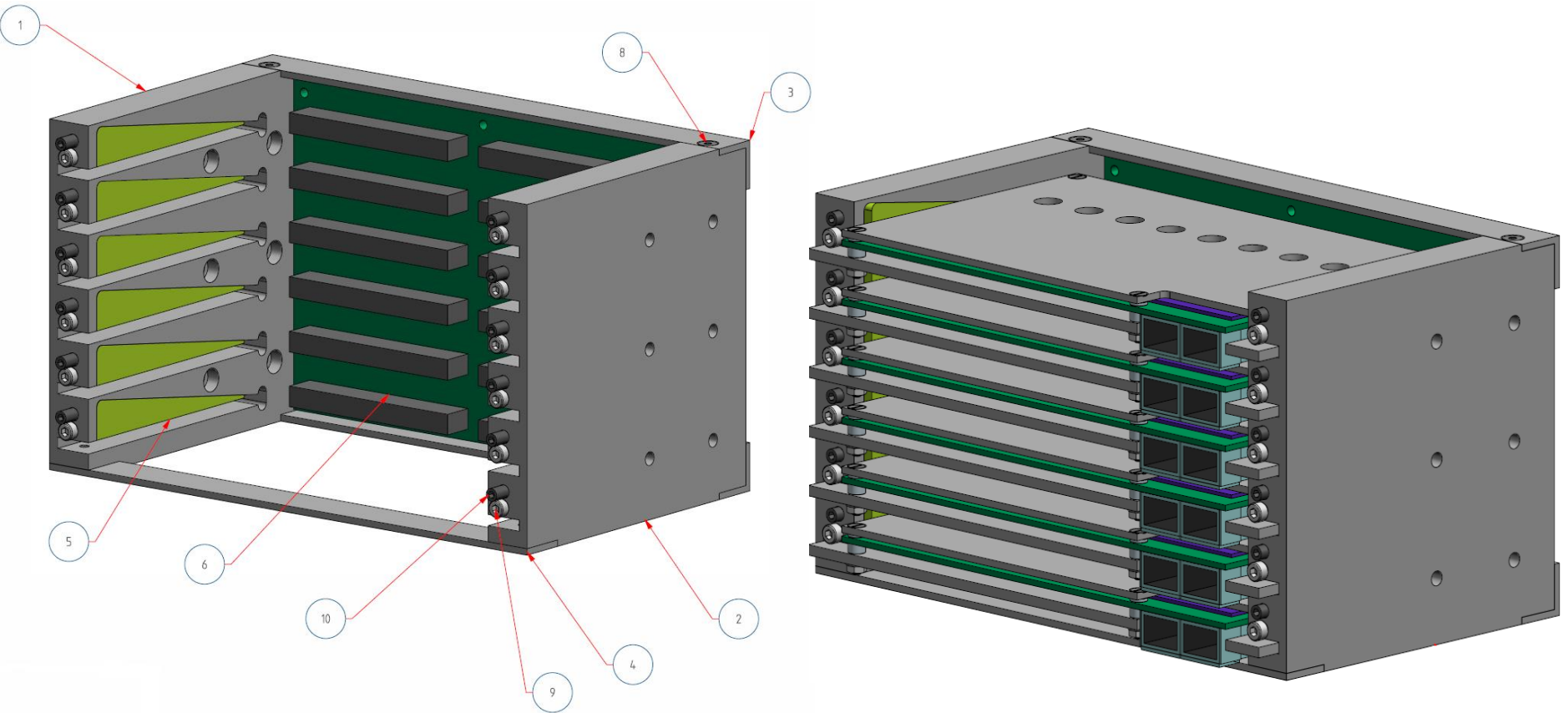


2 pcs Automatic tester

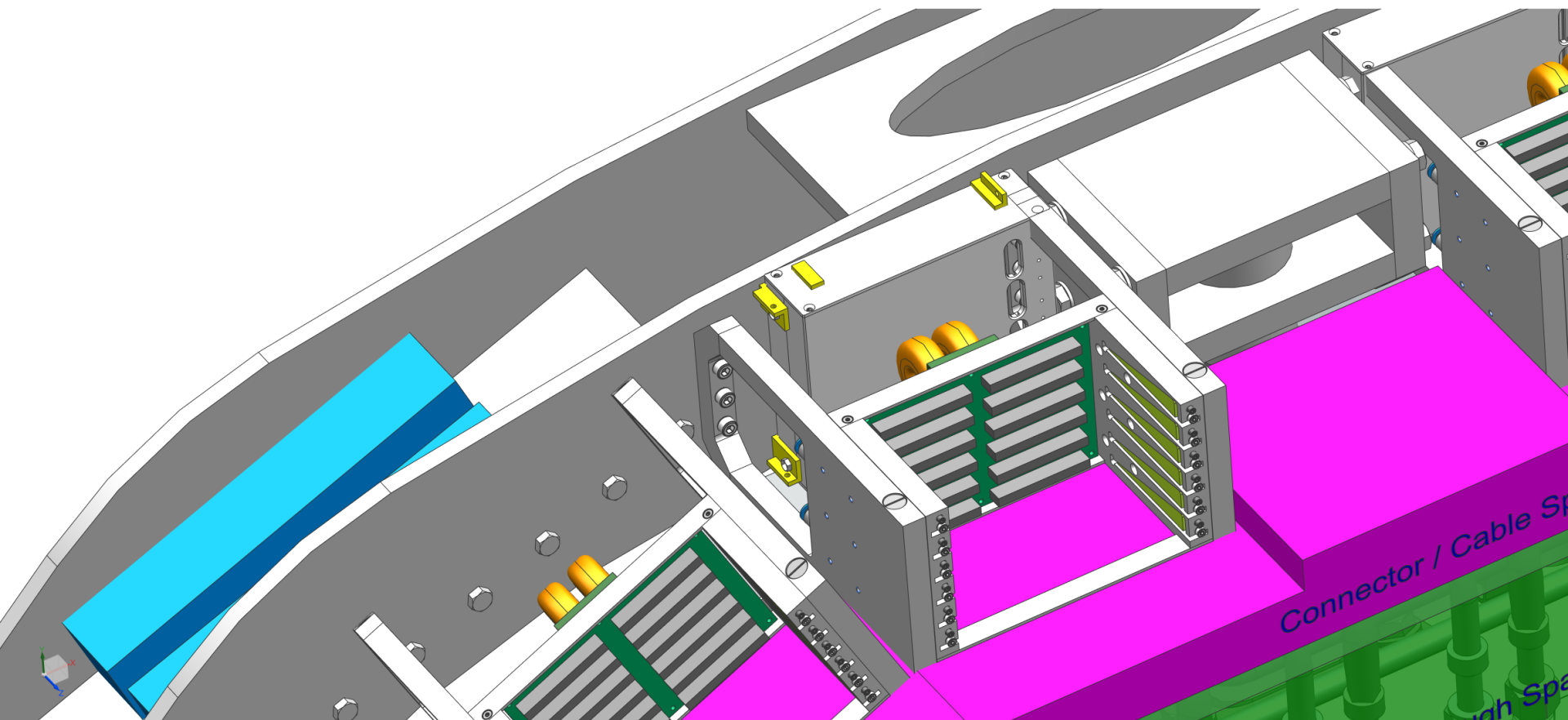
ADC Crate

Rear Compartment

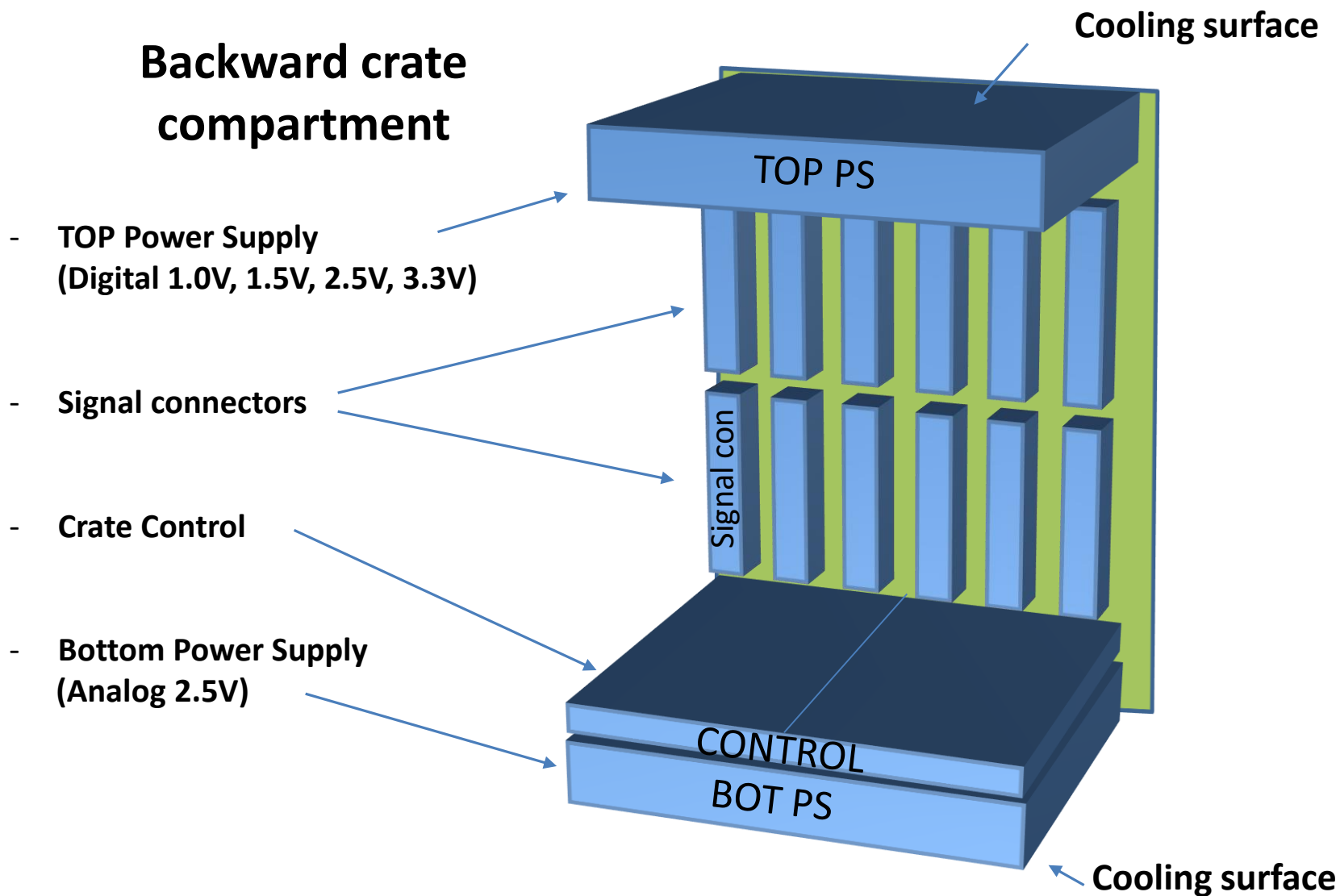




Courtesy KVI



Courtesy KVI

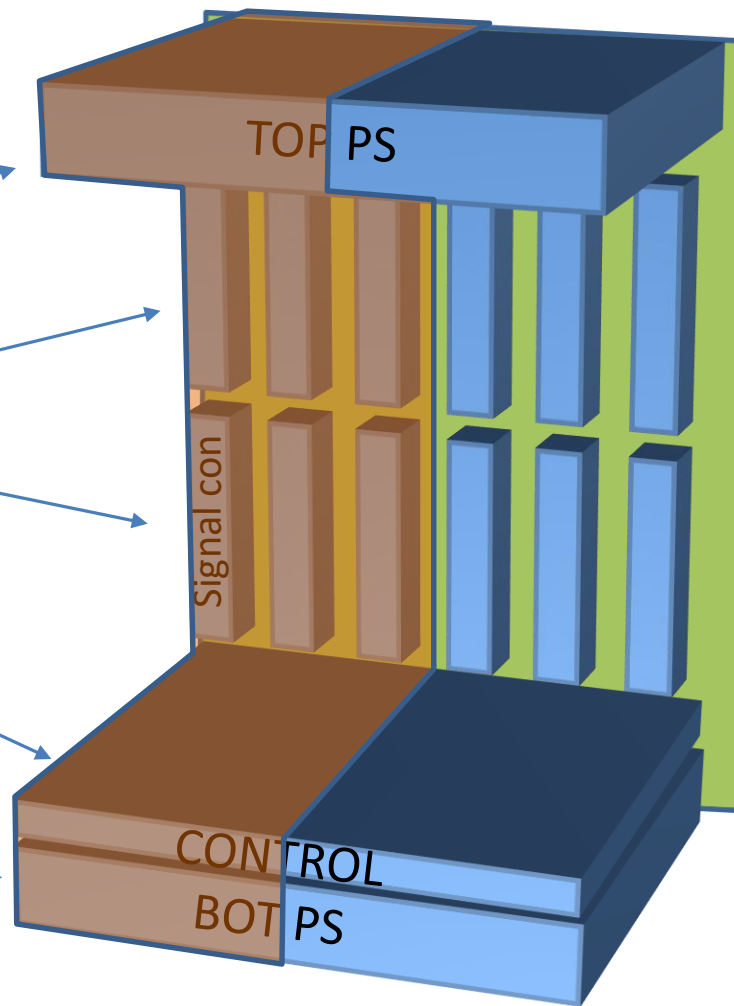


- Crate backplane preparation

Tripple slot module division

Backward crate compartment

- TOP Power Supply (Digital 1.0V, 1.5V, 2.5V, 3.3V)
- Signal connectors
- Crate Control
- Bottom Power Supply (Analog 2.5V)





ADC for EMC-Endcap - Crate backplane preparation

TRIPLE SLOT MODULE

TX/RX - GTX Triple module loop (HF buffered)

Can be used for re-routing of faulty main transceivers or for multiplexing of the readout

I²C AUX – provides differential I2C control for the detector ASICs (requested by Barrel).

Can be used for indicating FPGA configuration status (DONE) to the control system

I²C PWR – For monitoring of the ADC voltages and currents

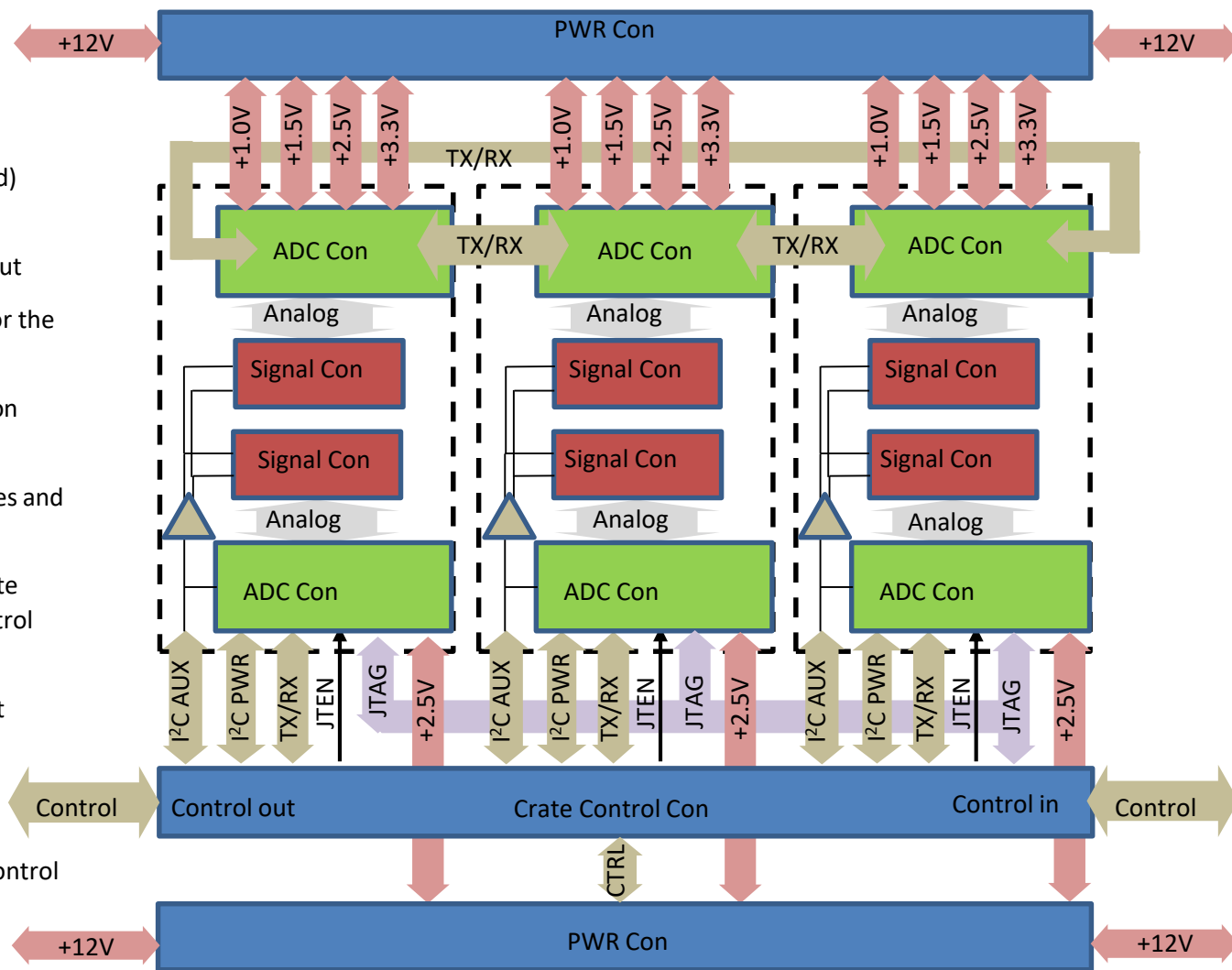
TX/RX – can be freely used inside of the Crate Control board. Either looped or fed to a control FPGA

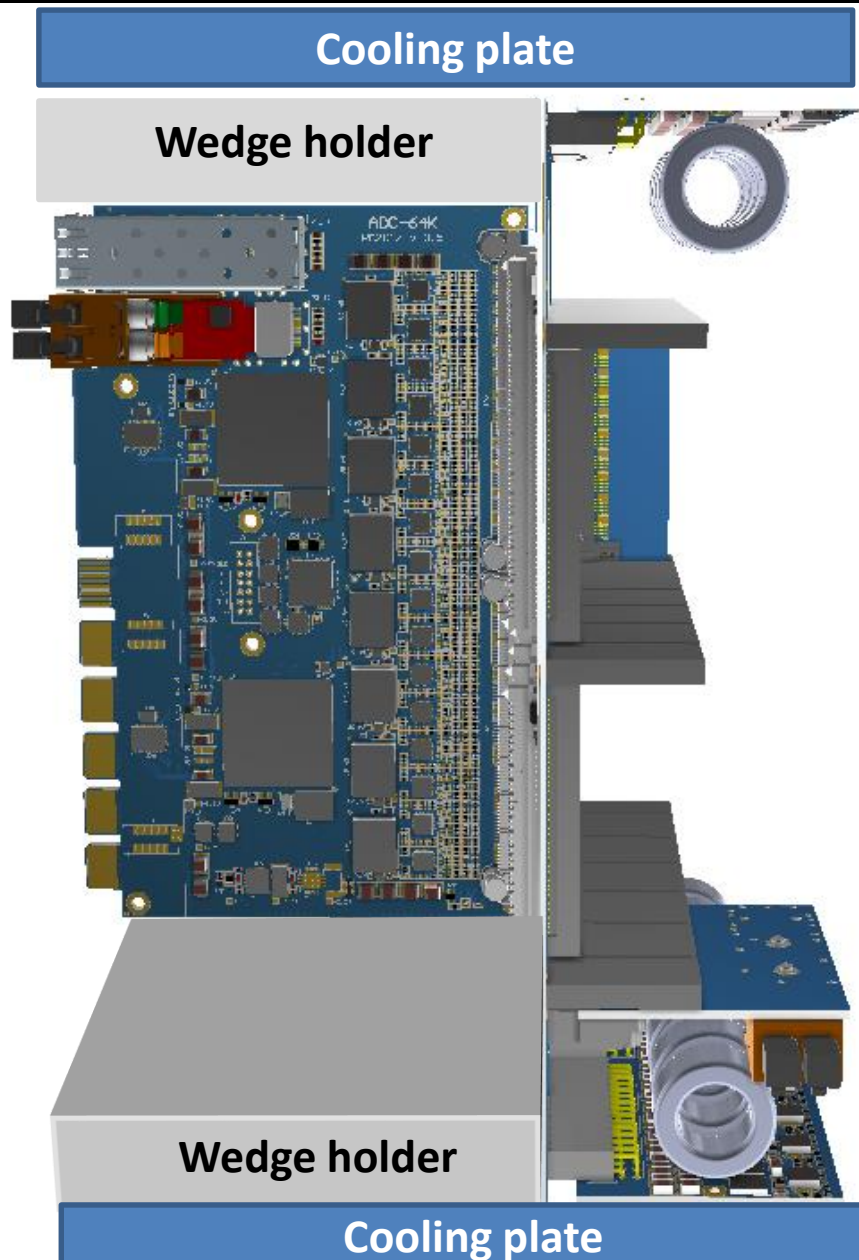
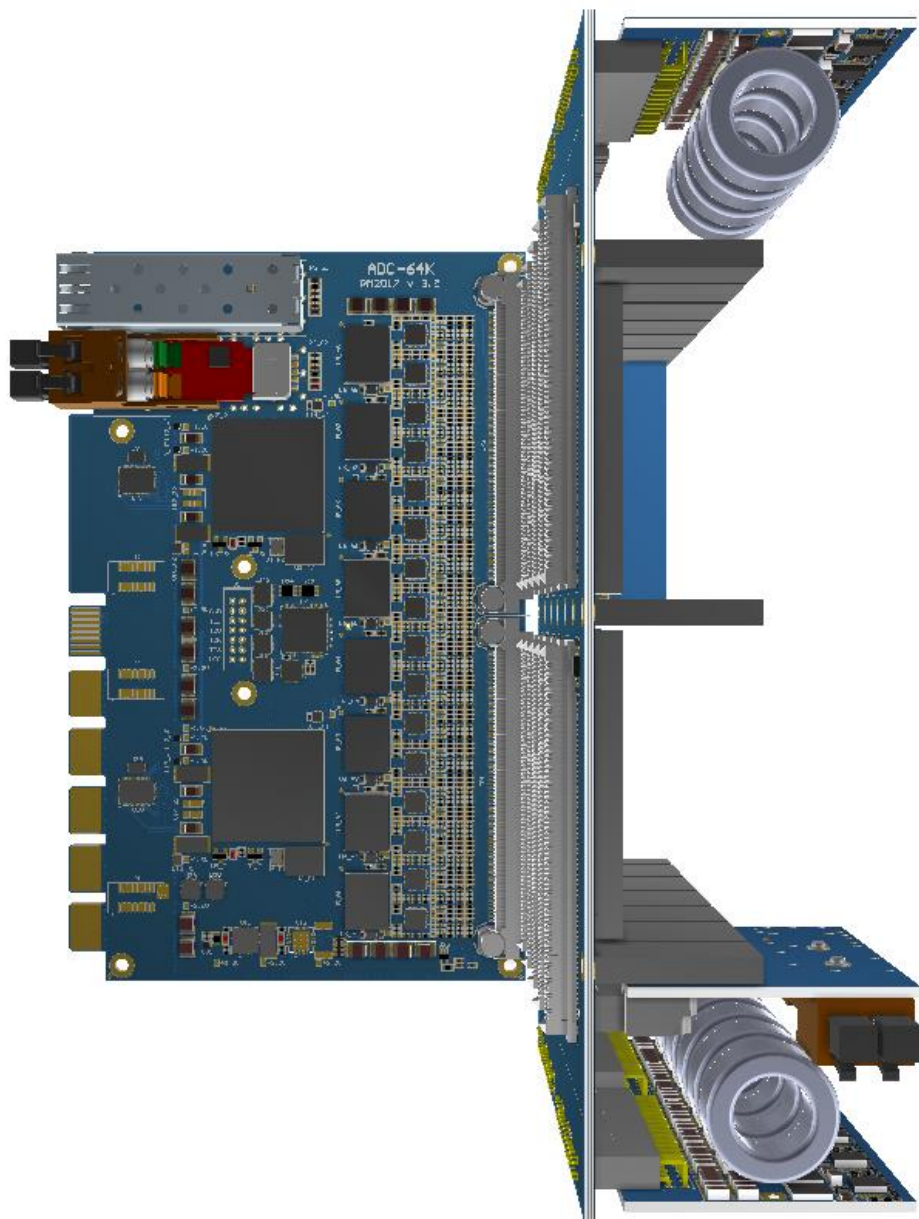
JTEN – JTAG enable for operation on the slot

JTAG – Common lines (buffered)

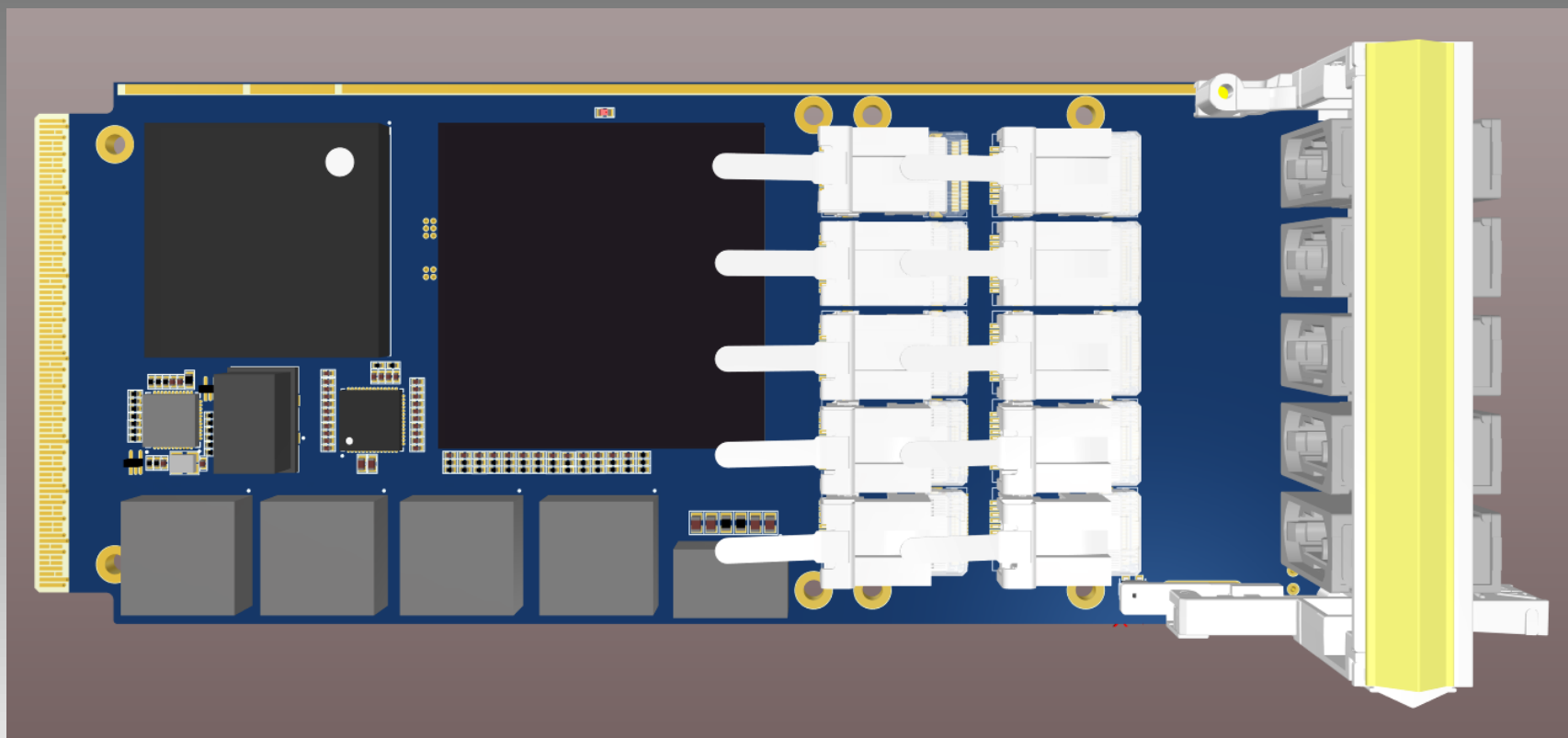
CTRL – PS control

Control – A daisy-chain interface for crate control (optical interface out?)





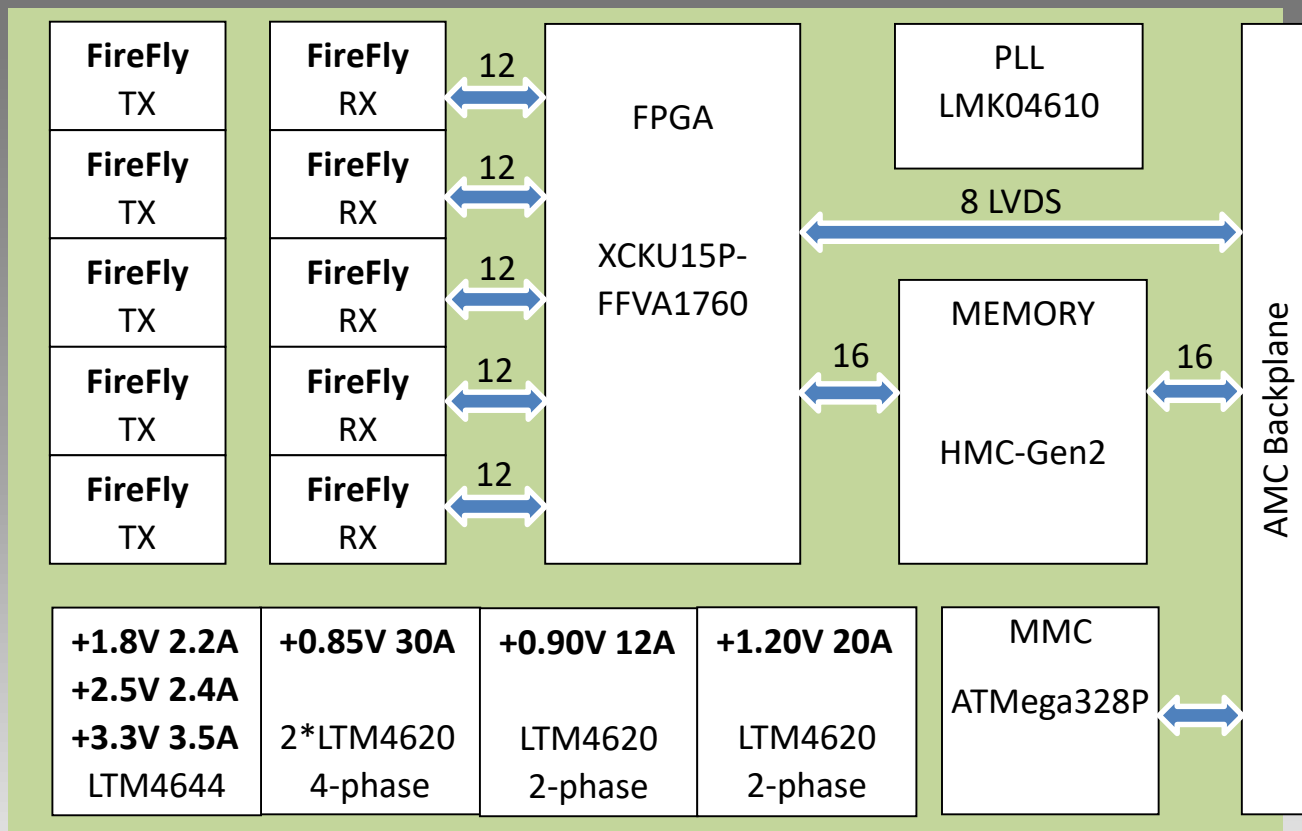
A data Concentrator for the PANDA experiment



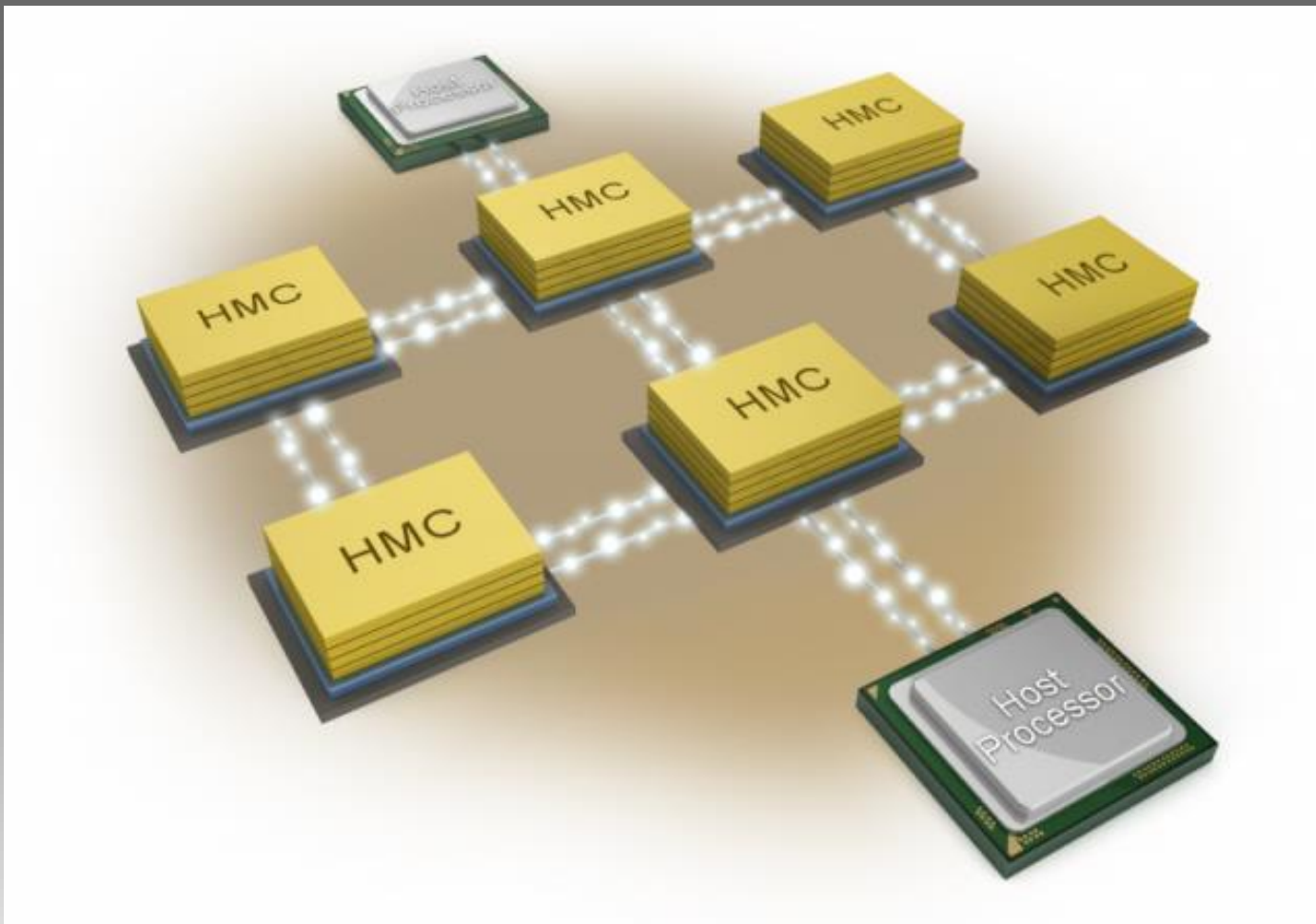


A data Concentrator for the PANDA experiment

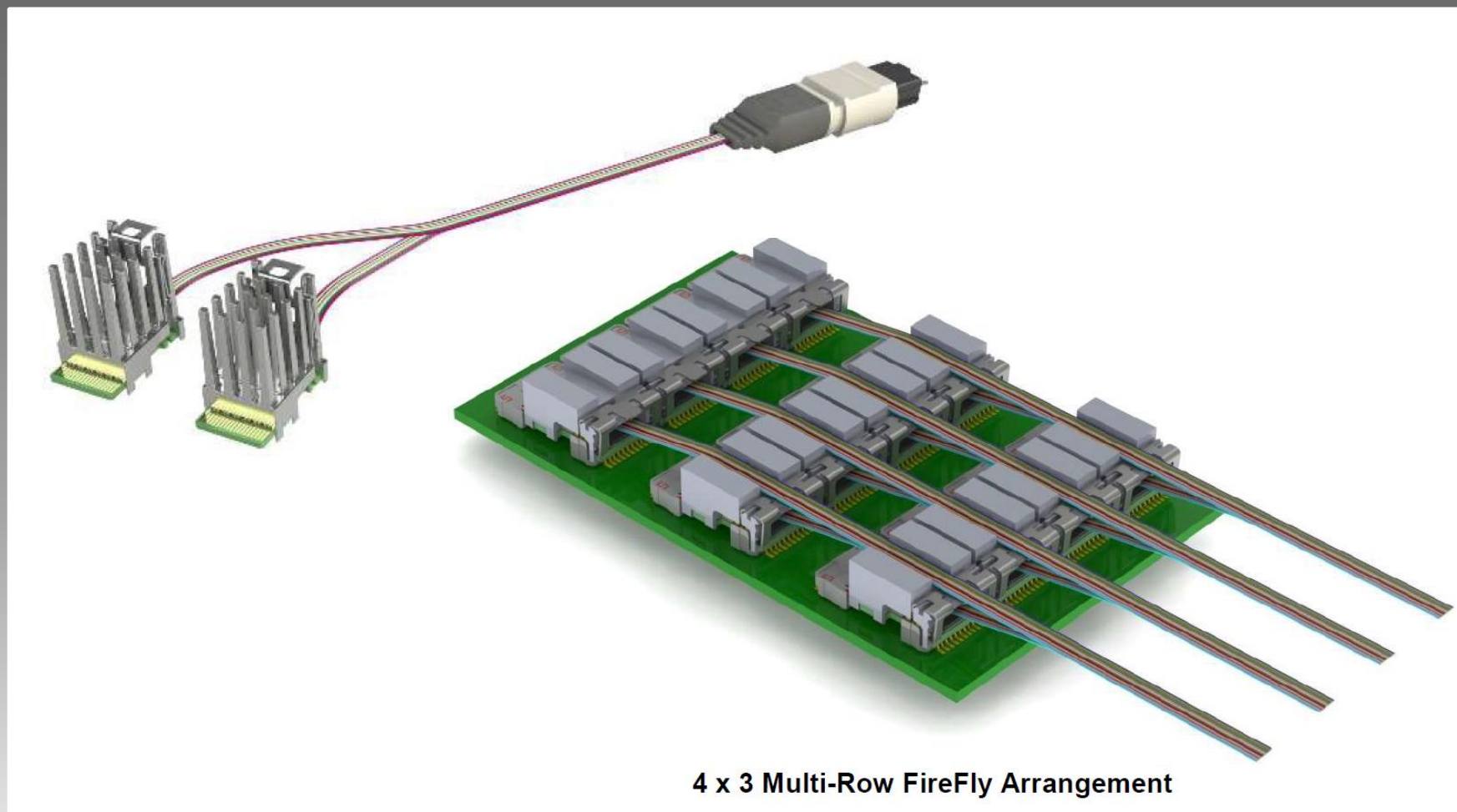
60 optical links!



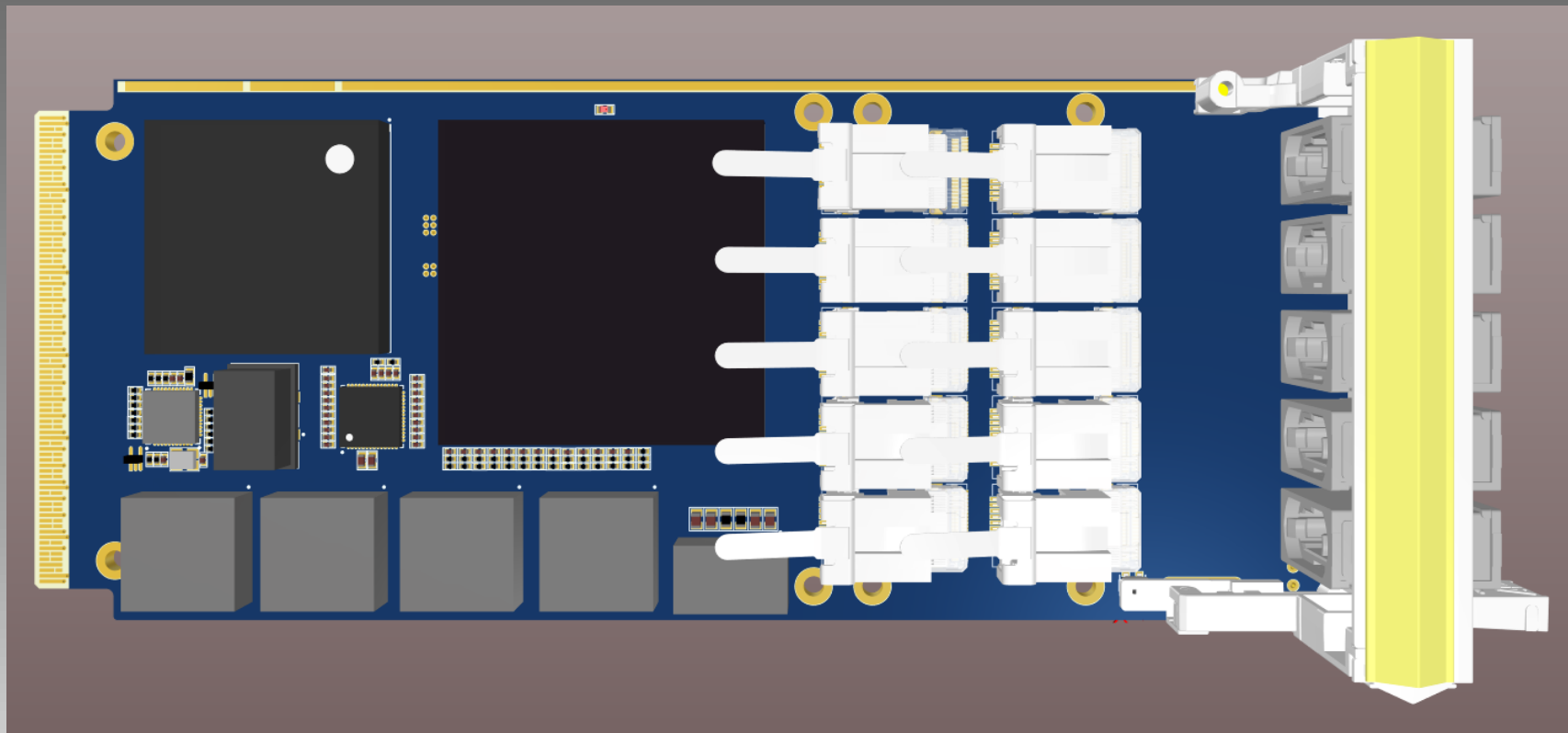
Hybrid Memory Cube

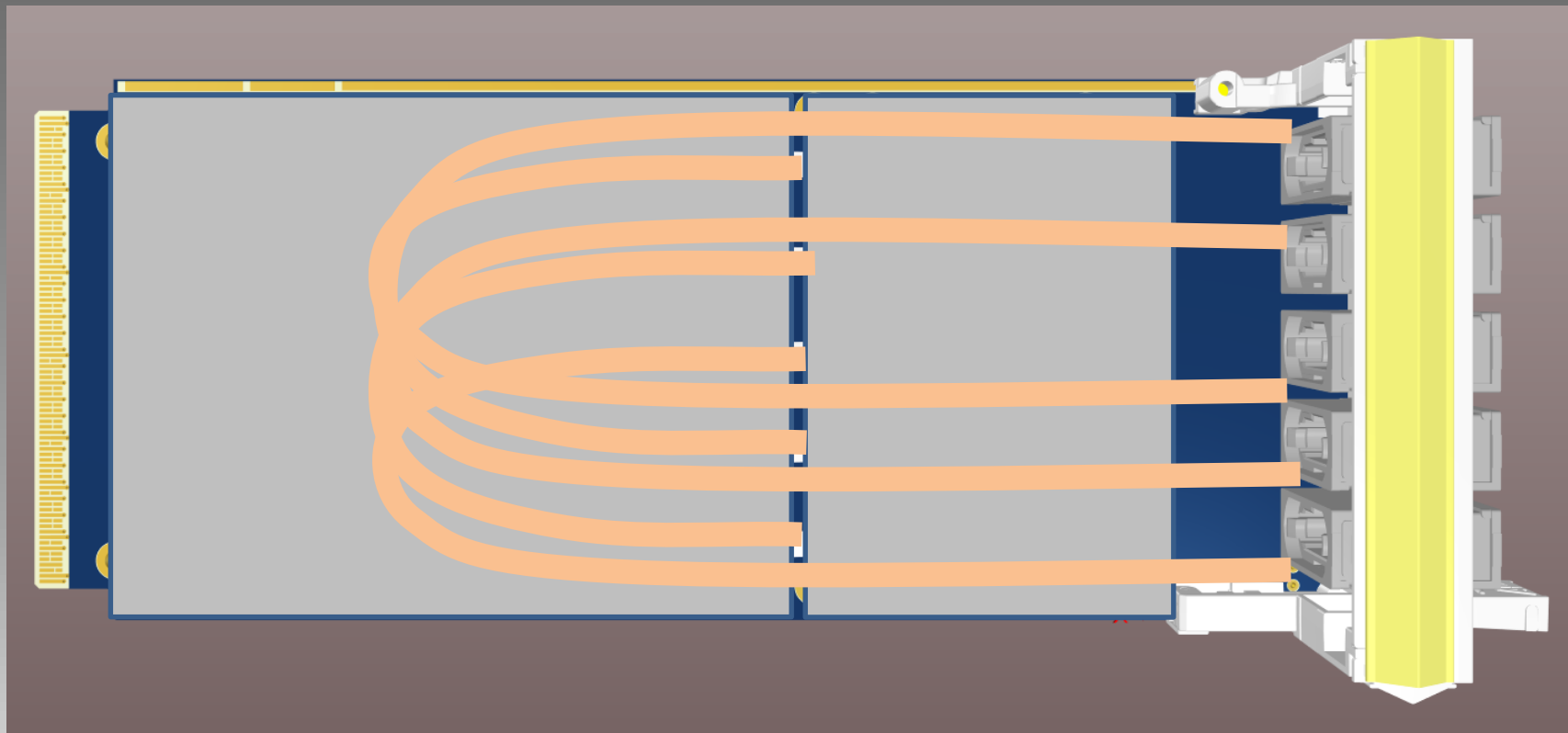


Samtec FireFly optical modules



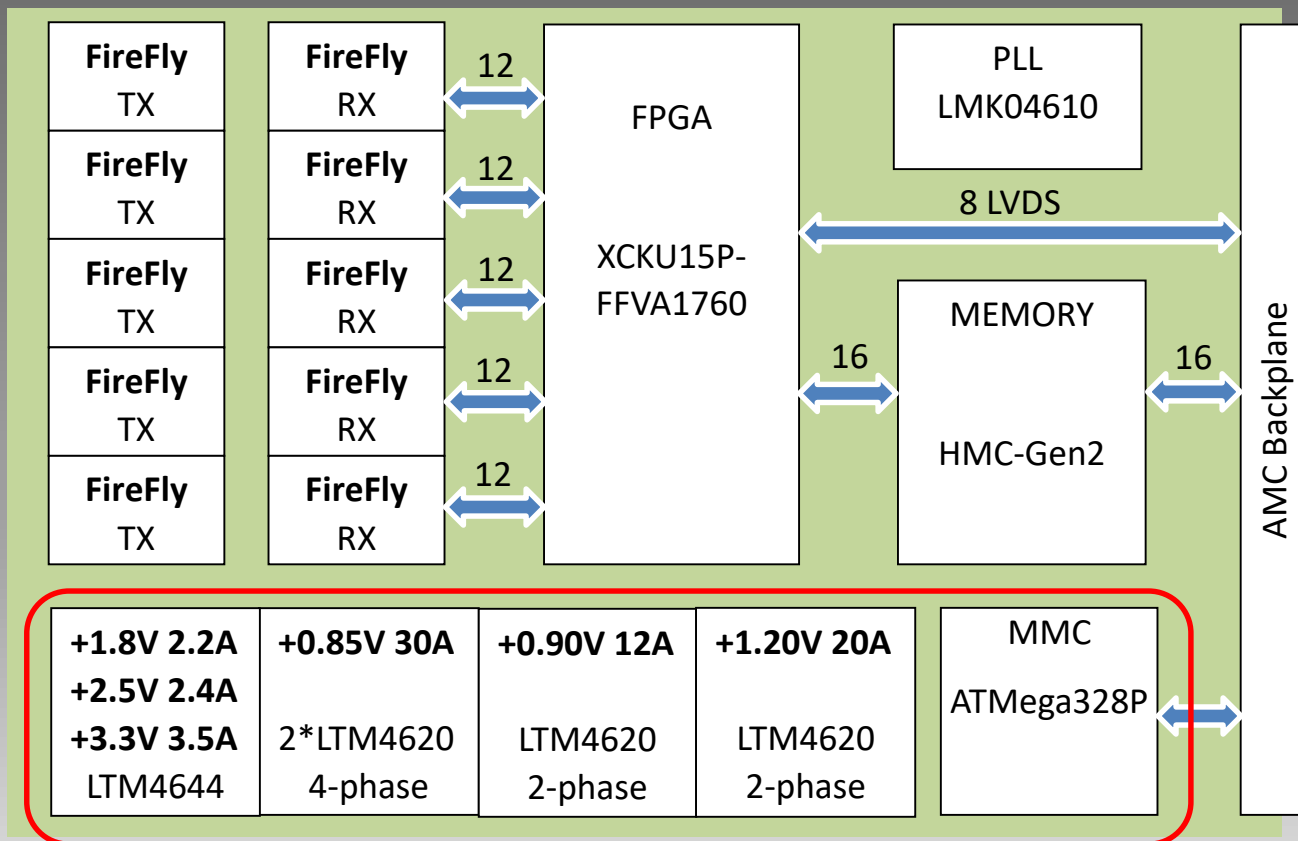
4 x 3 Multi-Row FireFly Arrangement







Module Power (70W)





Work progress

1. The idea is established.
2. The component price and availability was preliminarily agreed with distributors
3. Basic technological assumptions were checked.
4. The PCB technology was consulted with the manufacturer.
5. The schematic is complete (revisions and modifications are possible)
6. The PCB is >90% routed or pre-routed
7. The component placement is currently reiterated
8. Remaining are:
 - power distribution
 - diverse control signals
 - overall scrutiny



Thank You !



Thank You !

Special thanks to

Filza Saleem	- Uppsala
Ryszard Chmielewski	- Semicon