

DHH system

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and Applications

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Overview:

- DHC for pocket DAQ
- Integration of optical interfaces
- Possible further event building steps (for dicussion)

- Itoh-san requested one DHC for pocket DAQ
 - In June one DHC module will be delivered and installed in KEK
 - Pseudo random data generator with programmable event size

Irradiated optical transmitted

Glenair 050-301

850 nm, 2 Gbps

Power consumption 300mW/channel

Size 20x10x10 mm

TX (with blue stripe)



PASSED

Avago AFBR-811 TX

12 channels, 850 nm, 10Gbps

Power consumption 100 mW/channel

Size 22x19x15 mm



NOT PASSED

Short term:

Provide Setups for lab tests and DESY testbeam using optical transmitters

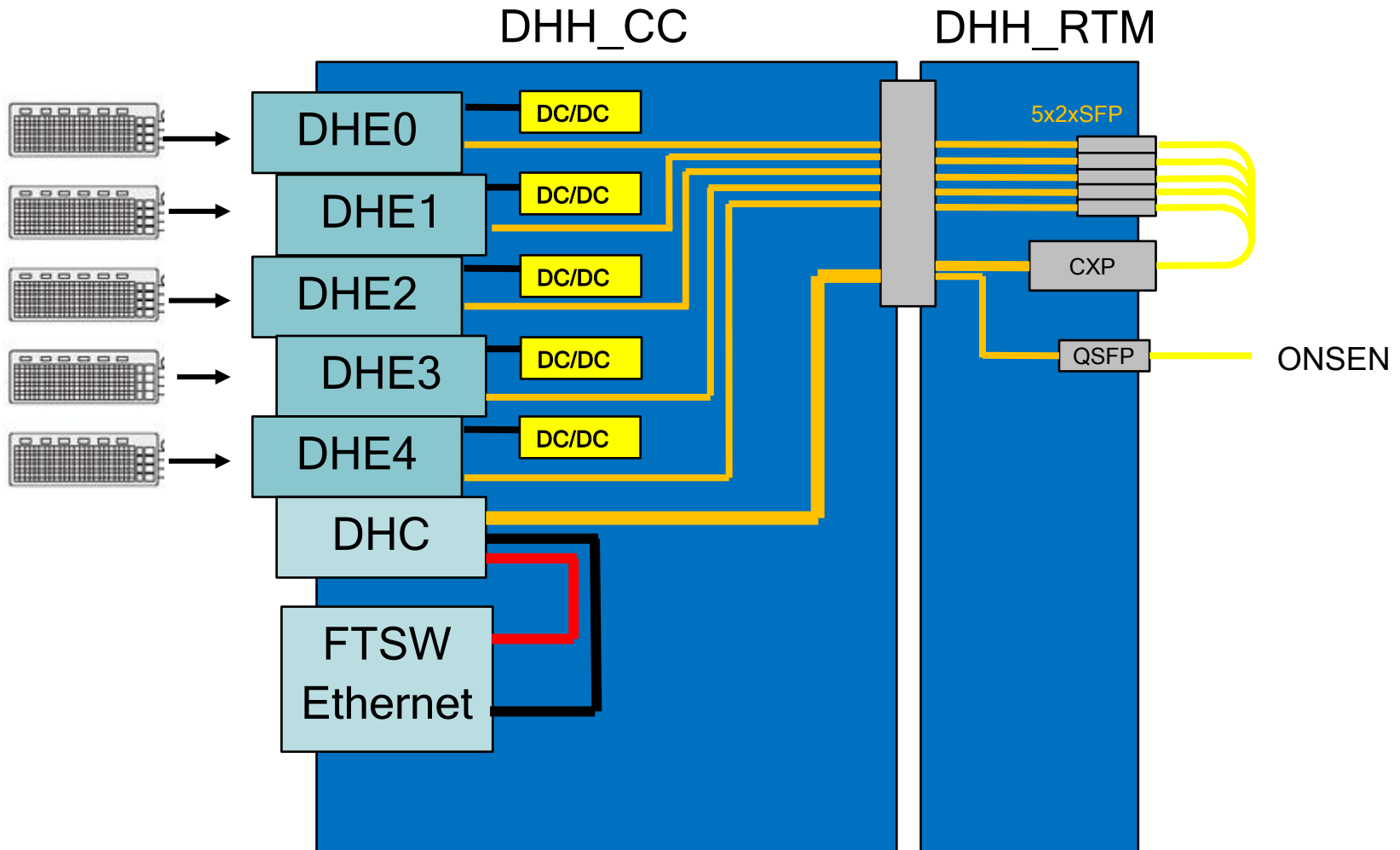
- DHEs are equipped with optical transmitters
- DHE: reallocation of Aurora ports to be done in firmware
- Adapter for Infiniband connector to integrate optical transmitters
- Redesign break out board and integrate optical transmitters

Long term:

Changes of DHH Carrier Card architecture

Current DHH_CC

 Data links



DHE/DHC module

RJ45 connector

- Dif. JTAG



Infiniband connector

- 4xAurora links
- Current monitor

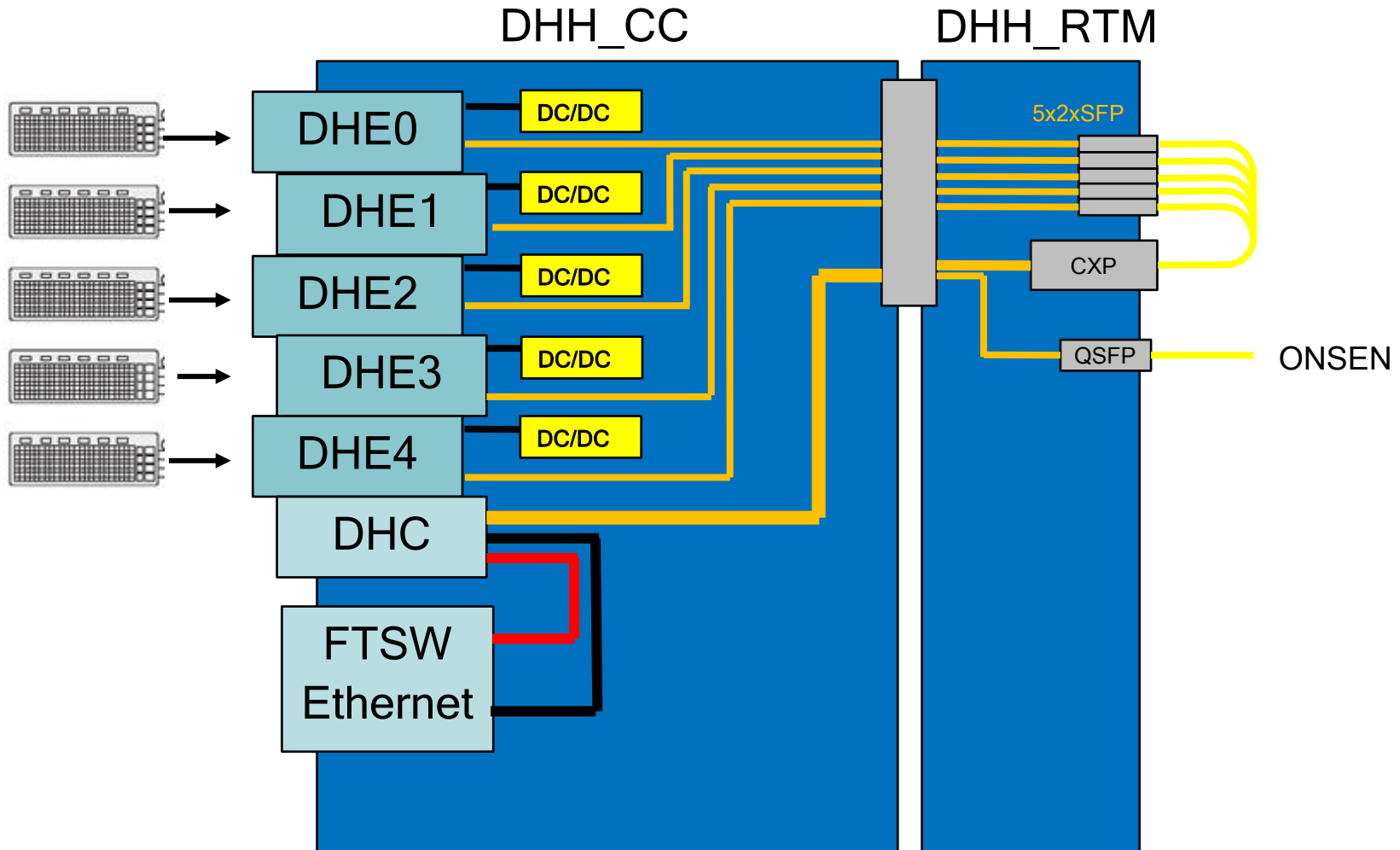


AMC connector

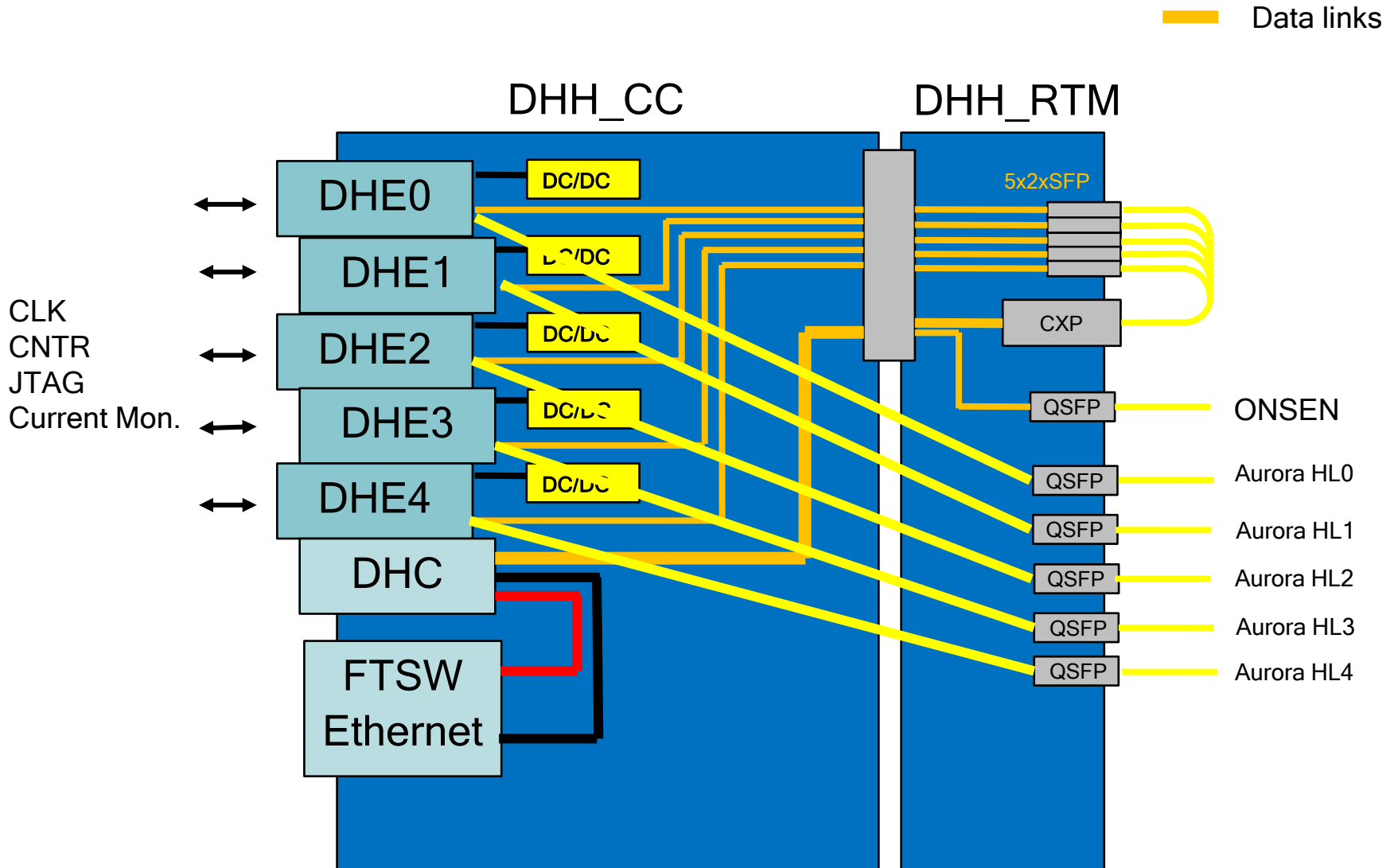
- FTSW
- Ethernet
- 16xSerialLinks (16x6.5Gbps)

Current DHH_CC

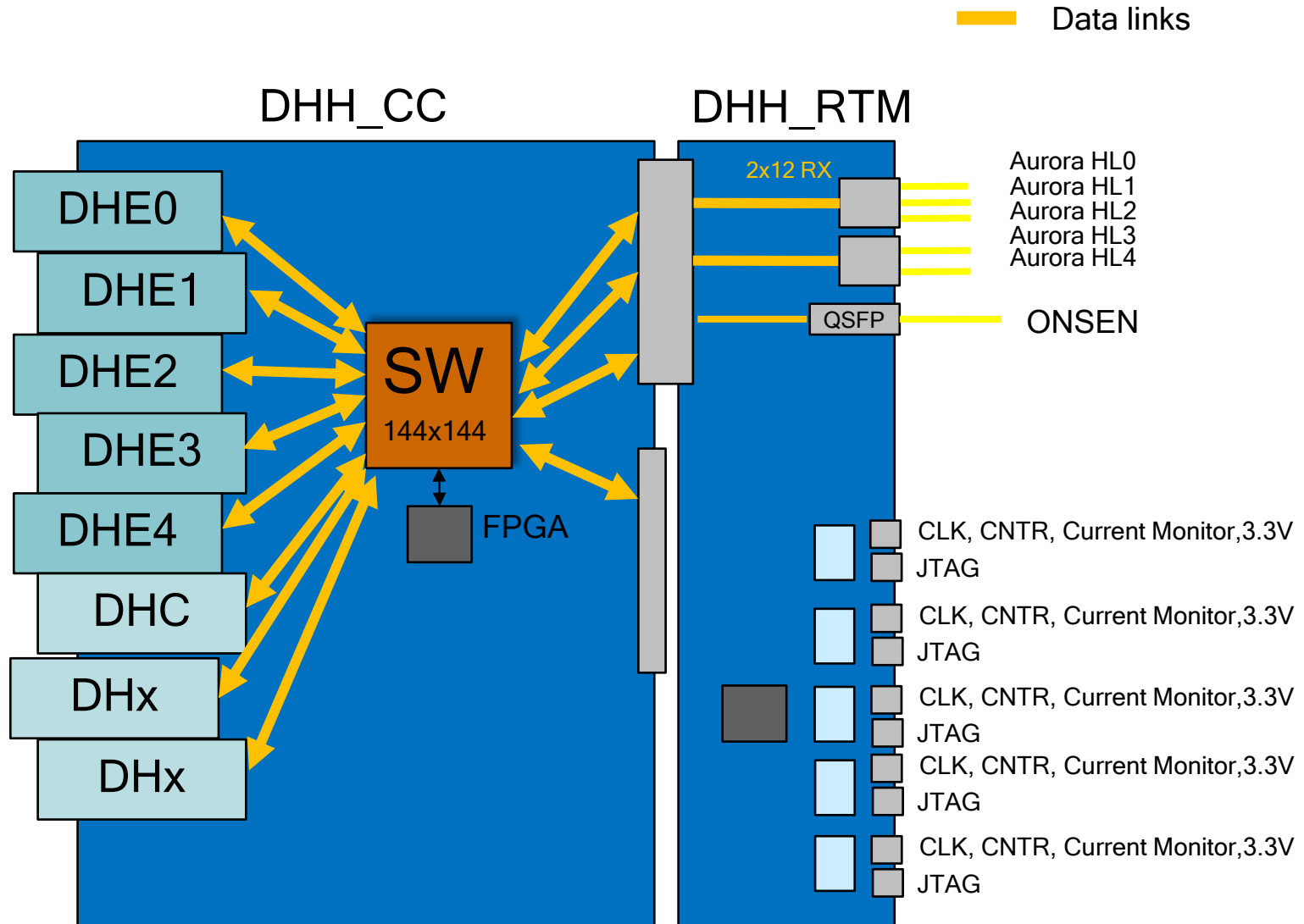
 Data links



Optical interface integration I



Optical interface integration II



Integration I

PROs

- Minimum changes

CONs

- Fixed architecture => no flexibility

Integration II

PROs

- Flexible architecture
- Integrated redundancy
- Synergy with another project

CONs

- More complex modules design
- Firmware development for two FPGAs

Comment:

- No changes of slow control software

- Current scenario:
 - DHH combines data from 5 half ladders
 - Complete event delivered to ONSEN via 8 optical links
 - ONSEN combines data from 4 links to one block
 - Complete event provided to DAQ via 2 Ethernet interfaces
- Possible scenario for discussion
 - By adding 8 more DHC modules one can assemble $\frac{1}{2}$ event
 - ONSEN will get complete event via 2 optical links and can complete full event assembly
 - Advantages:
 - Smaller load on ONSEN modules
 - Easy to arrange PXD only data taking

THANK YOU