

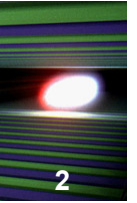


MicroTCA Hardware Concepts and Developments for the Accelerator

Kay Rehlich

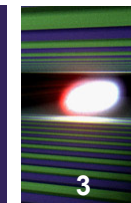
WP 28



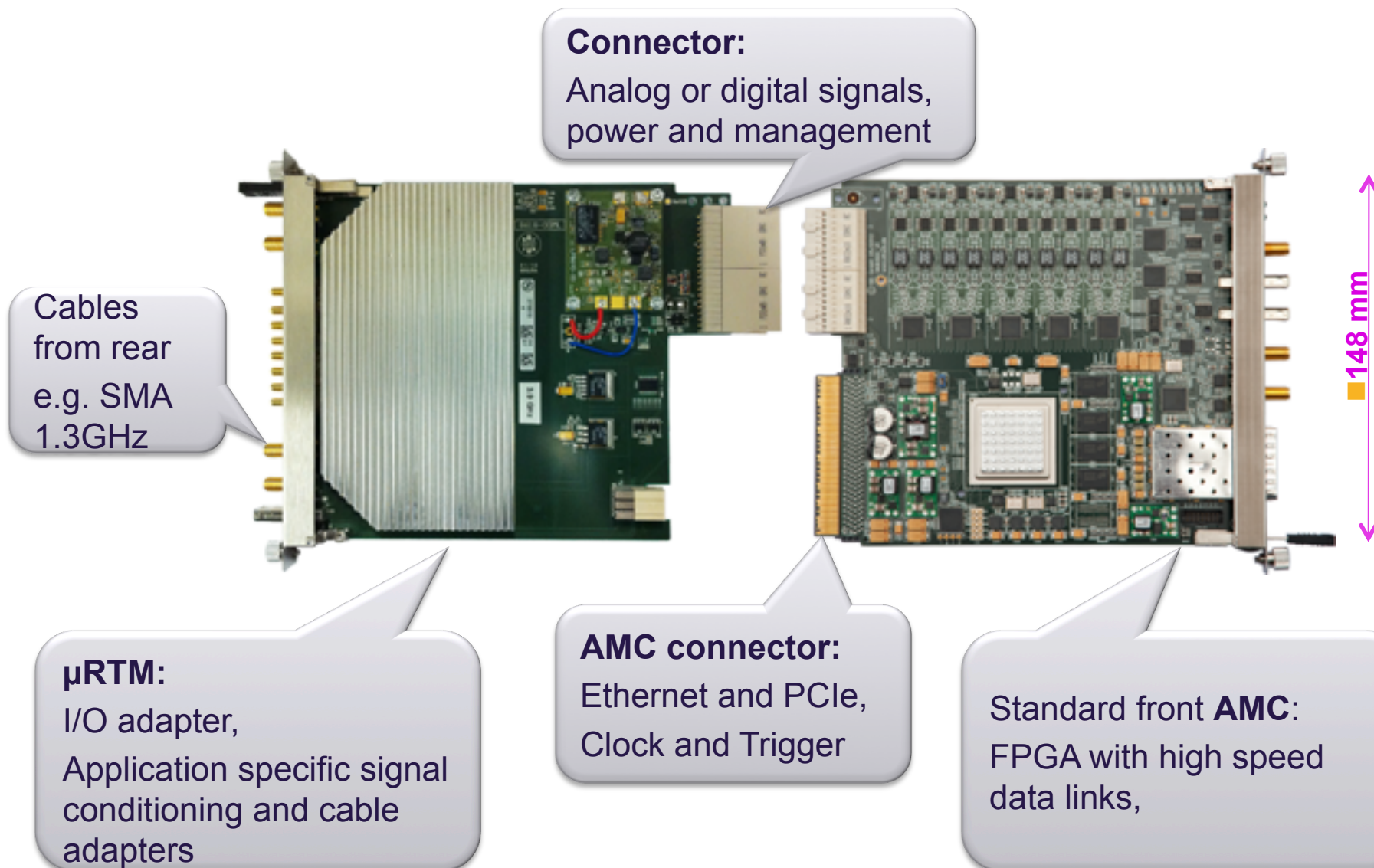


- Modules = AMCs & RTMs
- Crates
- Clocks, Triggers, Interlocks

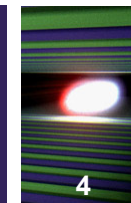
PICMG MTCA.4



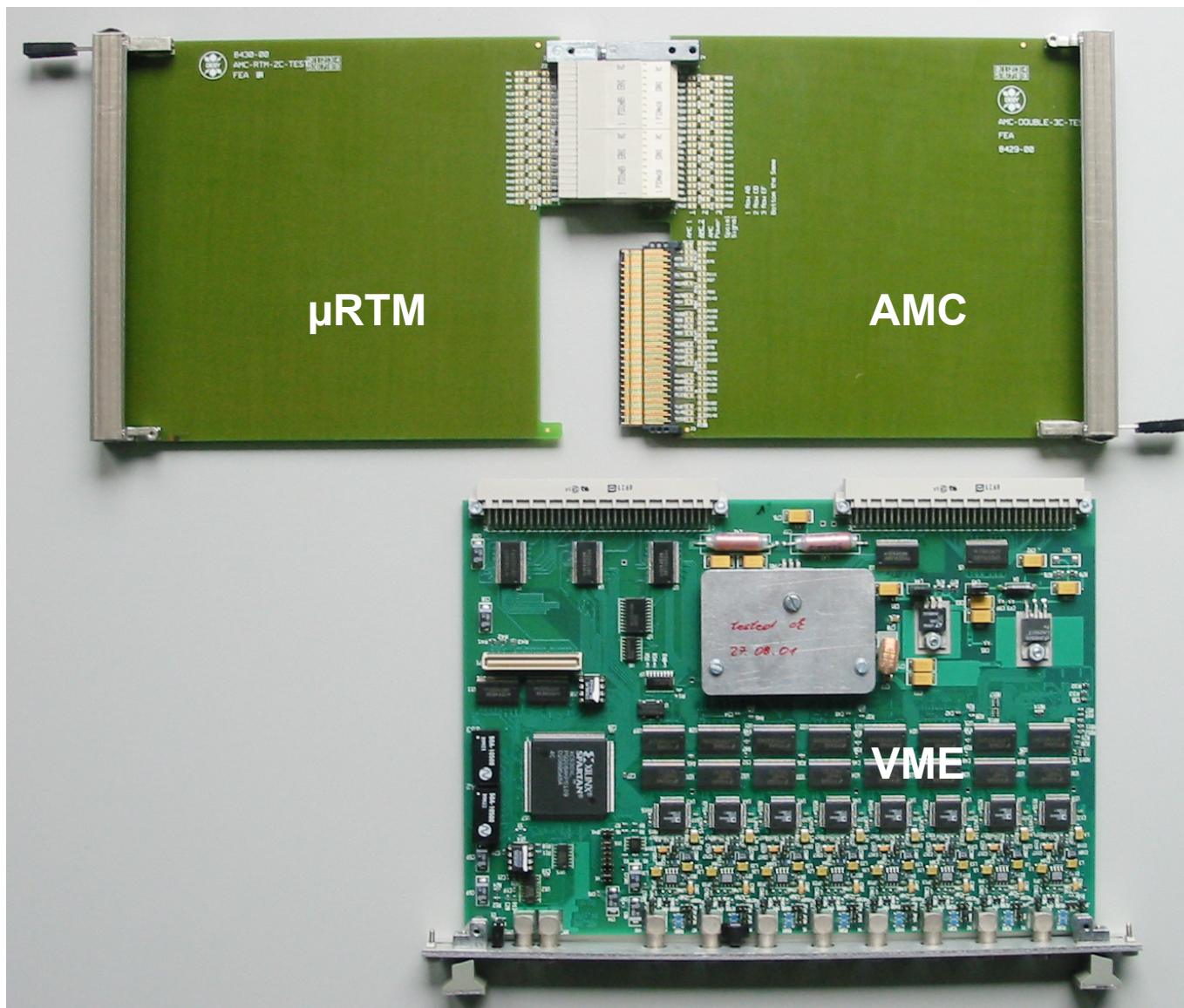
3



VME - μ TCA Board Sizes



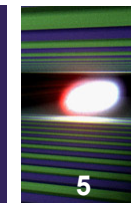
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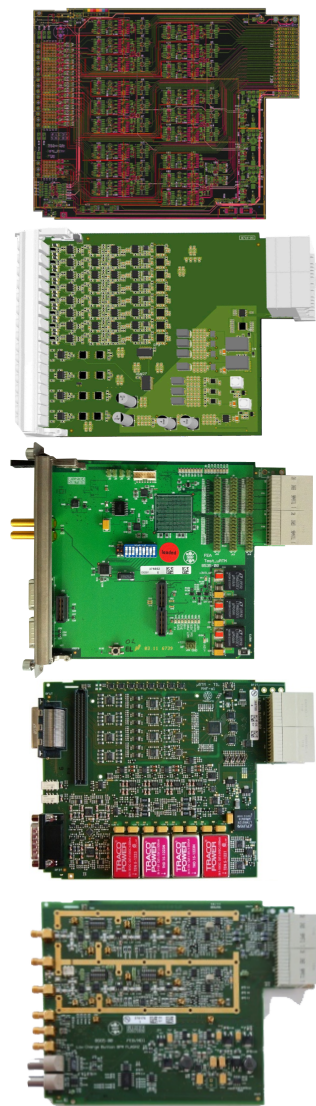
AMC and RTM:
~ 457 cm²

VME:
~ 345 cm²

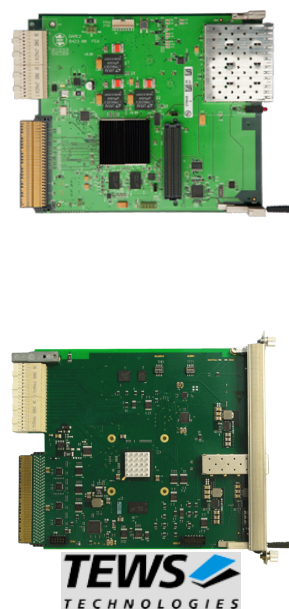
Hardware Status: AMC's and RTM's



RTM



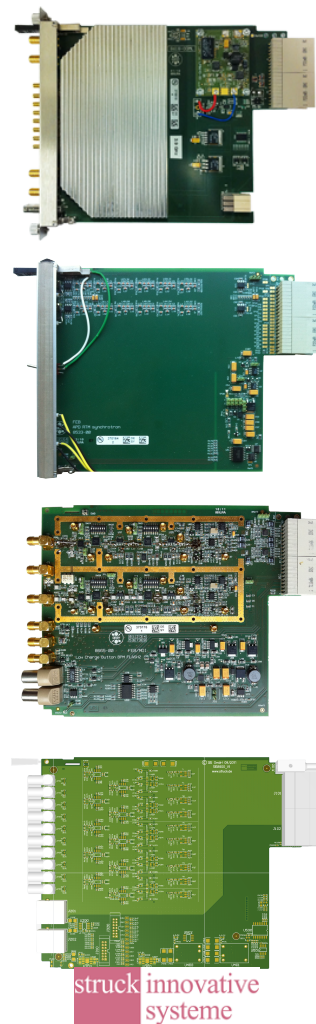
AMC



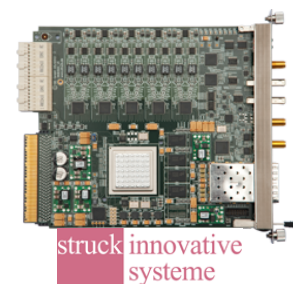
Digital Front

Analog Front

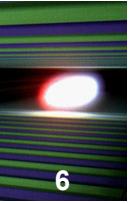
RTM



AMC



DAMC2: Versatile Digital AMC



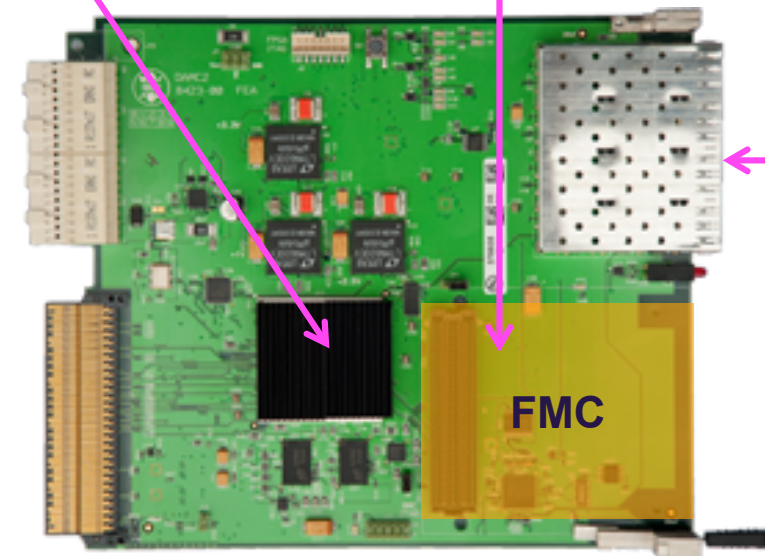
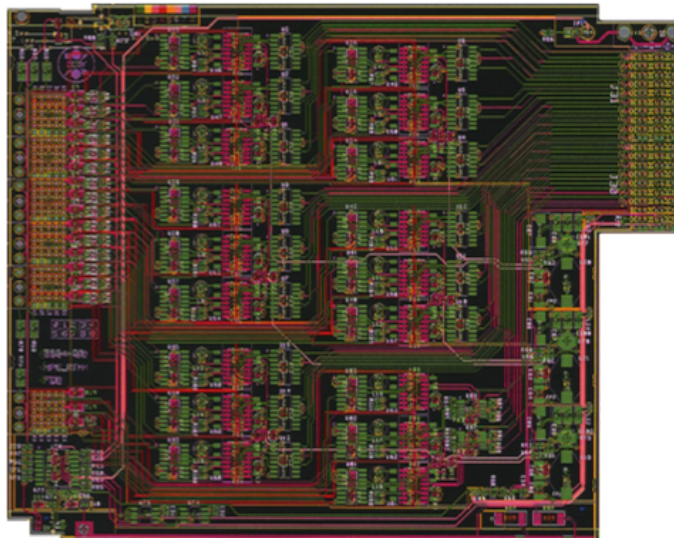
■ 2nd revision

- Almost ready
- Starting ordering components

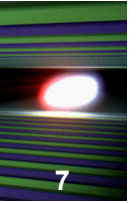
■ Front AMC = DAMC2

- ~700 modules required
- 4 Fiber optic links
- Logic in Virtex5 FPGA
- Mezzanine slot for radiation monitor

Cables →



MTCA.4: Available Shelves



12 Slot



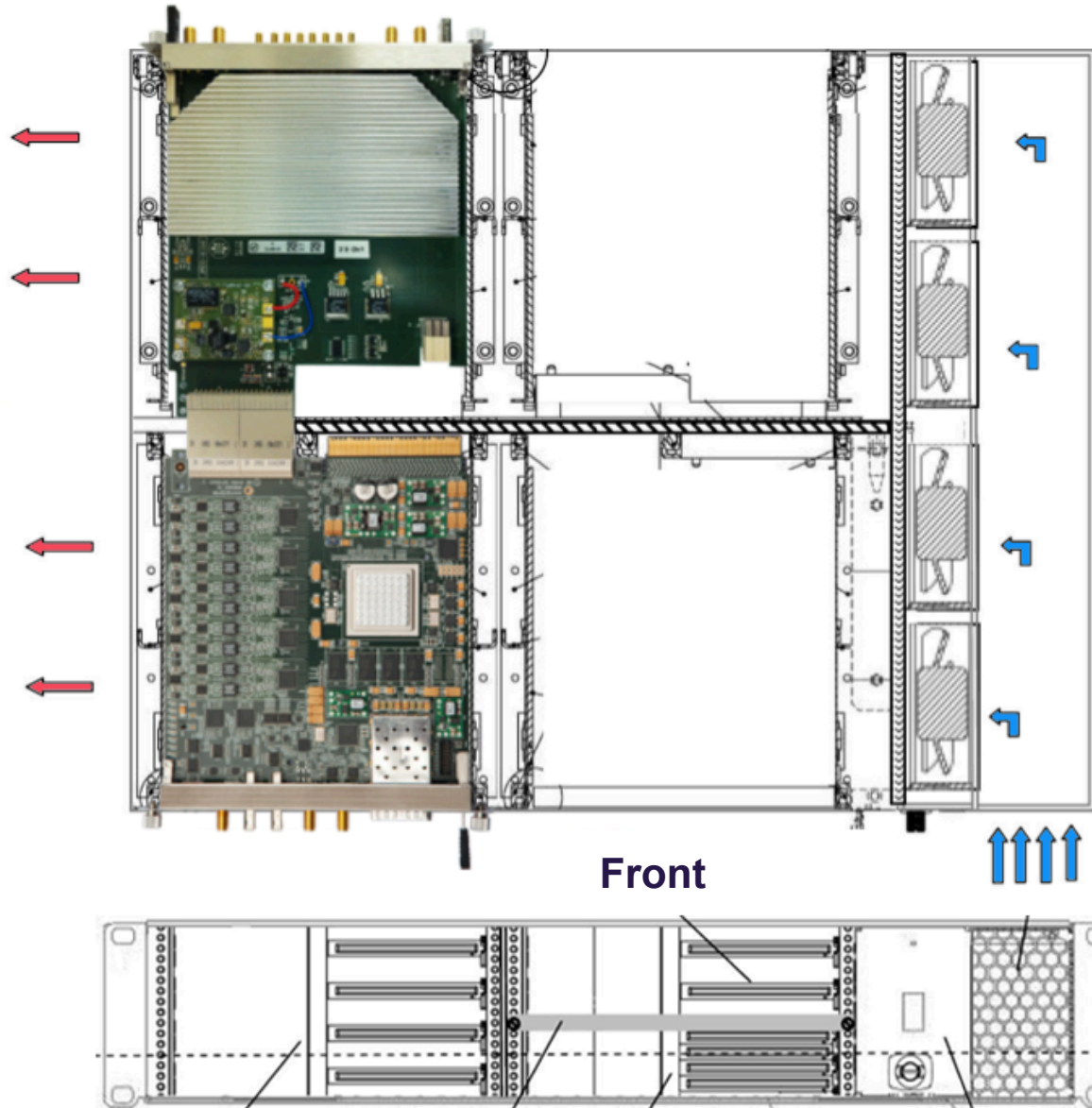
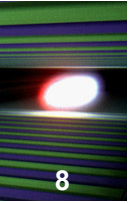
6 Slot



Elma

Schroff

New 2HE 6 Slot Crate

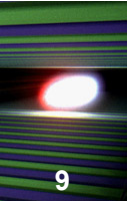


■ MTCA.4 crate

- Almost ready
- 4 slots w/ RTM
- 2 slots w/o RTM
- Std. PowerSupply from rear

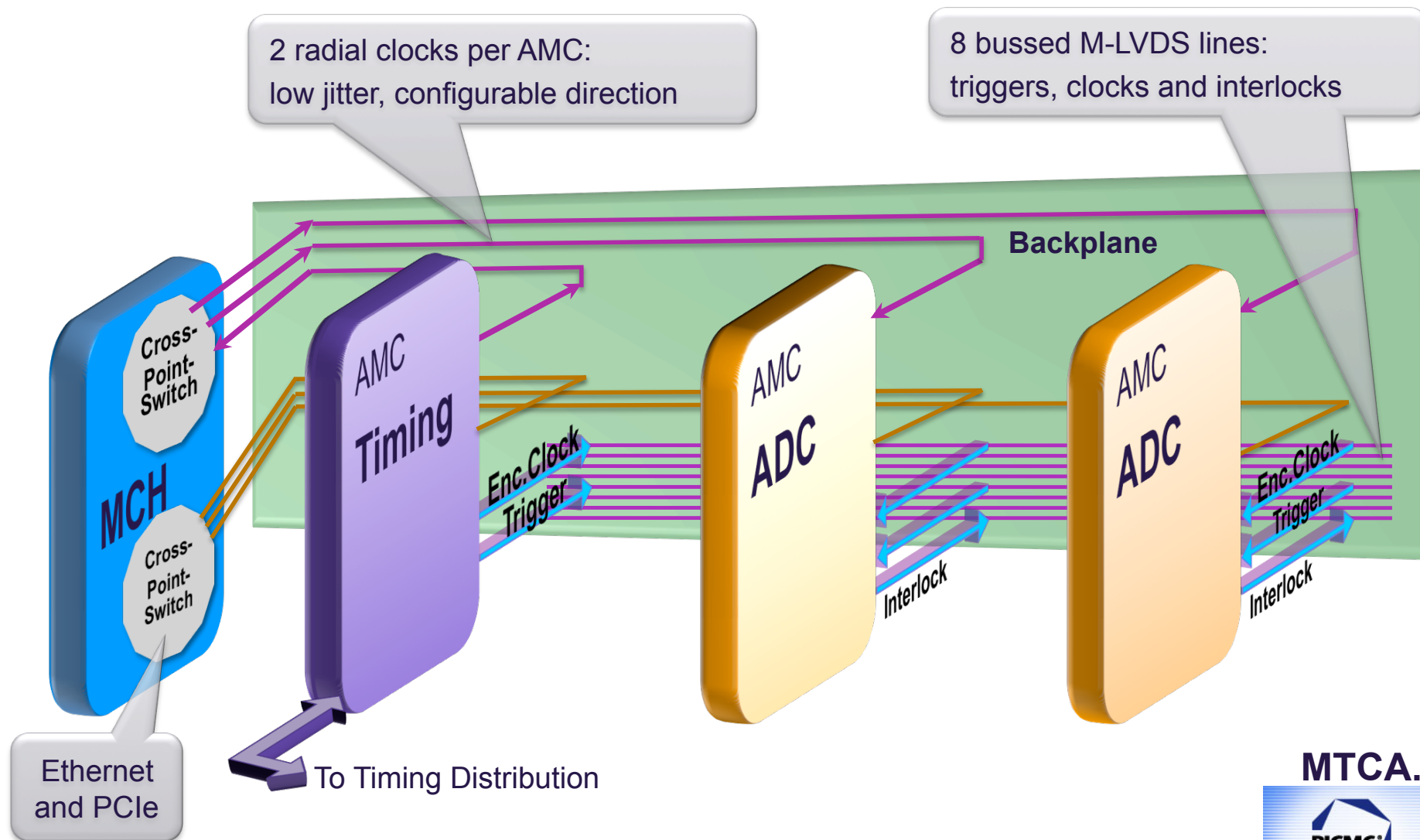
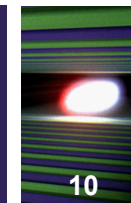
2 HE = 8.8 cm

Recent developments



- Power supplies
 - Double size modules from two companies in progress
- MCH
 - Clock distribution with ps precision in test phase
 - First PCIe gen3 available
- CPU
 - Single size i7 works nice
 - Double size i7 with redundant disk in September

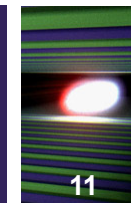
μTCA: Clocks, Triggers and Interlocks



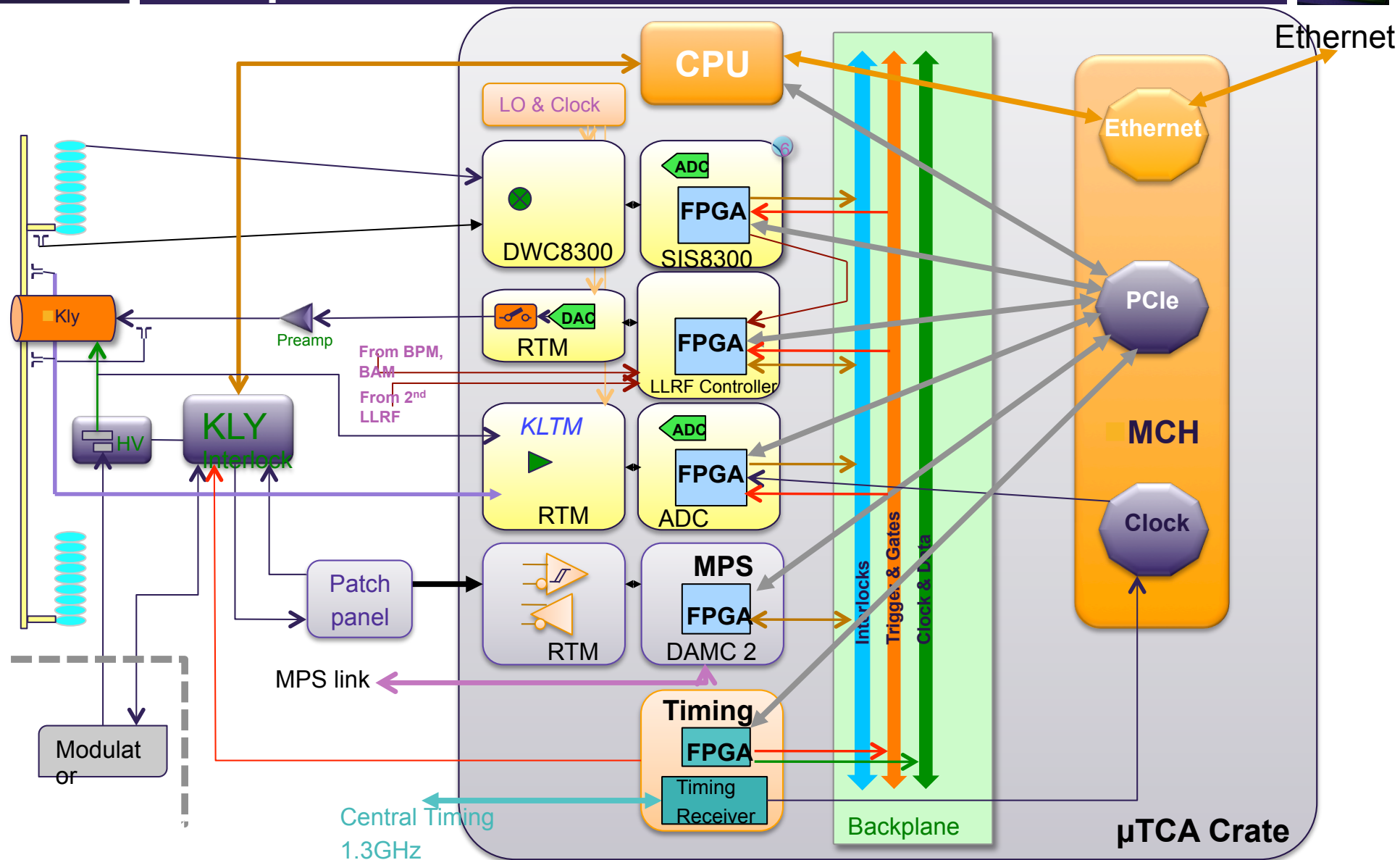
MTCA.4



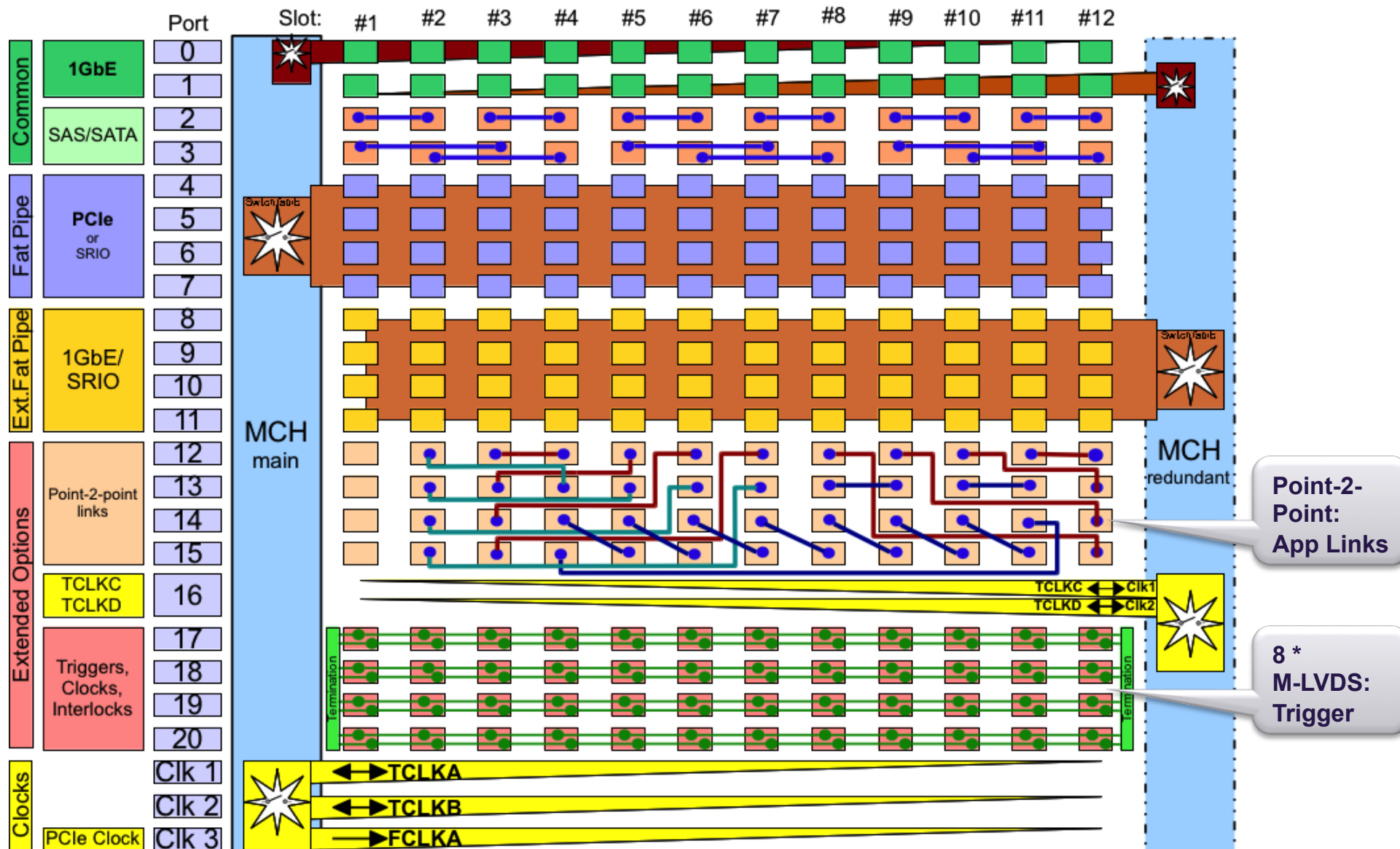
Backplane Links in MicroTCA



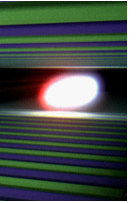
11



12 Slot MTCA.4 Backplane



8 Clock, Trigger and Interlock Lines



- Multi-Point LVDS
- Can be used for:
 - Clocks
 - Triggers
 - Interlocks
 - Data transfer
- All AMCs can be
 - Receiver
 - Transmitter
 - Or disabled

2 lines out of 8 shown

