

Gen2 FieldHub

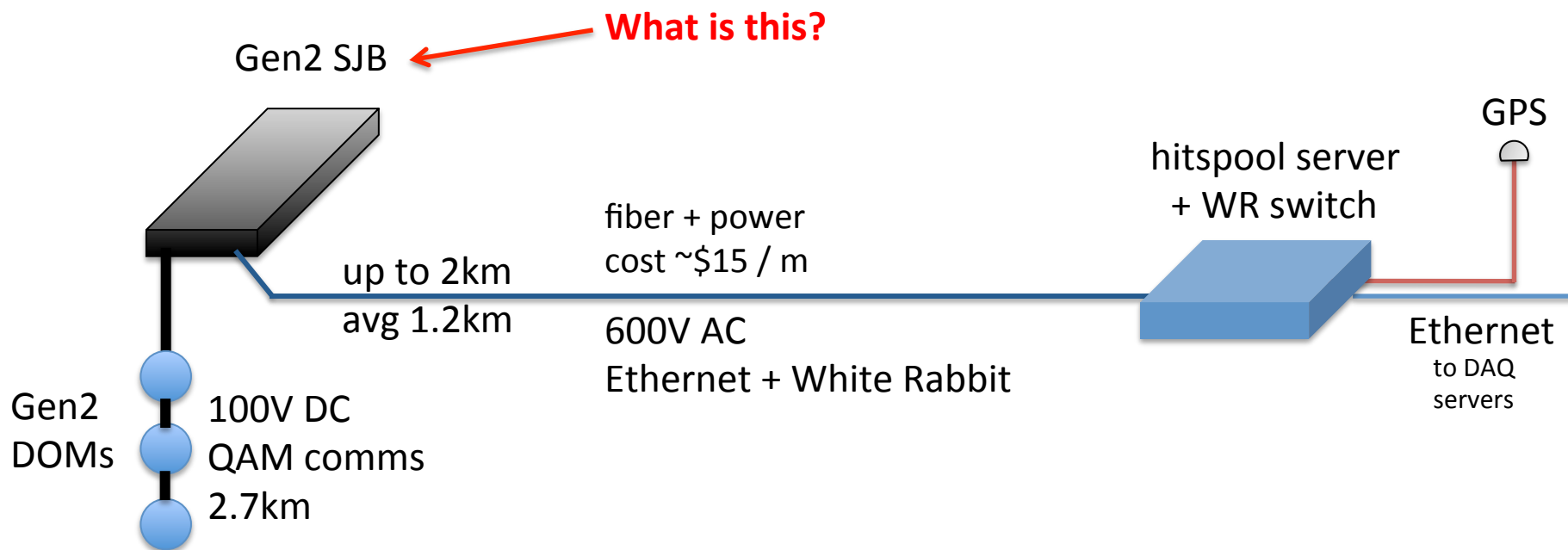
John Kelley

Gen2 Workshop

27 January 2015

DOM Readout (Gen2 HEA)

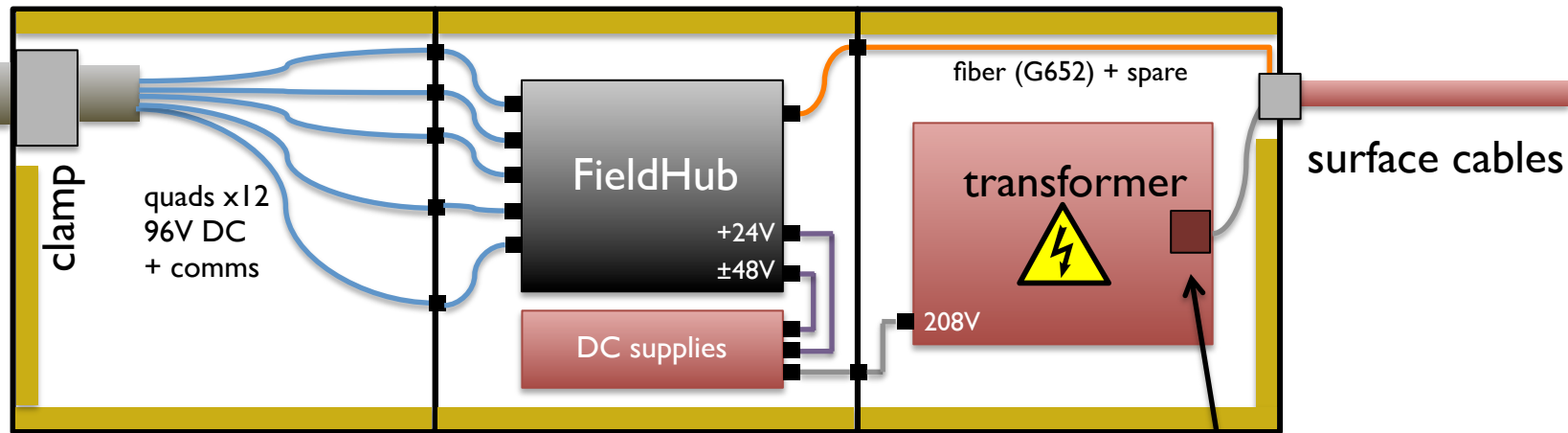
Gen2 DOMs + Gen2 field hubs, fiber to ICL



Gen2 Surface Junction Box

based on Aachen discussions

MSU group has expressed interest in further development



patch panel
or direct connection

Hub interfaces identical
to "indoor" rack version:

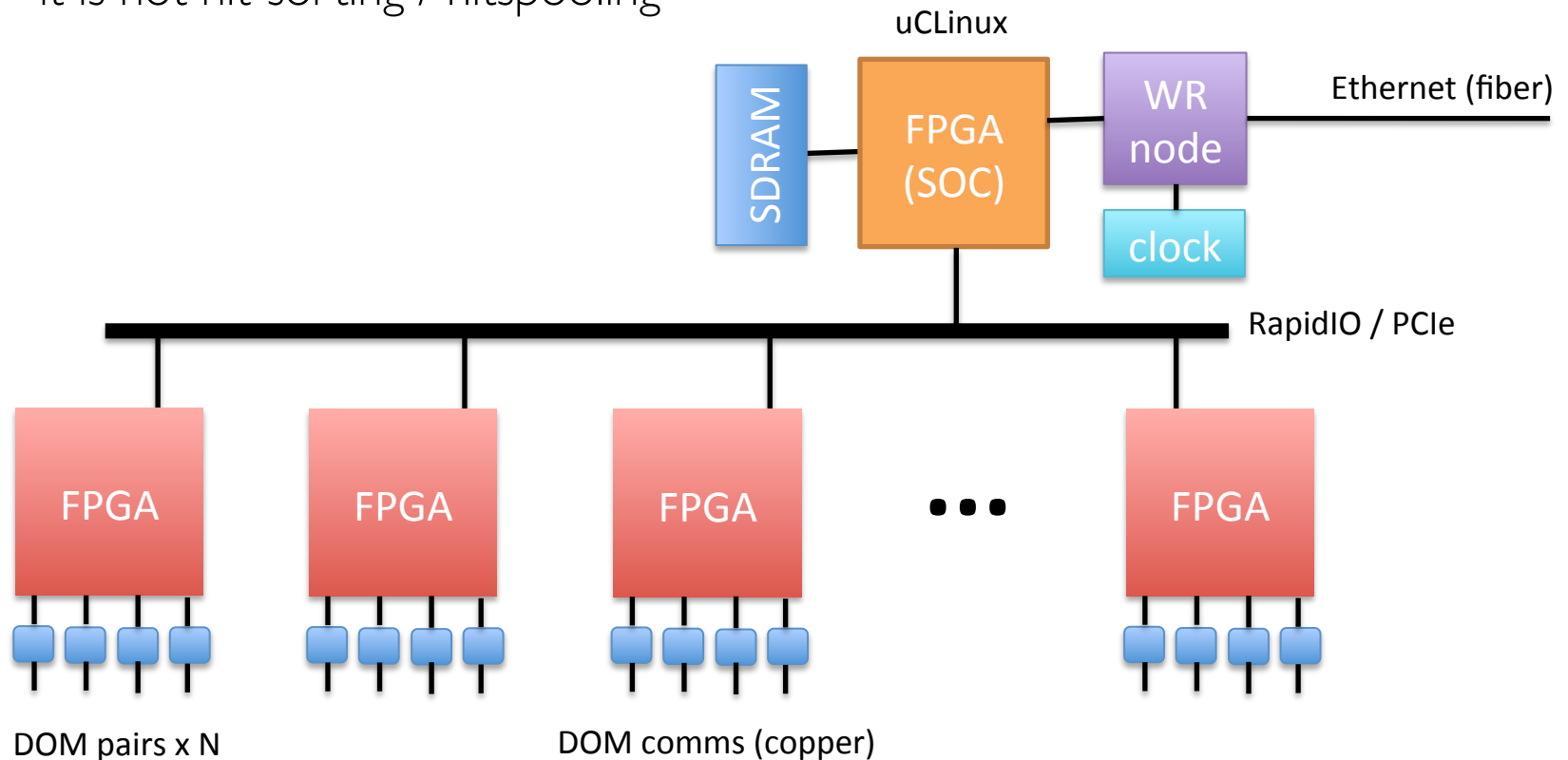
- Binder circular (quads)
- 208 VAC input
- fiber comms (SFP)
- local 96V generation (redundant)

thermostat switch
activates heater on cold
power-up

FieldHub

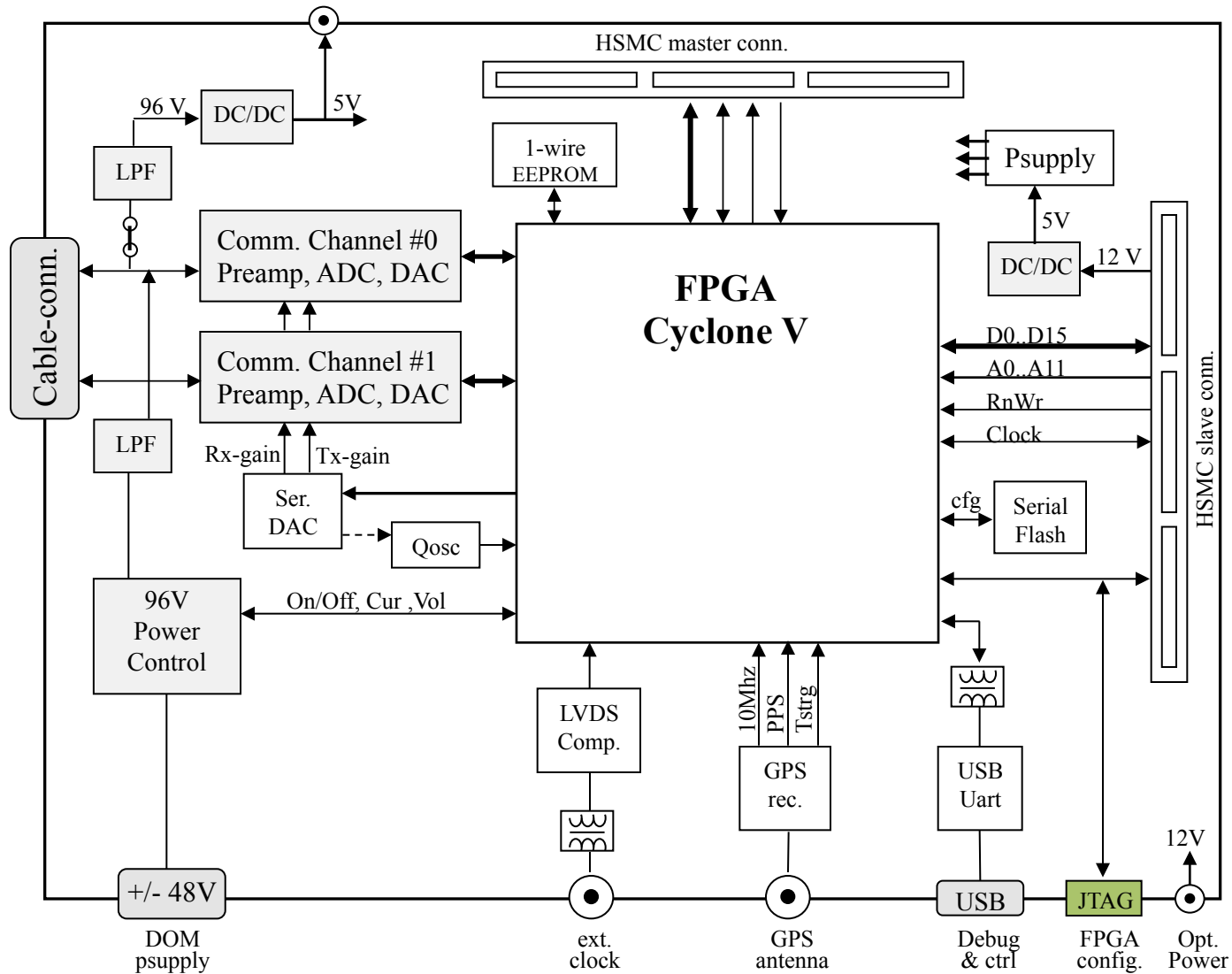
DOM-to-Ethernet converter + White Rabbit node

- comms for 1 string of DOMs (TBD # of FPGAs)
- central FPGA+SOC running embedded Linux
- it is not hit-sorting / hitspooling



CDC Rev.1, DOR-Mode, Block Diagram

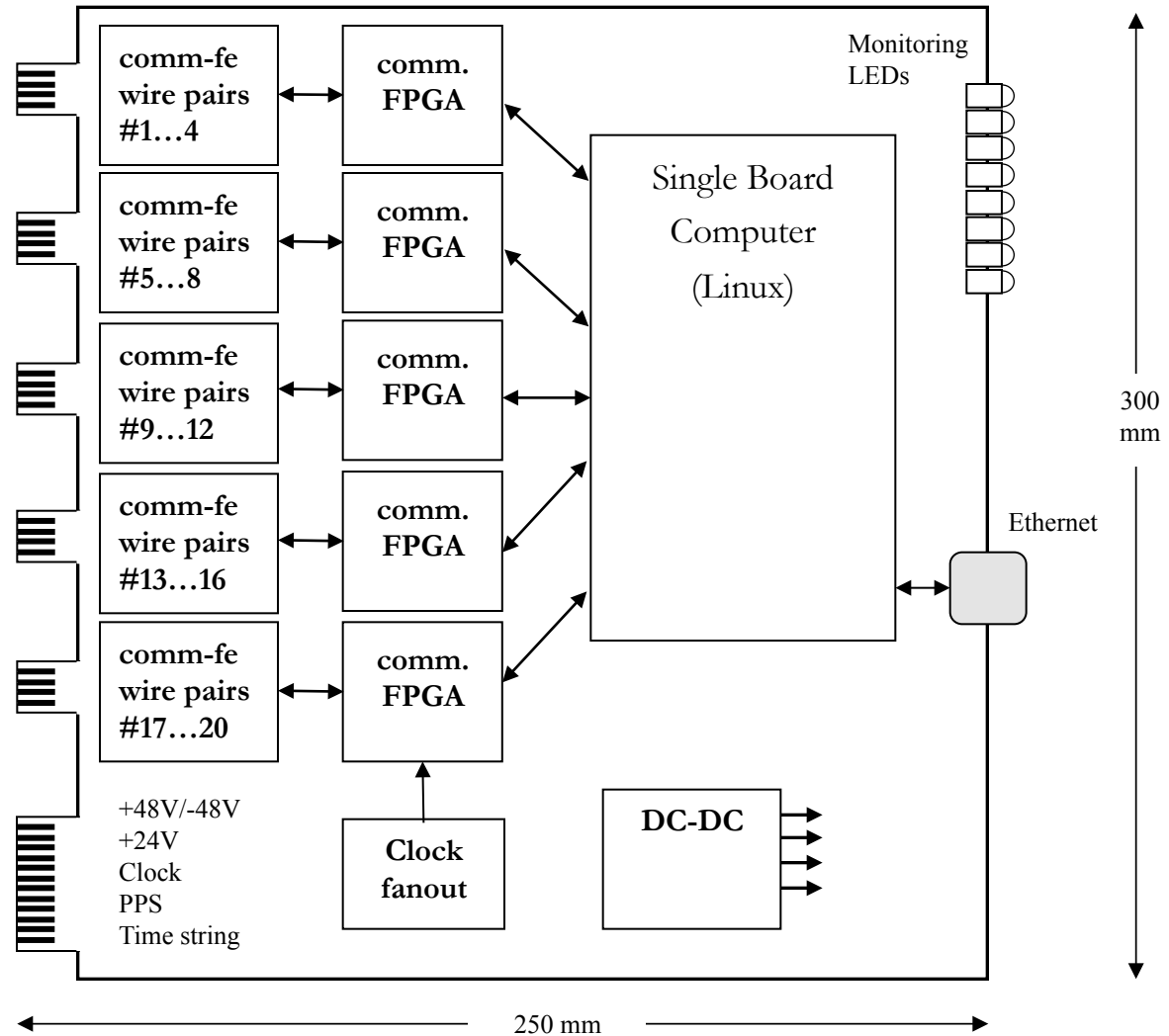
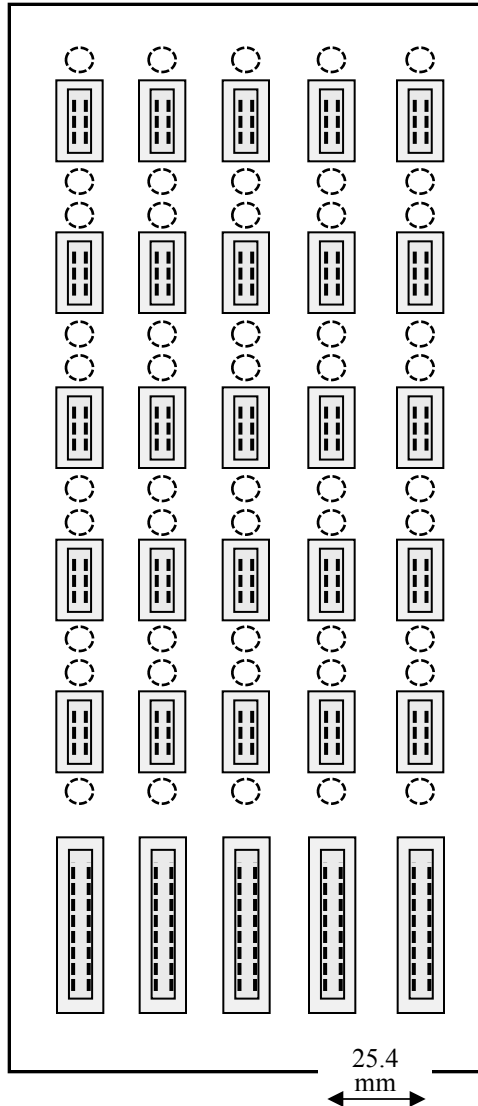
K. Sulanke



Pingu String Readout Board and Backplane

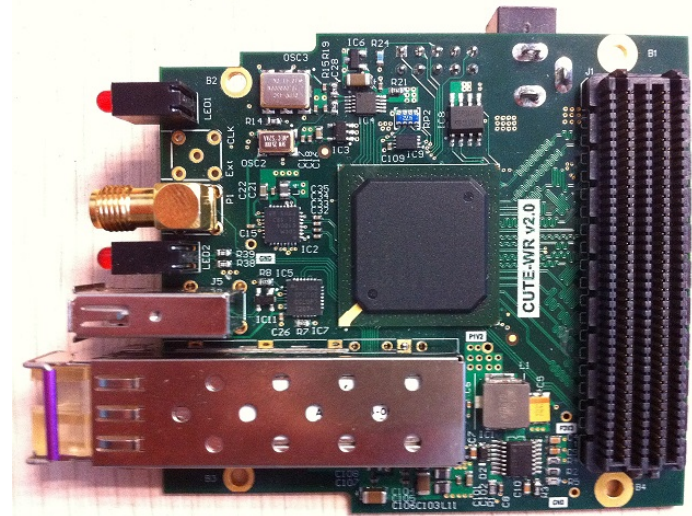
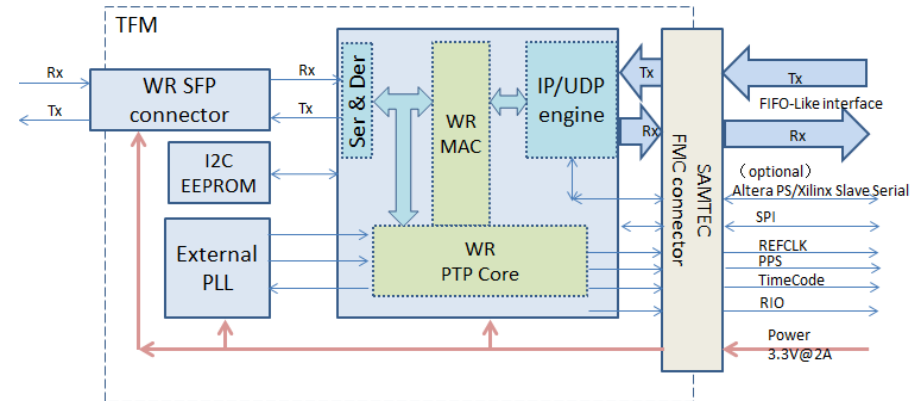
K. Sulanke

Backplane with edge pcb- & round quad conns (backside)



White Rabbit Integration

- WR node provides timing to hub
- Don't have to develop this from scratch
 - example: CUTE-WR mezzanine board
 - used in Daya Bay, LHAASO
 - open design
- We have ordered a White Rabbit startup kit for SPTS



<http://www.ohwr.org/projects/cute-wr/wiki>

Open Design Issues

- Path from CDC to full card/hub
 - built-in GPS to WR
 - multi-FPGA interconnectivity (e.g. choice of bus)
 - SBC vs. custom “master” FPGA
- Physical design
 - backplane vs. single PCB “pizza box”
 - maintenance and reliability issues
- Connector throwdown!

Questions / Discussion