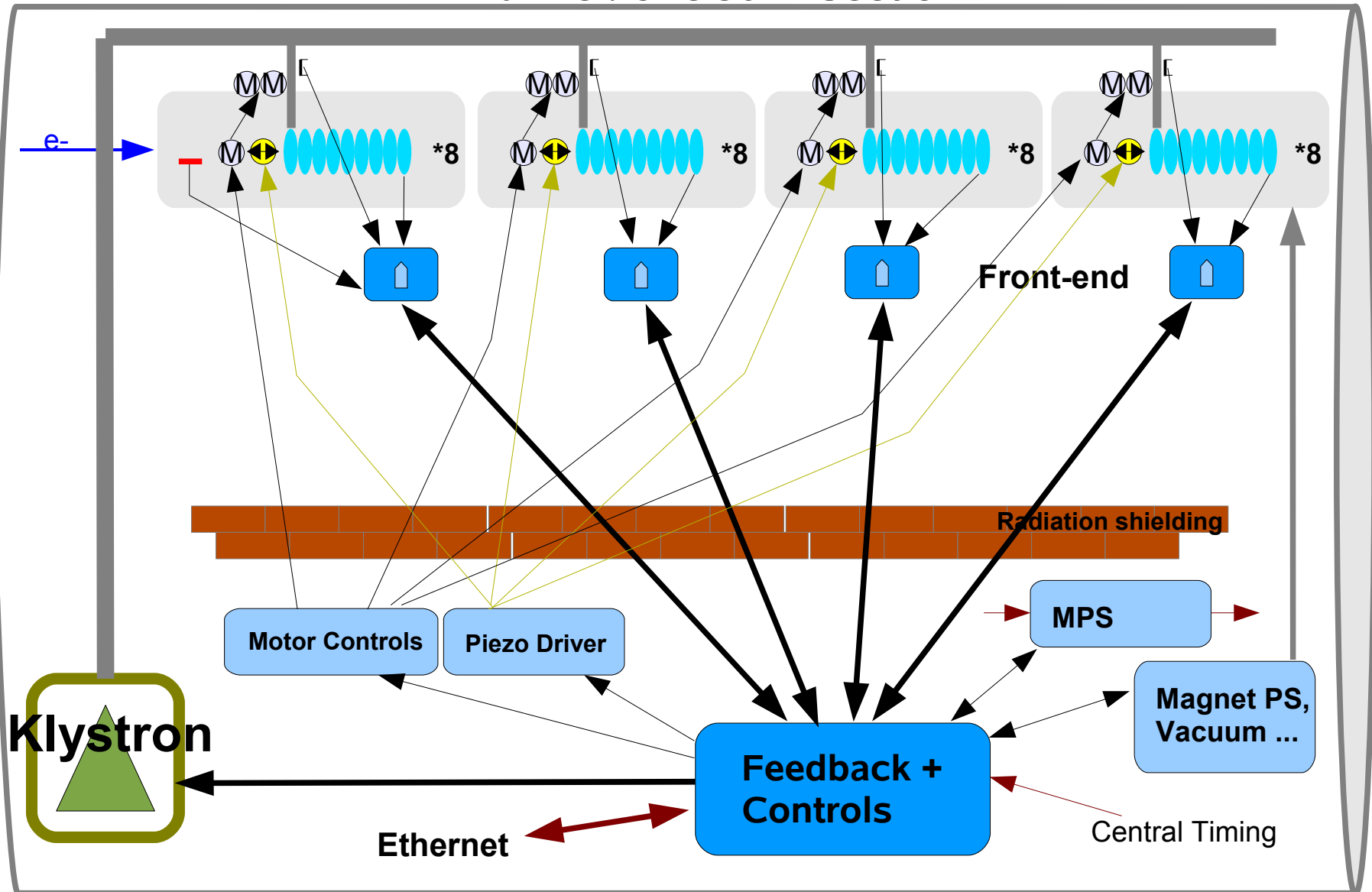


Control System Electronics and Cabling Concepts

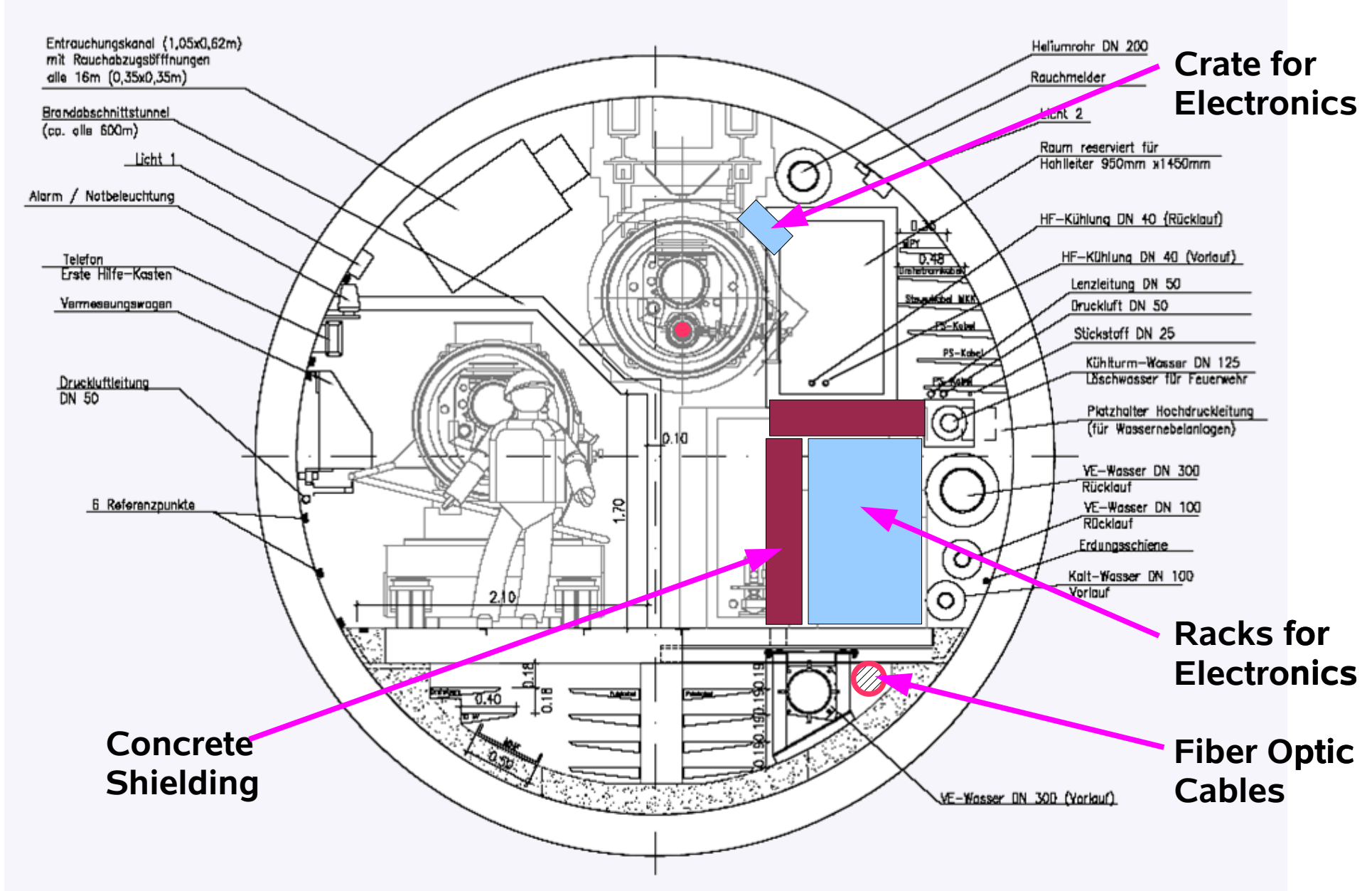
Kay Rehlich
14.11.2006

Electronics for one 50m Section

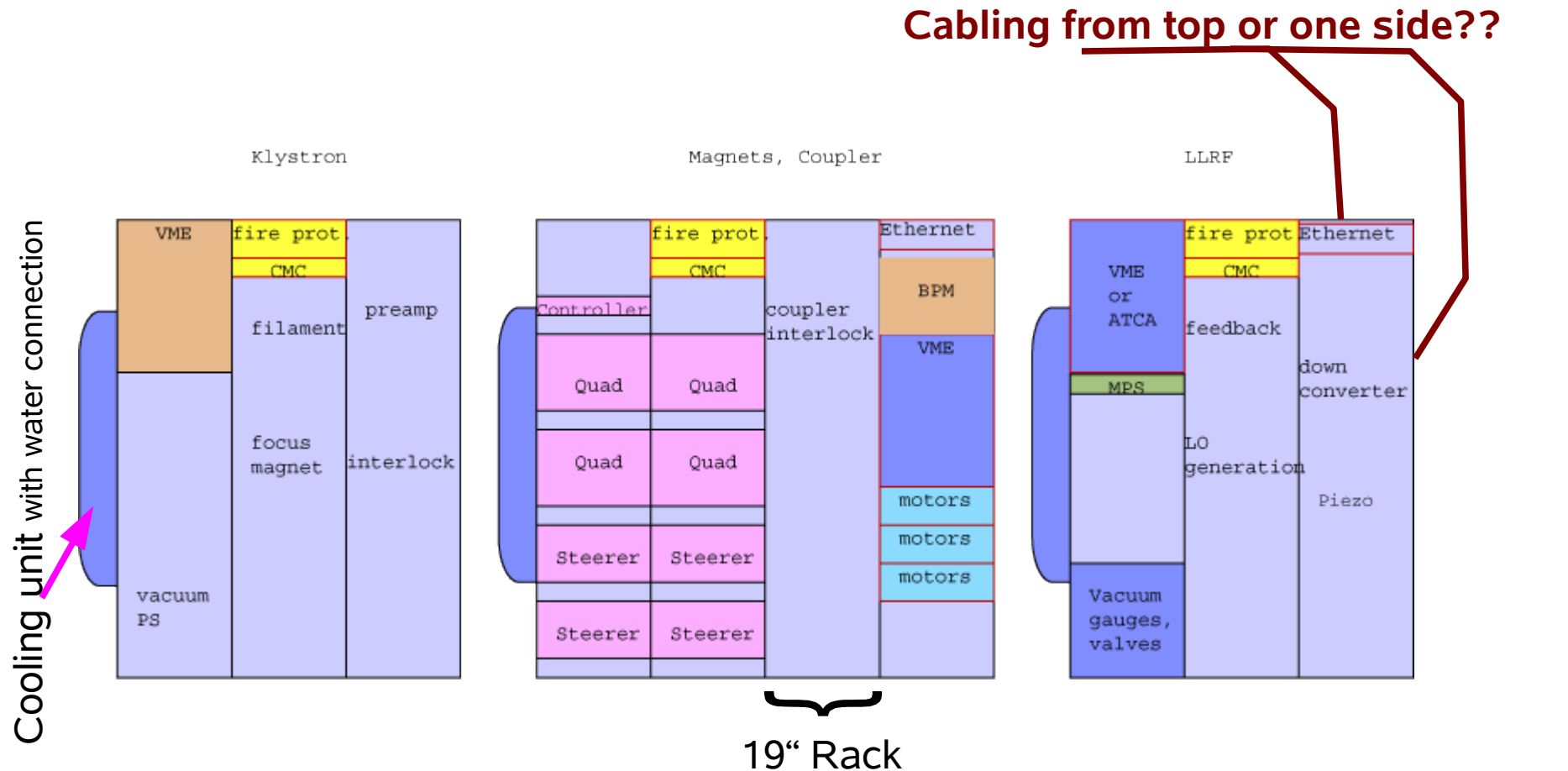
Tunnel: one 50 m section



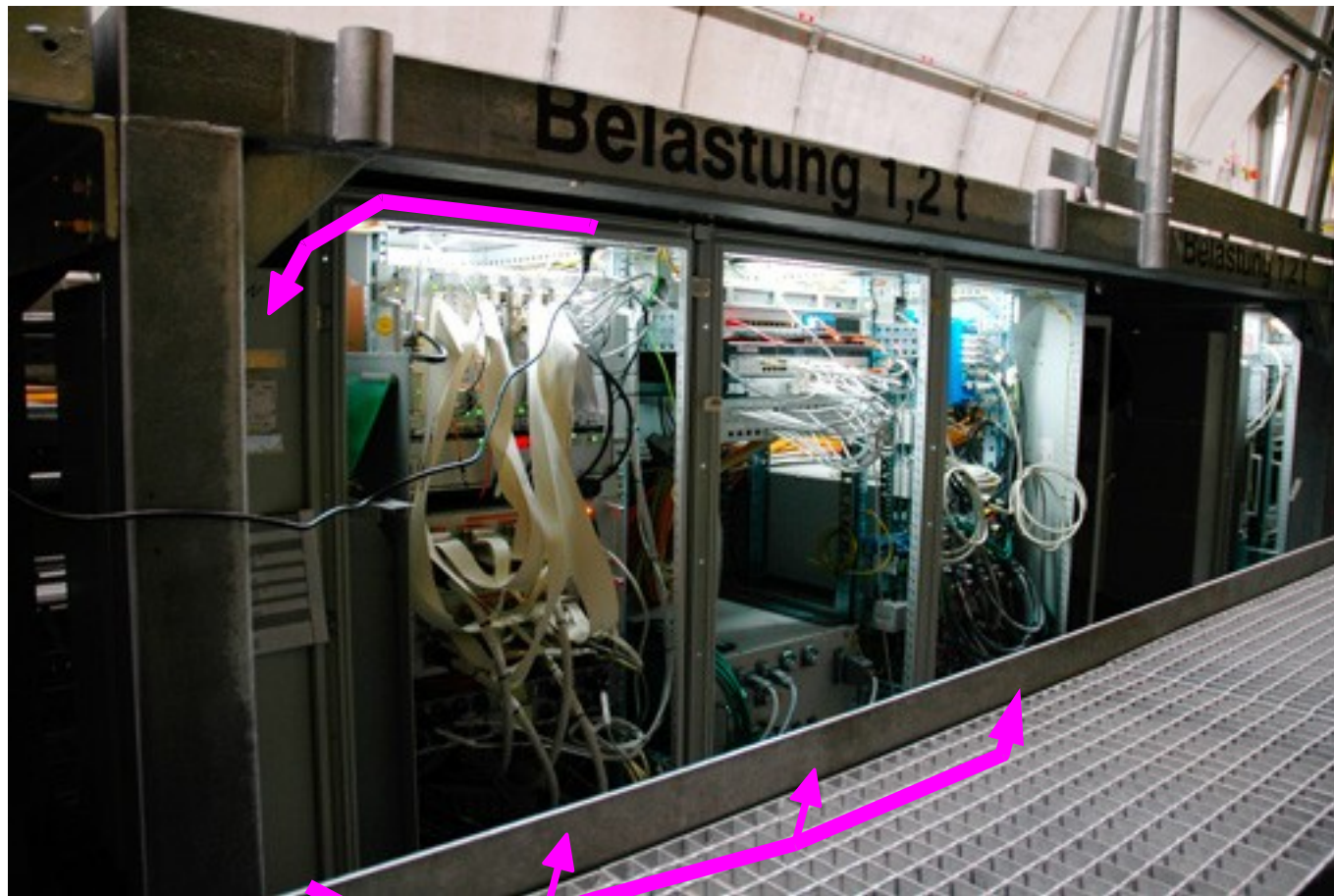
XFEL Tunnel: Cross-section



Racks in a 50m Section



Very preliminary!

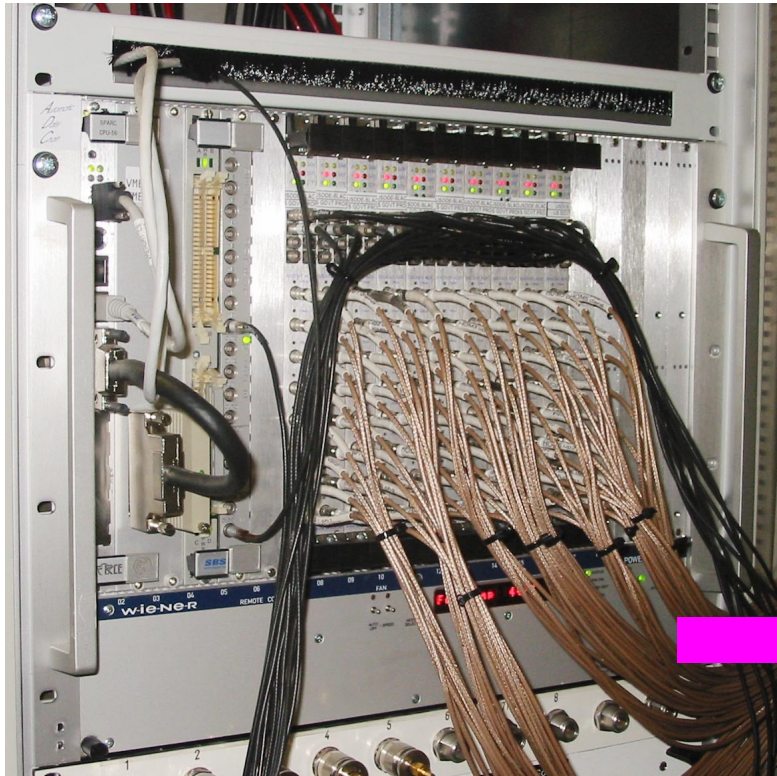


Cooling: air flow

Prototype Racks
used in FLASH:

- 3 * 19" width
- ~ 1.4m height
- sealed
- water/air cooling
- Remote status and alarms
- If water cooling fails:
fan with tunnel air

Possible Hardware Platform



VME

The old standard,
used at FLASH (TTF)

AdvancedTCA

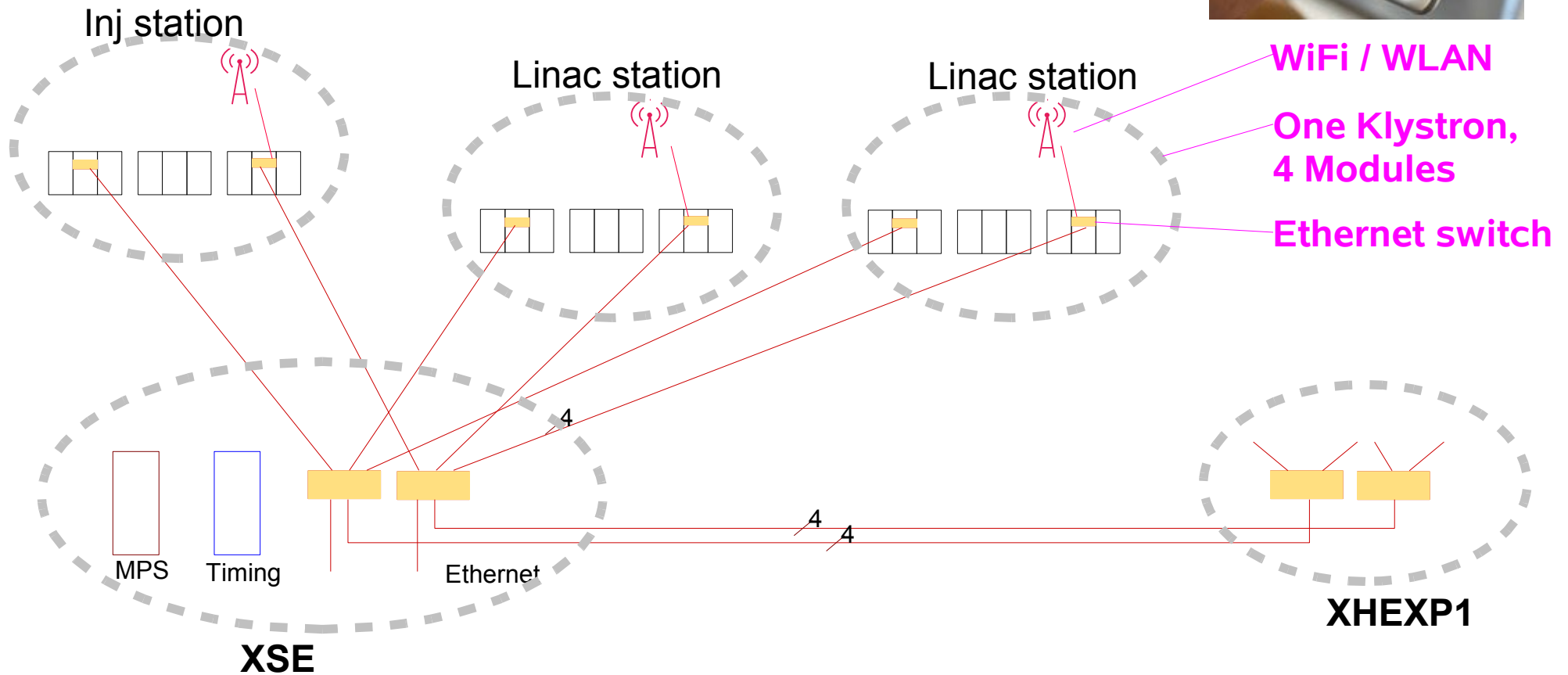
A new standard,
to be evaluated

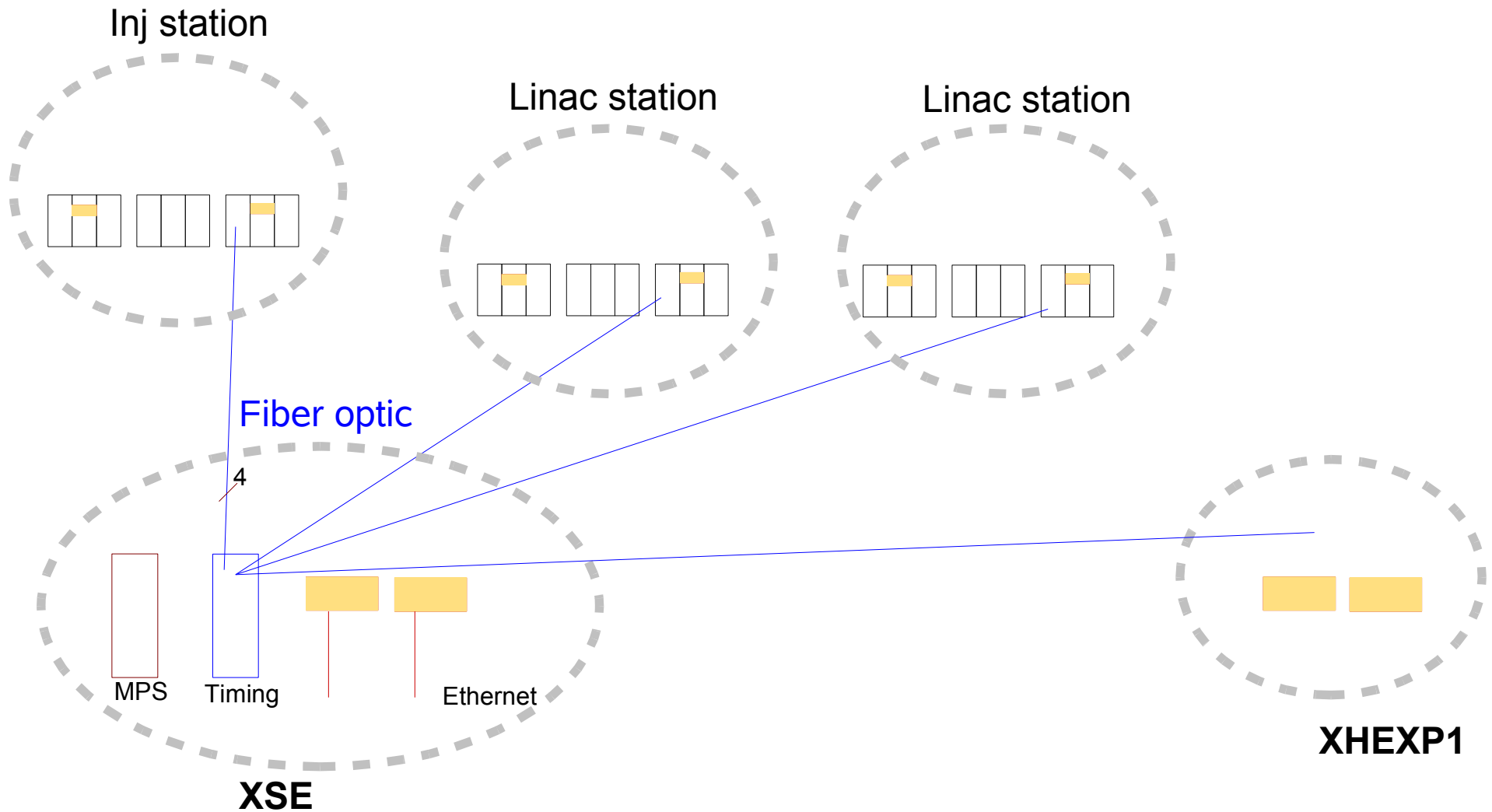


move



μTCA™





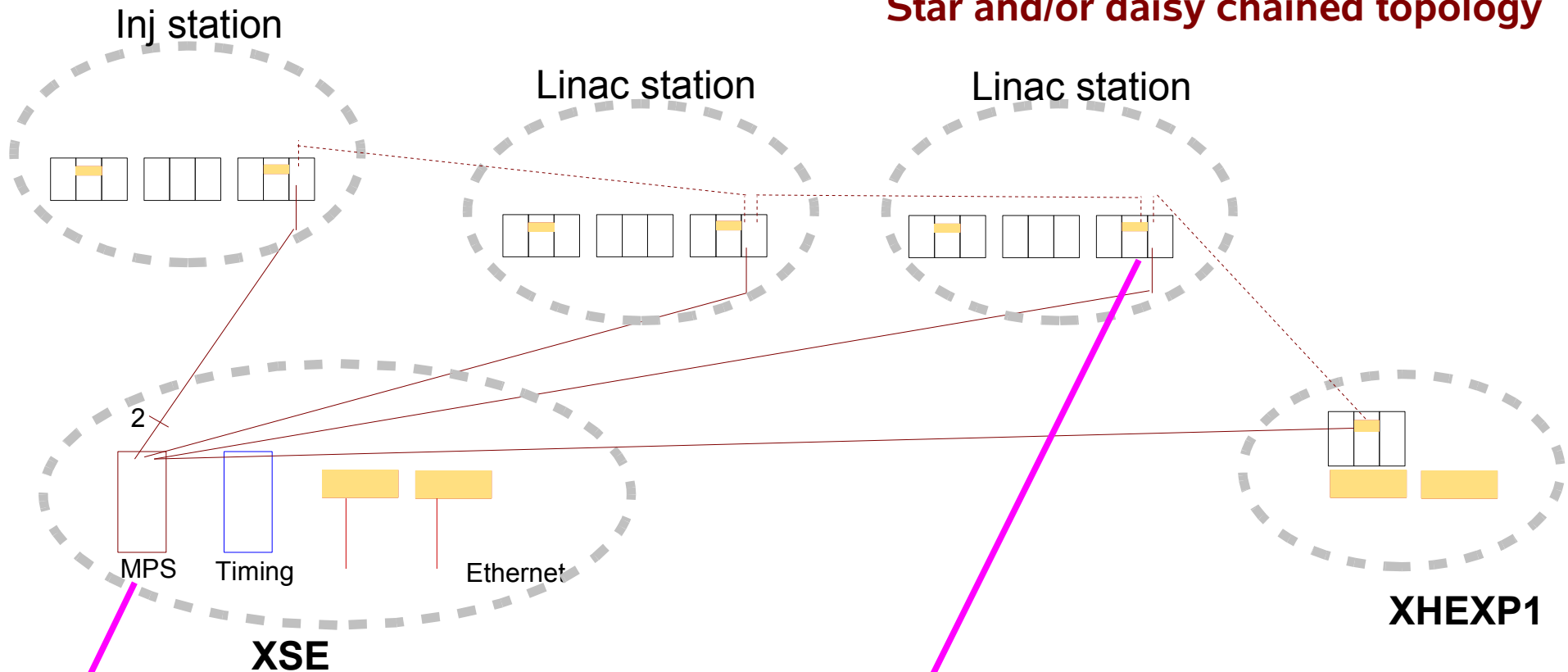
- **Requirements**

- **1.3 or 2.6 GHz clock, phase locked to RF**
- **~10ps RMS jitter**
- **Temperature compensation**
- **Cable length compensation**
- **Star topology with return path**
- **Events (fiducials) as triggers, event numbers ...**
- **Programmable timings (ns resolution) and interrupts**

- **Implementation:**

- **FPGA based**
- **AMC modules?**

Star and/or daisy chained topology



Central interlock box:

- Interface to the control system
- Detects the operation modes
- fiber optic IO

Local interlock box:

- collects local interlocks
- switches OFF local devices
- fiber optic IO