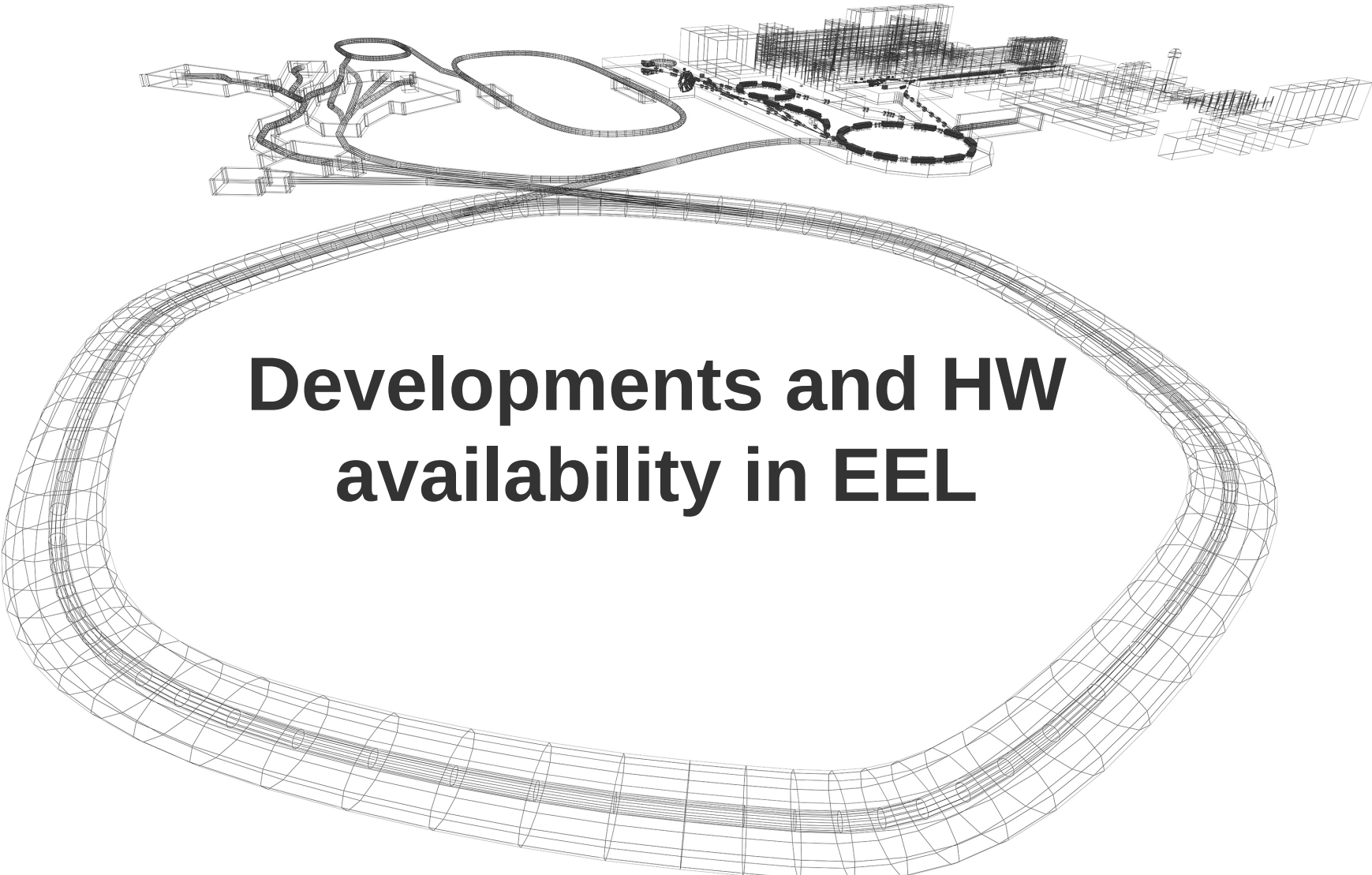


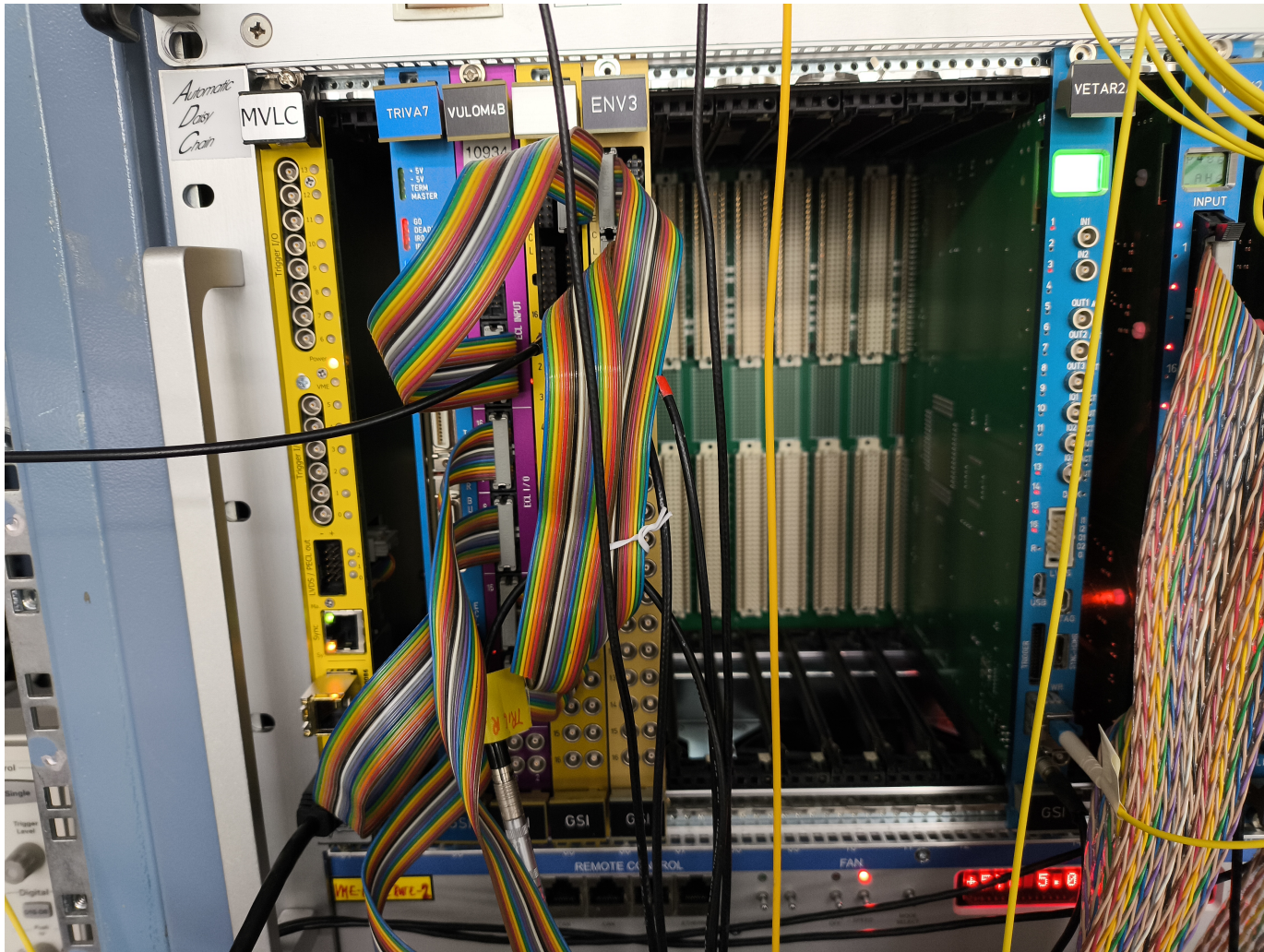
A detailed wireframe model of a particle accelerator, showing a large, oval-shaped ring structure with a complex internal lattice of beams and components. The model is rendered in a transparent, wireframe style, allowing the internal structure to be visible. The text 'Developments and HW availability in EEL' is overlaid on the central part of the ring.

Developments and HW availability in EEL

- MBS VLAN
- MBS boot server
- PXE boot of Debian system with MBS installation for all VME Controllers and IPCs
- Mass storage interface “File Storage Queue” (FSQ)
 - FSQ server with access to /lustre and TSM
 - DAQ writes data with lightweight FSQ protocol, no IBM libs required
 - Files are copied to /lustre first, then archived to tape

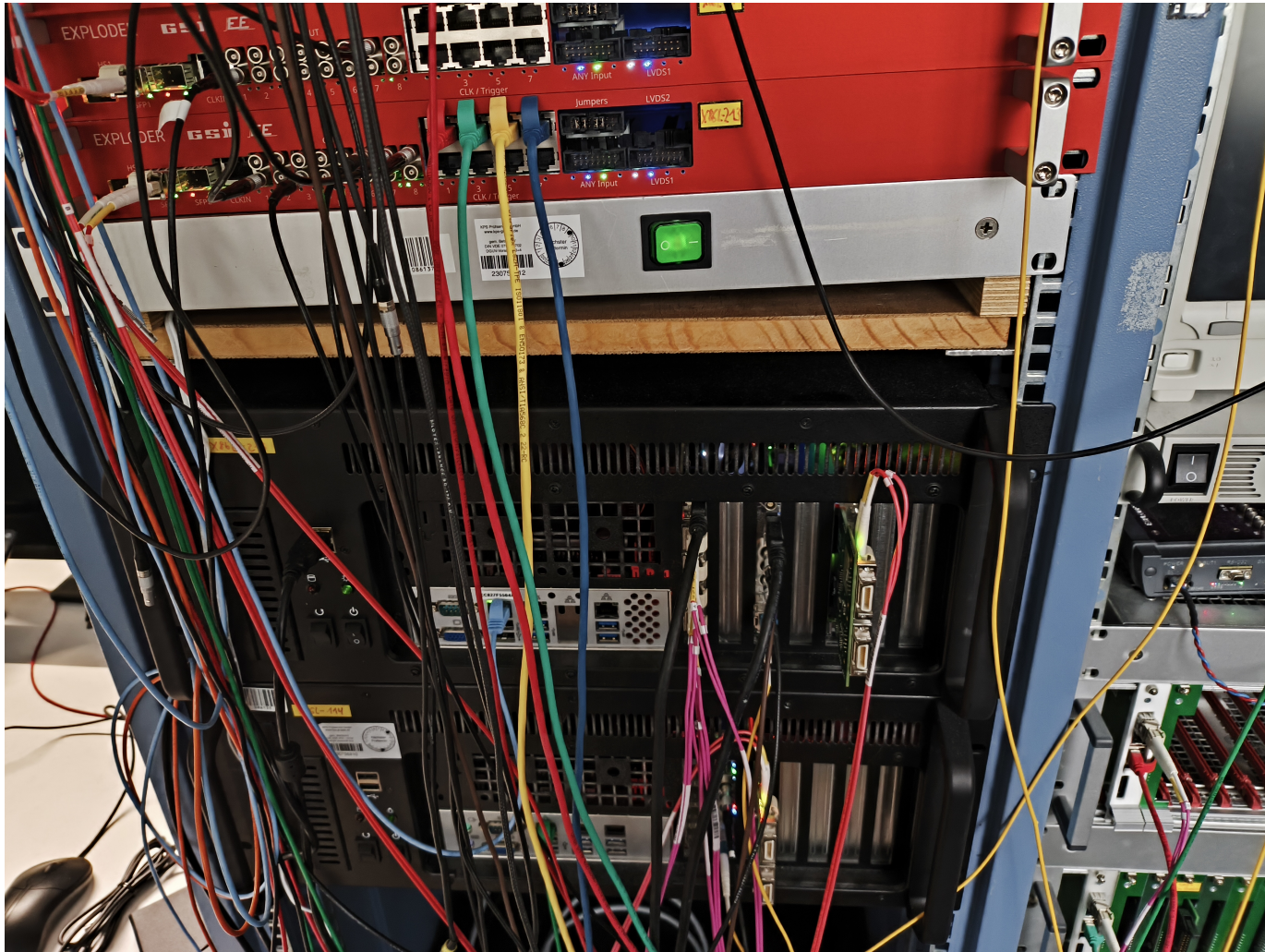
- Controller:
 - IFC: lower performance, readout in `f_user.c`
 - MVLC + PC: highest performance, only sequencer
- Trigger module: TRIVA
- Deadtime: locking VULOM4(B/C) PEV8 firmware
- WhiteRabbit: VETAR2a enigma 5.0.4 gateway
- Front end: commercial TDC / ADC / scaler /

VME



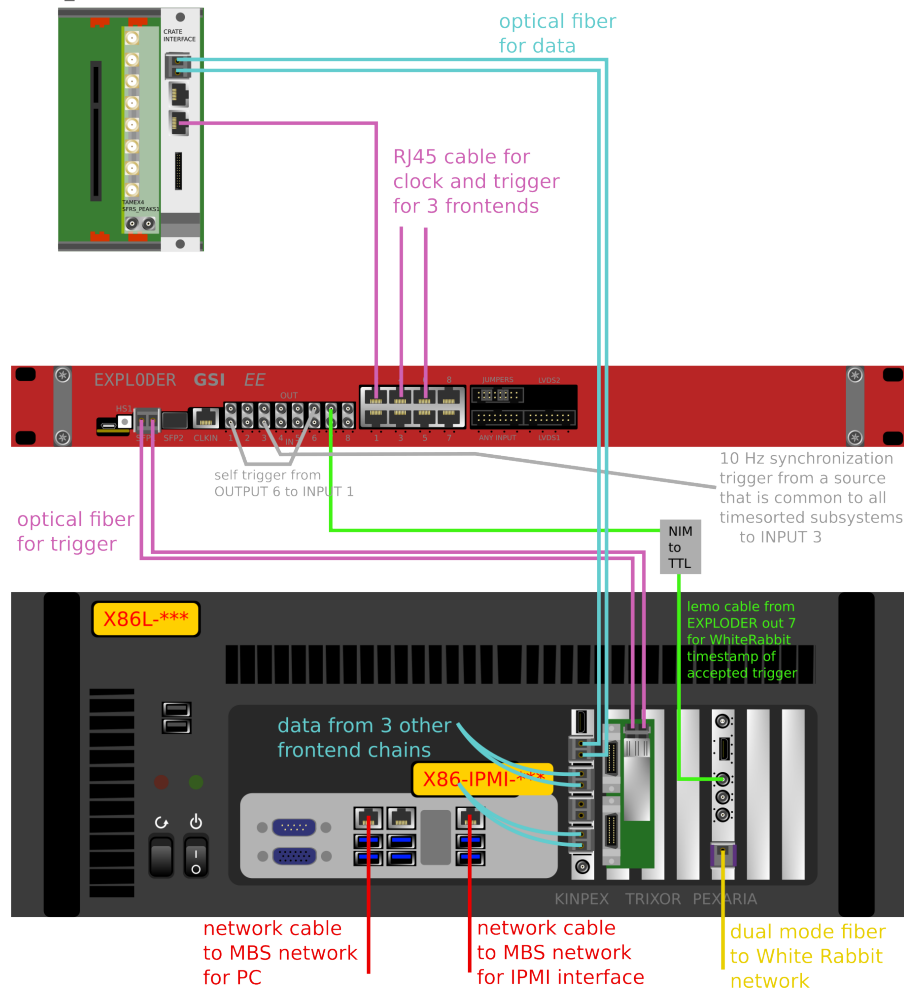
- Controller: “Industrie-PC” (IPC)
 - PCIe/GOSIP interface: KINPEX
 - Trigger module: TRIXOR
- Deadtime locking, clock/trigger distribution: (MUPPET)EXPLODER
- WhiteRabbit: PEXARIA enigma 5.0.4 gateway
- TAMEX3/4: FPGA delay line TDC, high resolution
- FEBEX3/4: sampling ADC
- CLK-TDC: SERDES based TDC (various form factors), 2.4 GHz sampling rate, 128 channels

PCIe



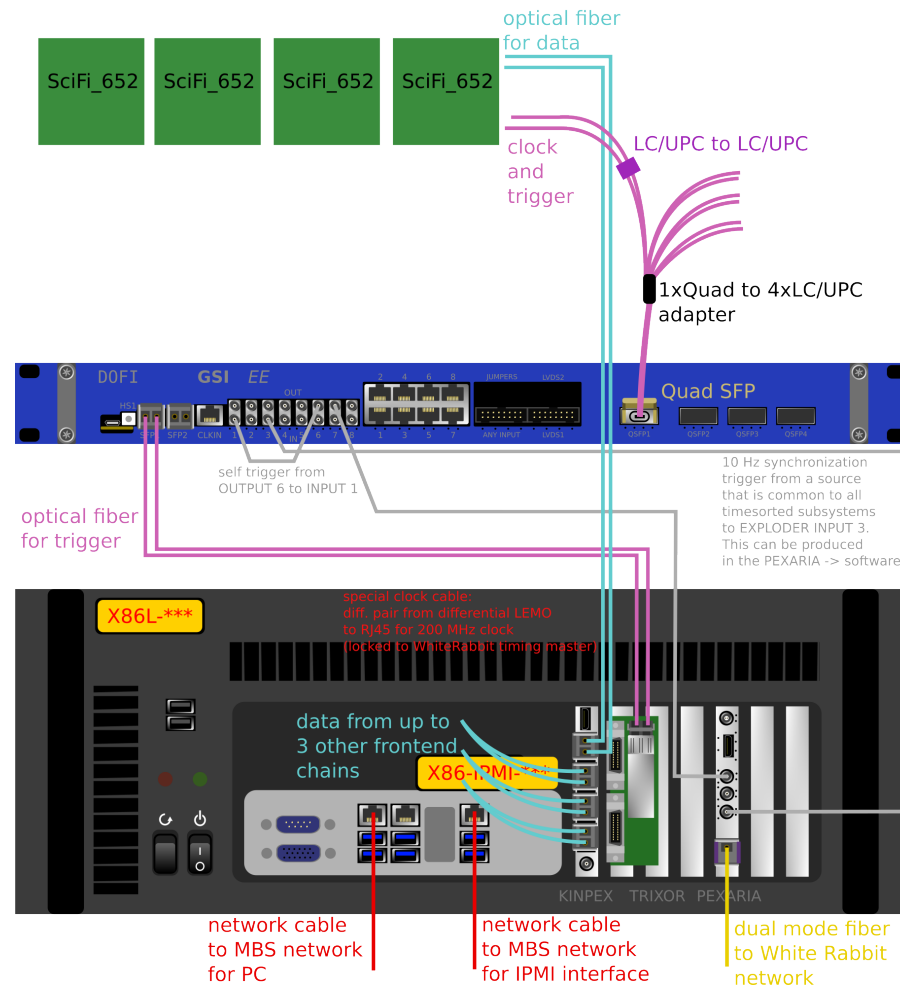
SFRS ToF Hardware

3 slot crate with TAMEX4
SRFS_PEAKS1 frontend



- Problem: 200 MHz-clock distribution via copper has limited range.
 - Possible solution: Clock distribution via optical fiber.
New Crate interface, new firmware for Exploder
- Problem: 10 Hz synchronization trigger distribution
 - Possible solution: Generate 10 Hz on Timing Receiver
- Problem: Optical connection from TRI XOR to EXPL ODER does not always work after power-up
 - Firmware fix needed
- Please run the system.

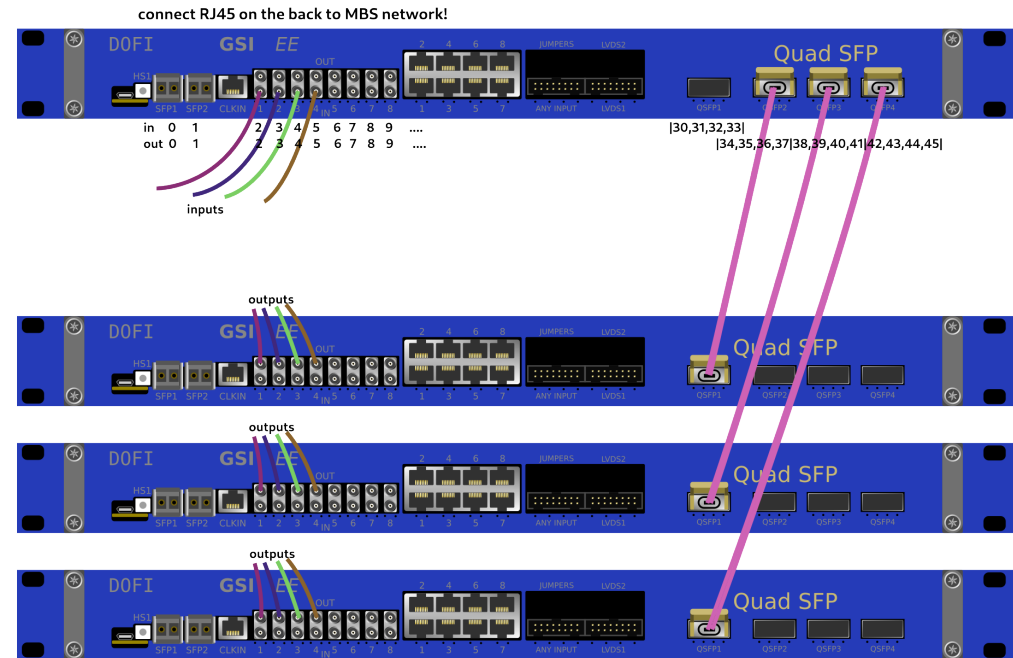
SFRS SciFi Hardware



- Firmware development for EXPLODER
 - Intermediate solution: DOGMA-HUB + EXPLODER
- Problem: 10 Hz synchronization trigger distribution
 - Possible solution: Generate 10 Hz on Timing Receiver
- Problem: Optical connection from TRI XOR to EXPLODER does not always work after power-up
 - Firmware fix needed

Digital over fiber (DOFI)

- Firmware from N.Kurz
- Change Input delay and length
- AND/OR of any combination of inputs to any output
- Input and output scalers
- Use case: distribute trigger signals over optical fiber



- Timing receiver hardware (PEXARIA) is at the moment only used for trigger timestamping.
- What it offers in addition:
 - White Rabbit locked clock generator (PEXARIA)
 - LM32 user CPU that can be programmed with C-code
 - The Event-Condition-Action (ECA) unit reacts on timing events.
 - Timing events can come from
 - Control system
 - Host system or LM32 user CPU
 - Inputs
 - Actions can be
 - IO activity (pulses)
 - Host system or LM32 CPU interrupts