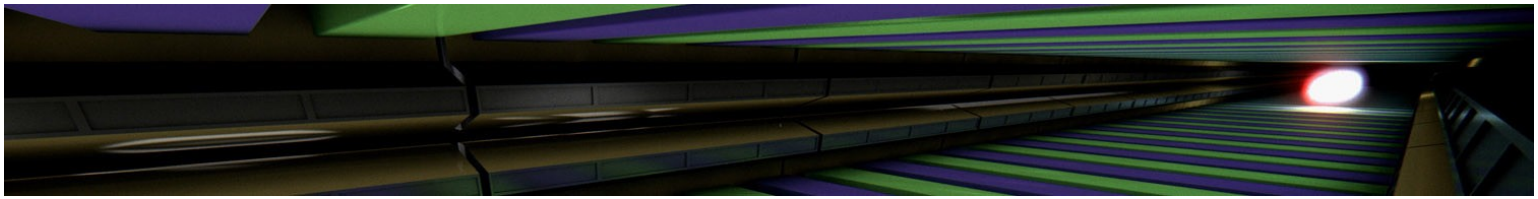
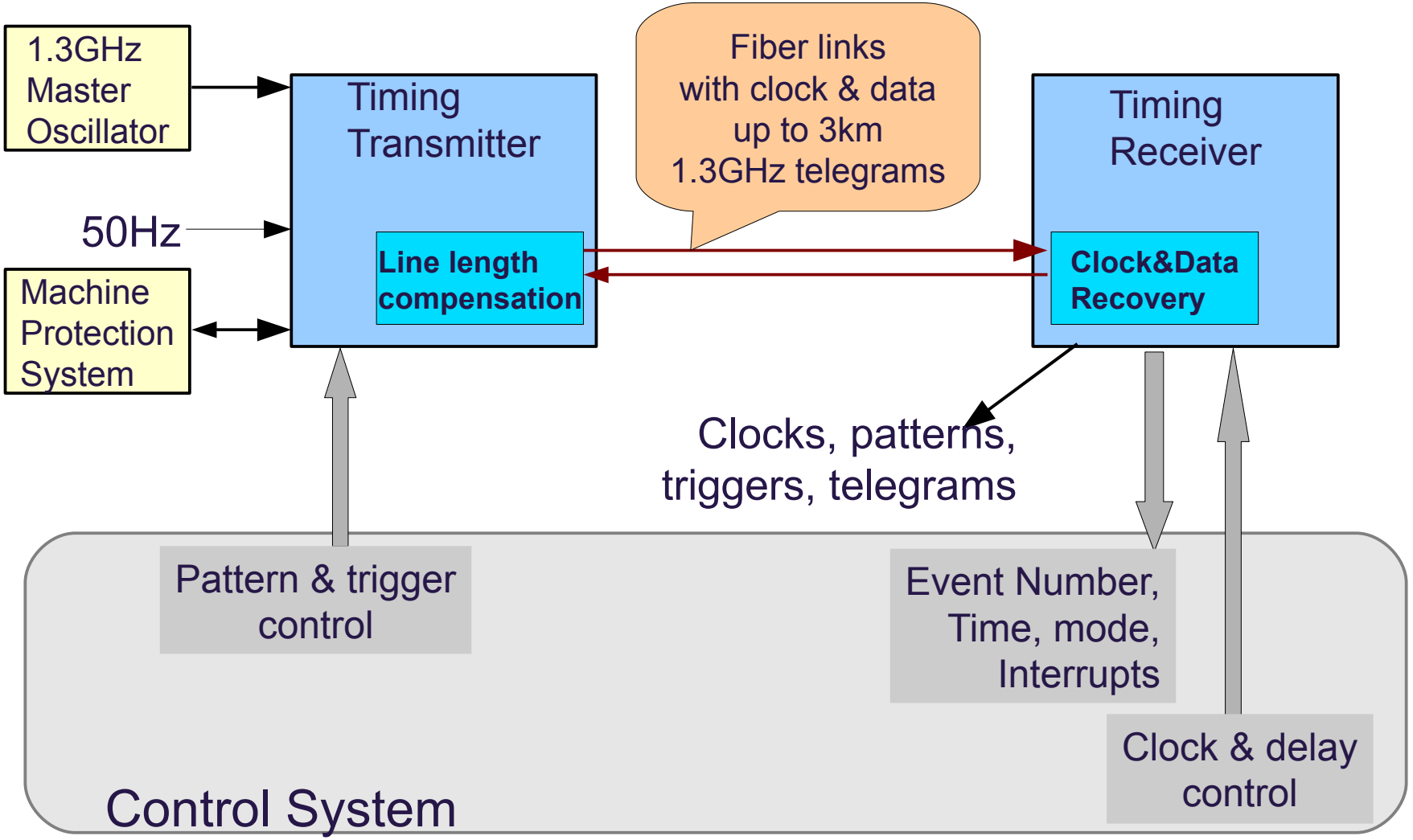


XFEL Timing System

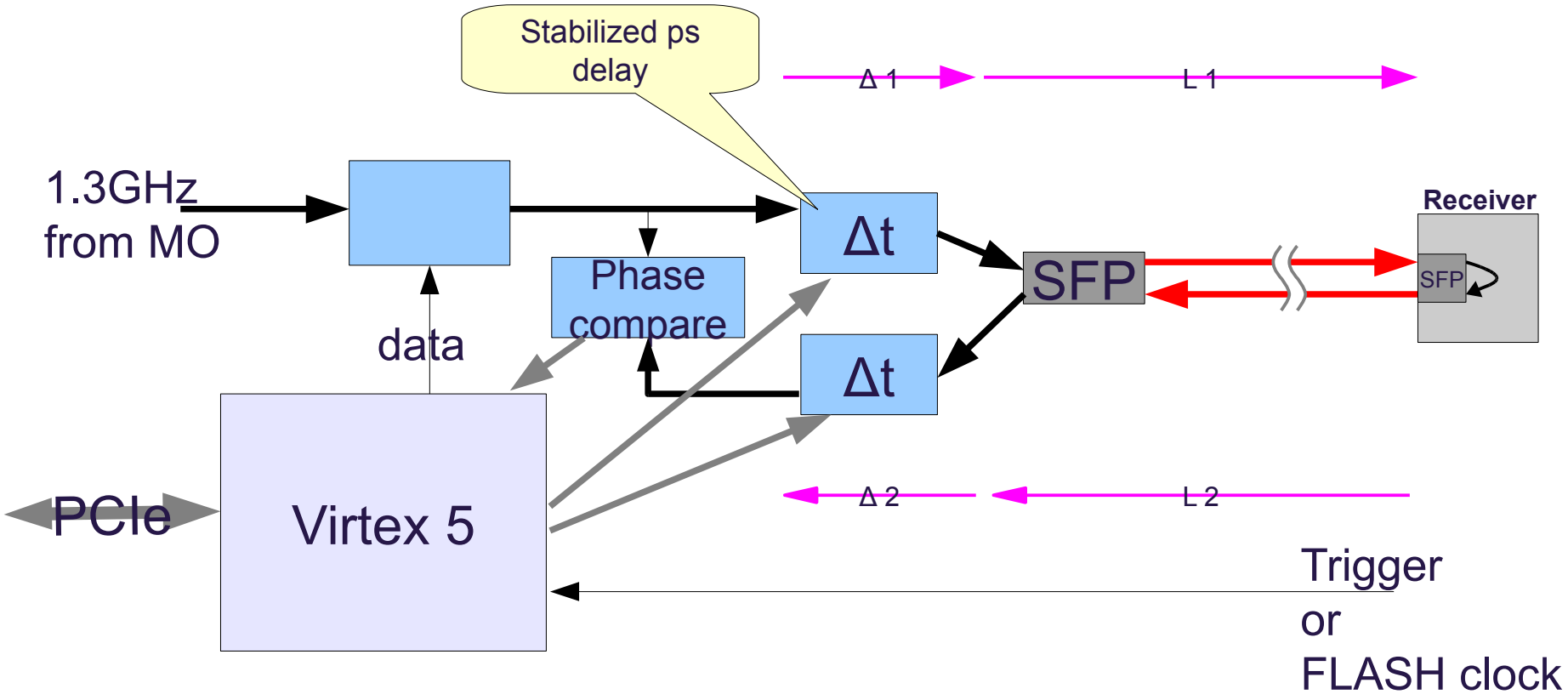
Status 10.2009

Christian Bohm
Attila Hidvégi
Patrick Geßler
Kay Rehlich

Timing System Blocks

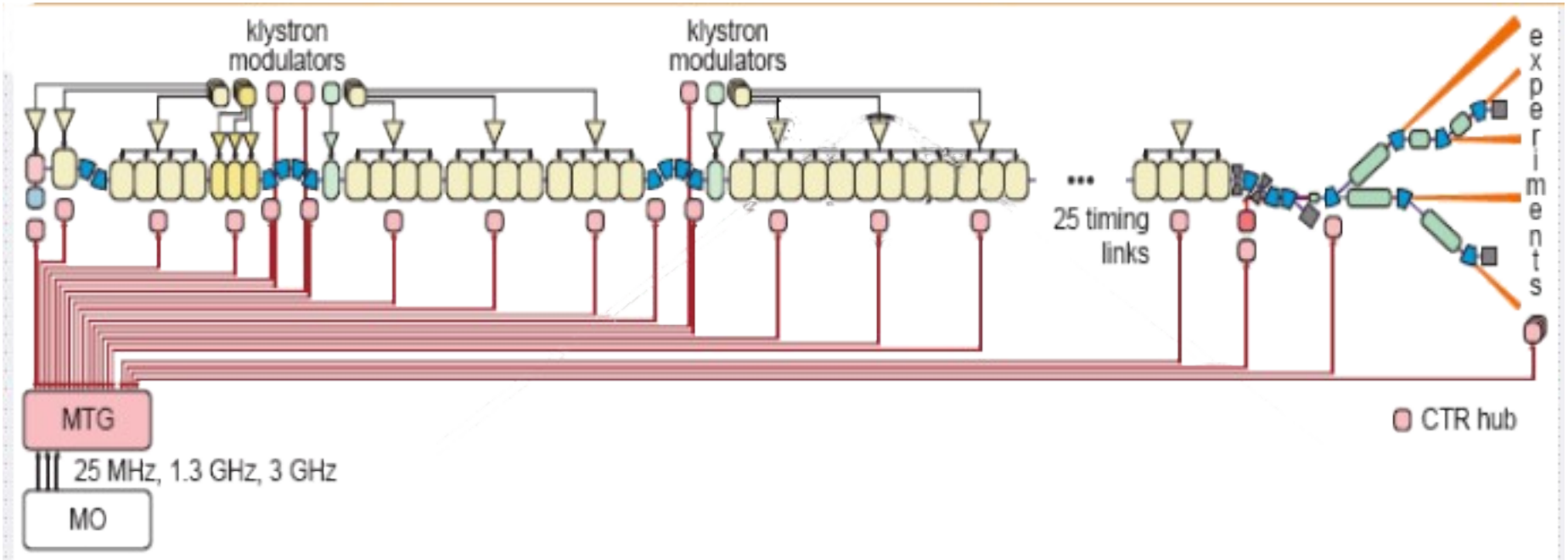


Drift Compensation Schema

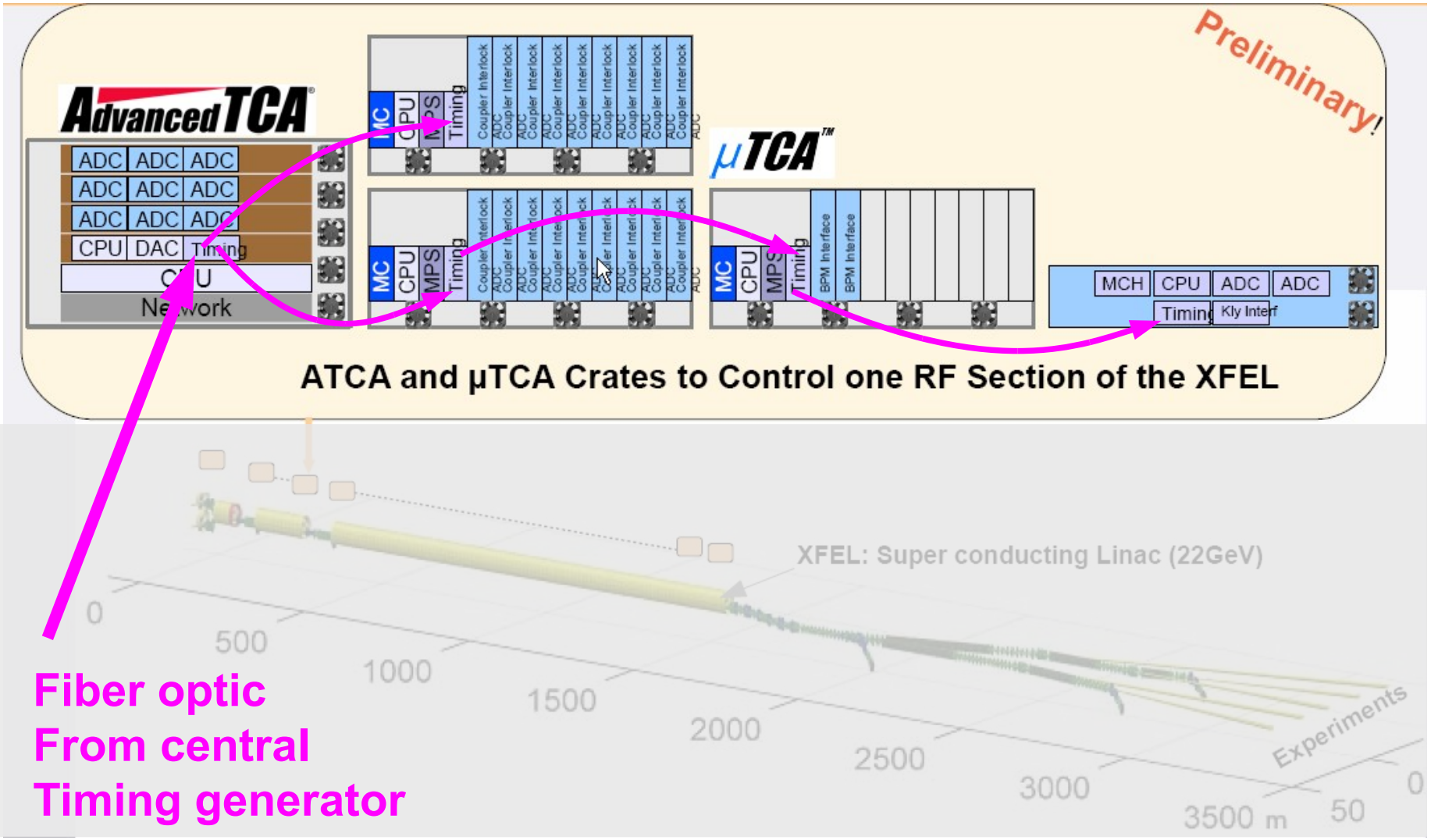


European XFEL

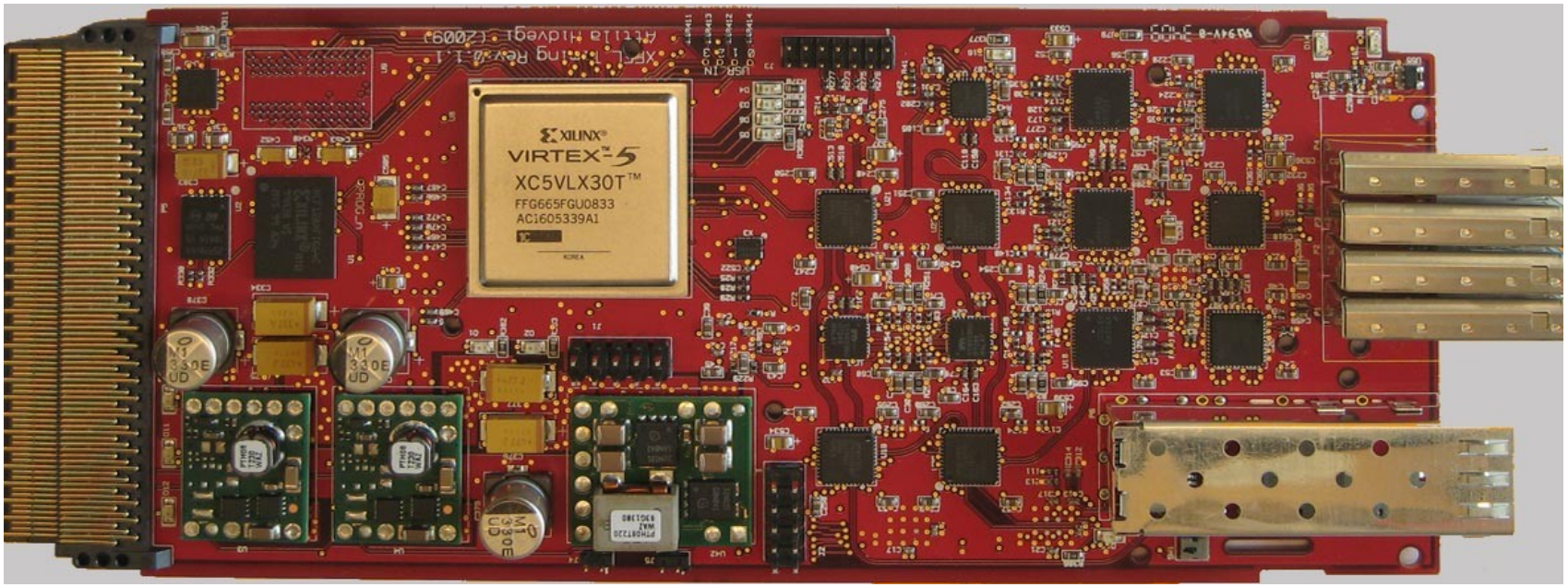
Star Topology to Distribute Timing



Local Timing Distribution

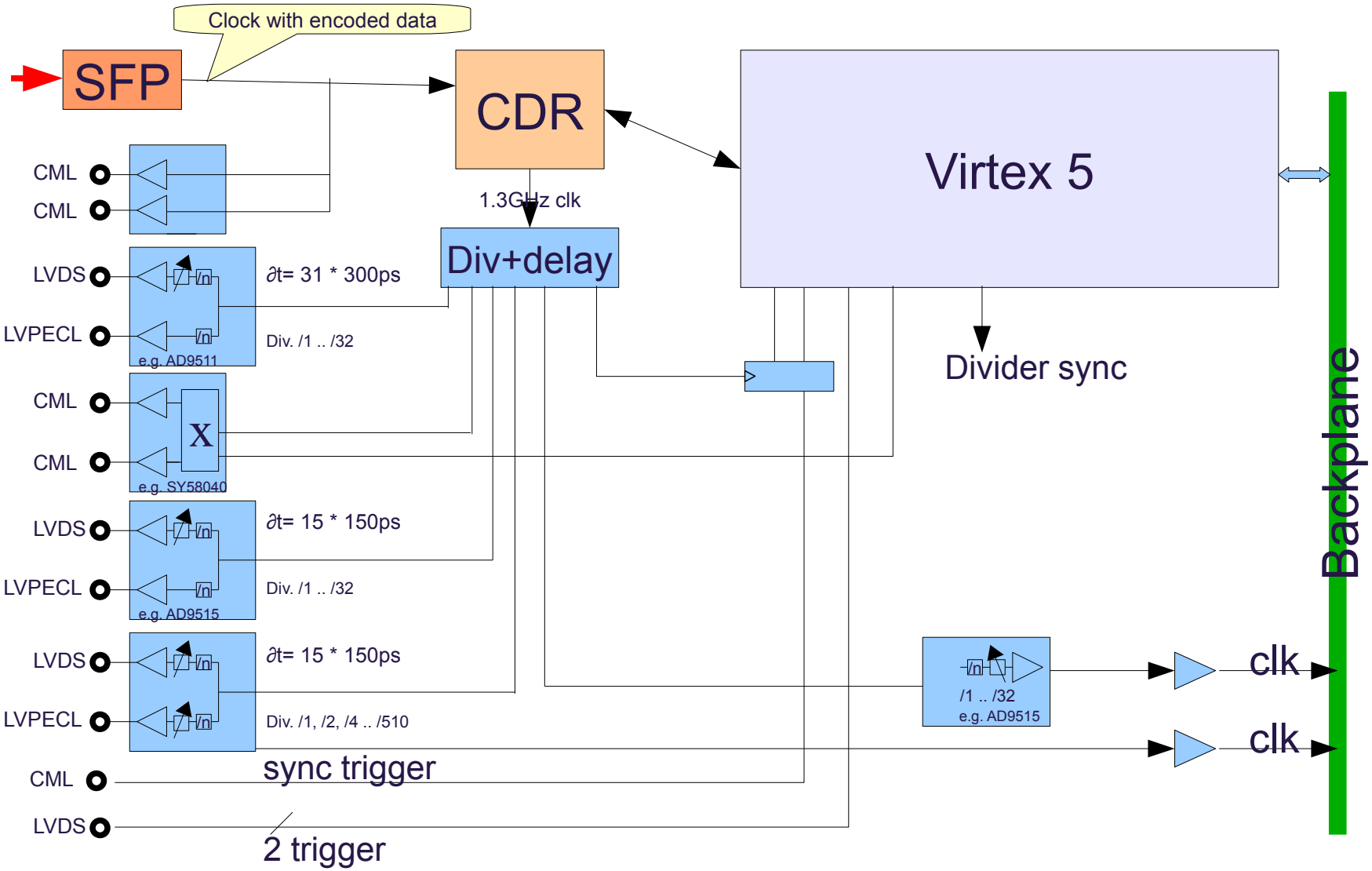


Prototype Status of Combined Xmitter/Receiver

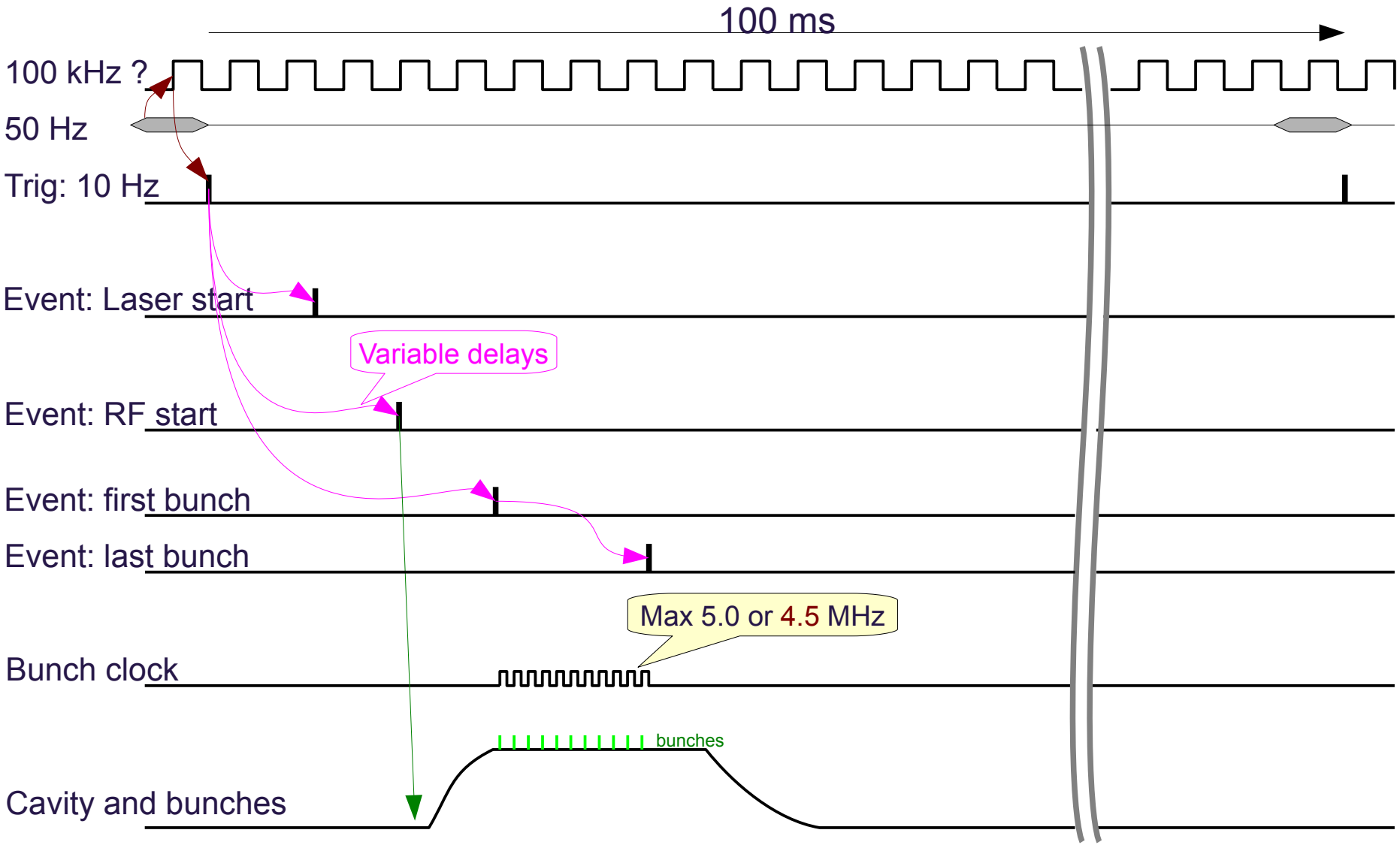


- 6 AMC boards are ready since a few days
- First results:
  - All functions work so far
  - Random jitter (RMS) of outputs: 1.5ps
  - Test with Xmitter – Receiver link to be done

Timing Outputs of the Prototype



Clock and Trigger Sequences



Preliminary Specs

- Trigger:
  - Timing resolution: 1.54ns
  - Programmable with 32 bits (max delay seconds)
- Clocks:
  - Jitter: < 5ps RMS (goal)
  - Constant or burst (e.g.bunch clock)
  - Automatic adaption of location/beam mode
  - Fixed e.g. 100kHz (with const. Delay to first bunch)
- Raw 1.3GHz telegrams with encoded data
  - Data format is not yet fixed
    (e.g. number of filler words for the clock recovery TBD)