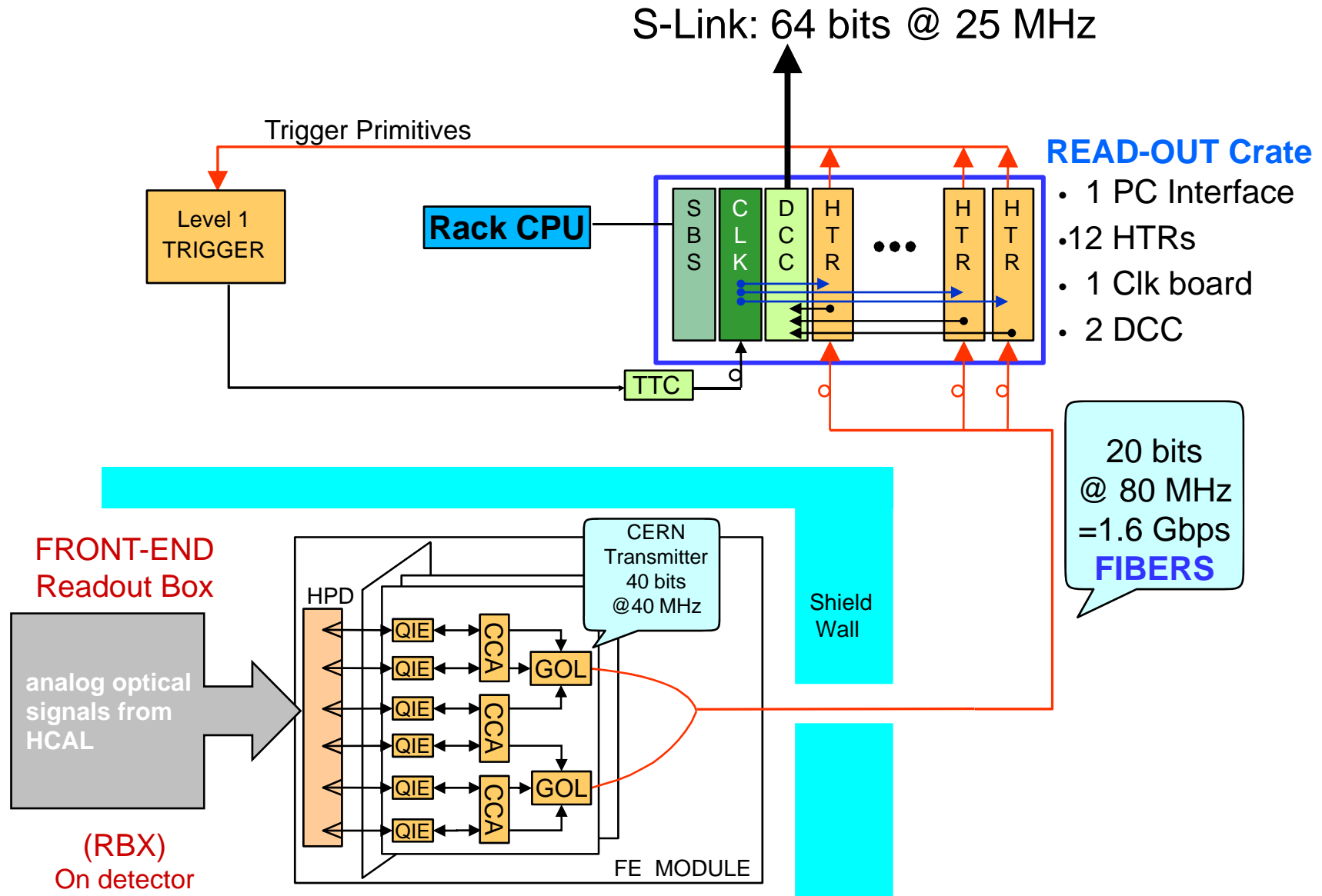




HCAL Back-end Considerations



HCAL Electronics Overview





Baseline Scenario Issues



- Replace HCAL back-end electronics with stuff that can support new FE upgrades
 - Faster digital fiber data transmission?
 - Parallel optical links, clocking with oscillators and asynchronous FIFOs, etc
 - Make better use of increased FPGA functionality over current HTR Virtex2
 - Clocking, more BRAM, access to massive and fast external memory, built-in deserializers, more resources for monitoring, perhaps make use of built-in processors/ethernet
 - Use VME and CAEN or go to “TCA”-like technology
 - Is it worth it? Impact on XDAQ/controls if we move to ethernet over PCI, etc
 - Handle legacy TTC system and at the same time be ready for GBT?
 - DCC/DAQ issues, how DAQ might evolve, TTS, etc



HCAL/ECAL Scenario Issues



- Merge ECAL and HCAL receiver cards in same crate, add preprocessing capability, enhance what you can do in the trigger
 - Can it be done? Is there are reasonable scheme?
 - Need a lot of coordination with ECAL and Trigger here
- This is purely cost/benefit. This might be too ambitious but it is definitely worth considering



Simulation



- Jets/MET using HCAL at high luminosity
 - MET vs MHT
 - There are many reasons why at high luminosity, MHT would work much better
 - Level 1 regions
 - Going from 4x4 to smaller regions?
 - Going from 3x3 regions to 1x1 or 2x2 regions?
 - Other systematics? Long lived heavy particles? Other exotica?
- Simulations needed to help guide HF
 - Especially at high luminosity, will be based on what we find next year