LTPI Developments

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24 July 2008

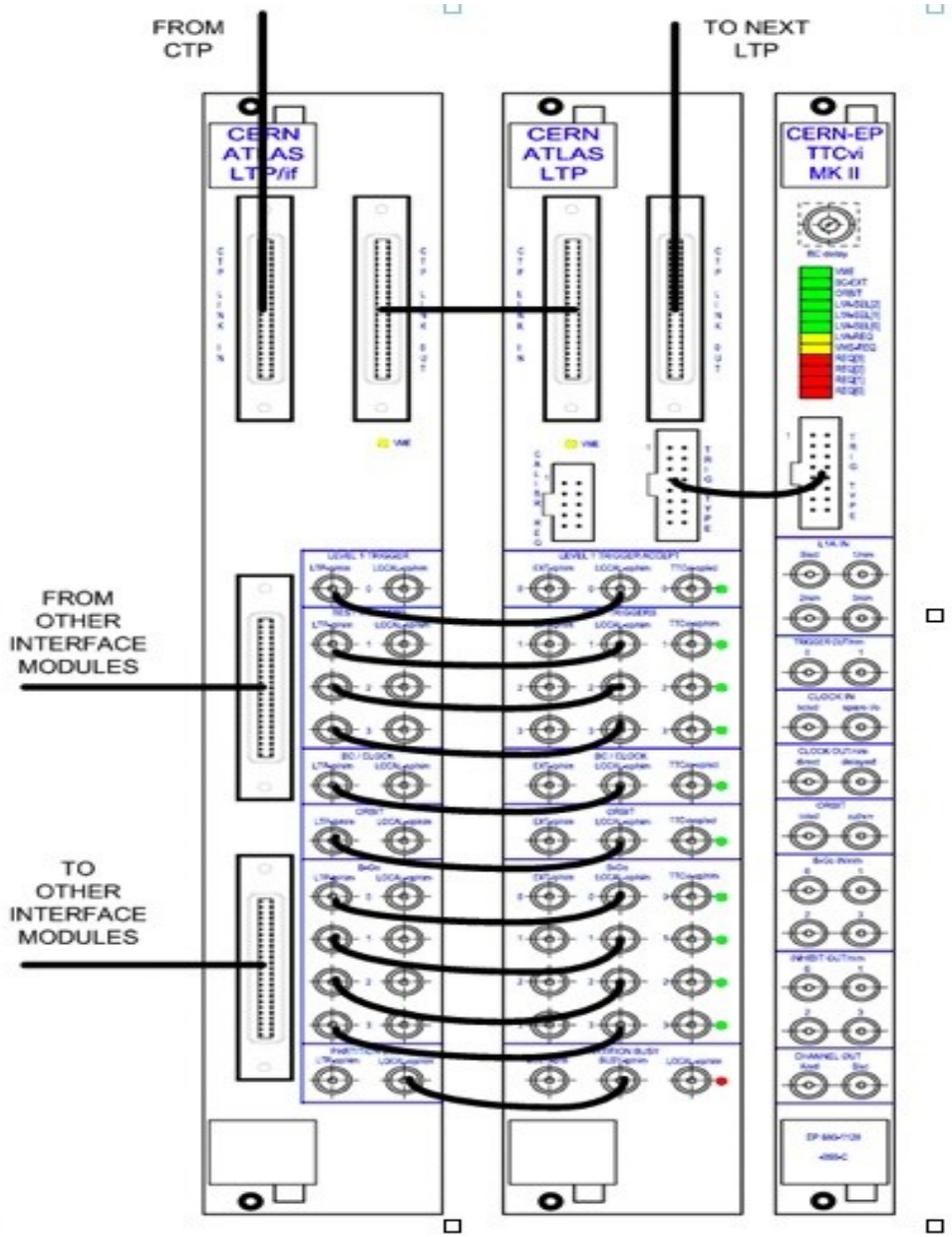
- What is an LTPI anyway?
- Connections
- Operation modes
- Progress and problems solved
- Remaining work

Local Trigger Processor (LTP) Interface

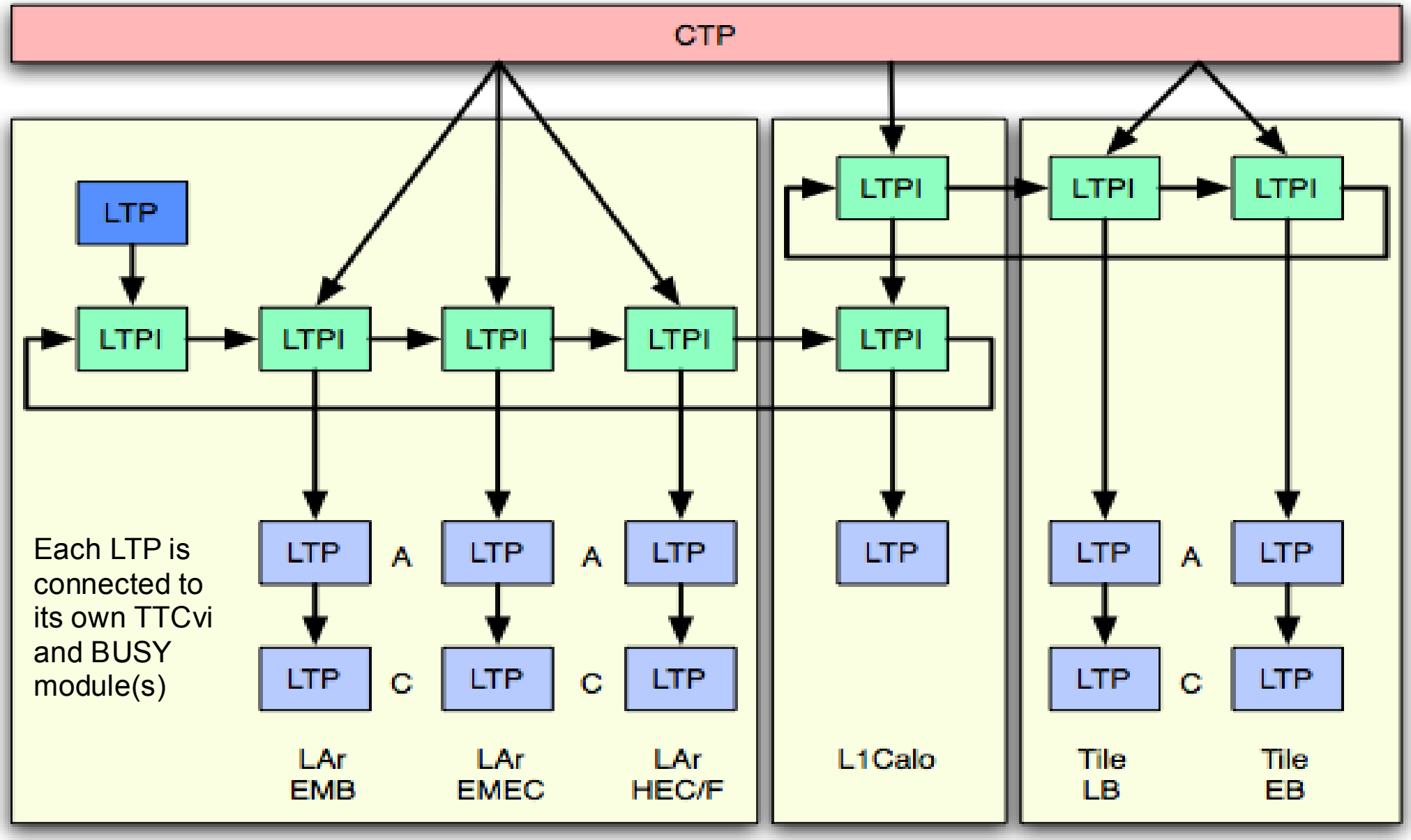
- Normal (physics) operation with the CTP
  - Direct links between CTP and LTPs for each TTC partition
  - CTP sends Clock, Orbit, L1A, BCR, ECR to each subdetector LTP and on to each TTCvi
  - Subdetector TTC partitions send ROD BUSY back via their LTP to the CTP
- Operation without the CTP
  - Can use LTPIs to interconnect separate subdetectors
  - The LTP of one subdetector acts as master of this combined partition (in place of the CTP)
    - It is responsible for sending Clock, Orbit, L1A, BCR, ECR
    - It receives and Ors the BUSY from participating partitions

LTPI to LTP Connections

- Basic setup for LTP to drive an LTPI ring
  - NIM outputs from master LTP are all connected to the equivalent NIM inputs on the LTPI
  - NB the other LTP outputs are also connected to the TTCvi (not shown here)



LAr, Tile and L1Calo LTPI Connections



Operation Modes

- Physics: all signals to/from CTP, LTPIs in passthrough
- Standalone: Tile/LAr use internal LTPI connections. but no cross connections with L1Calo
- Tile Master: Tile LTP is master of Tile+L1Calo
  - L1Calo LTPIs: Tile slave, LAr passthrough
  - Used for calibrations with Tile using Tile CIS/Laser trigger
- LAr Master: LAr LTP is master of LAr+L1Calo
  - L1Calo LTPIs: Tile ignored, LAr slave
  - Used for calibrations with LAr using LAr pulser trigger
- L1Calo Master of LAr and/or Tile
  - L1Calo LTPIs: master of one or both LTPI rings
  - Used with L1Calo "self triggering module", eg noise studies

Progress

- Last week
  - Tried L1Calo as slave (separately) to Tile and LAr
  - Mostly succeeded with Tile
    - Clock & trigger OK, no ECRs, manual (HDMC) setup for BUSY
  - More successful with Lar
    - Clock, trigger & BUSY OK, though no ECRs(?)
- This week
  - Tried L1Calo as master (separately) to Tile and Lar
  - Again a success with both systems - after various L1Calo software fixes
    - Sending clock & trigger, receiving BUSY (maybe still manual setup required with Tile?)
- In all cases, using separate ROS event builders

Remaining Work (1)

- Fix remaining issues (if any) with ECRs etc
- Automatic BUSY for Tile
  - Needs L1Calo to define a BusyChannel for the ROD crate DAQ LTPI SW used by Tile to take our BUSY into account
    - LAr and L1Calo both use private LTPI software
- Set up easily selectable L1Calo LTPI/LTP configurations
  - So far its a matter of experts editing OKS databases
  - Provide menu of choices on L1Calo RunPars IGUI panel?
- Need readout pointer adjustments in each mode
  - L1Calo DB needs (at least) separate sets of adjustments per calorimeter partition for each of the LTPI operation modes to cope with variations in latency between systems in each case

Remaining Work (2)

- Use "slice" of full dataflow system (instead of ROS EB)
  - Needs allocation of DFM, SFI(s) and use of TTC2LAN
  - Tile successfully tested this earlier this week
  - Still need to add L1Calo+LAr
- Self triggering module (Richards magic box)
  - Prototype version just provides bit 0 of CMM-CTP cable
  - Presently connected up to tau output
  - Seems to count a lot - even with no inputs to the trigger
    - See similar feature of lowest thresholds in recent CTP timing test?
    - To be investigated – while waiting for next version