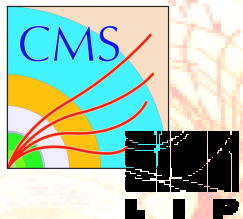


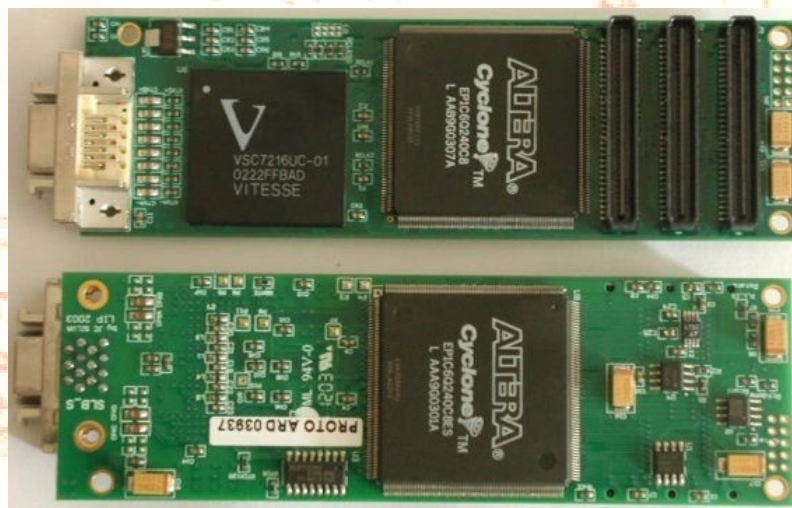
# Preliminary design of the SSLB ("S" for SLHC)

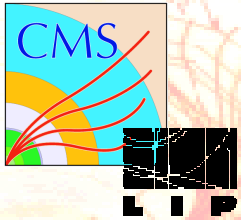
sLHC upgrade meeting



## SLB – Functional Description

- Overall synchronization of the ECAL and HCAL trigger primitives.
- Transmission of the Trigger Primitives to the Calorimeter Regional Trigger.

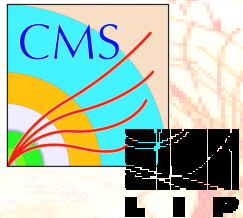




## SLB – Functional Description

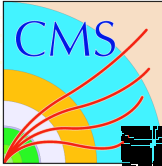
- **Receives 9 bit data @ 40 MHz / TT**
- **Each SLB houses 8 TT**
- **Align Trigger Data using the LHC Orbit bunch structure to determine the BX position using internal histograms**
- **FIFO stage to compensate fiber length differences, deserialisers lock delays and to guarantee the alignment of data sent to the RT from both ECAL and HCAL.**
- **2 TT data merging + Hamming code prior to send it over the high speed link**
- **4 High speed links (1.2Gb/s each)**



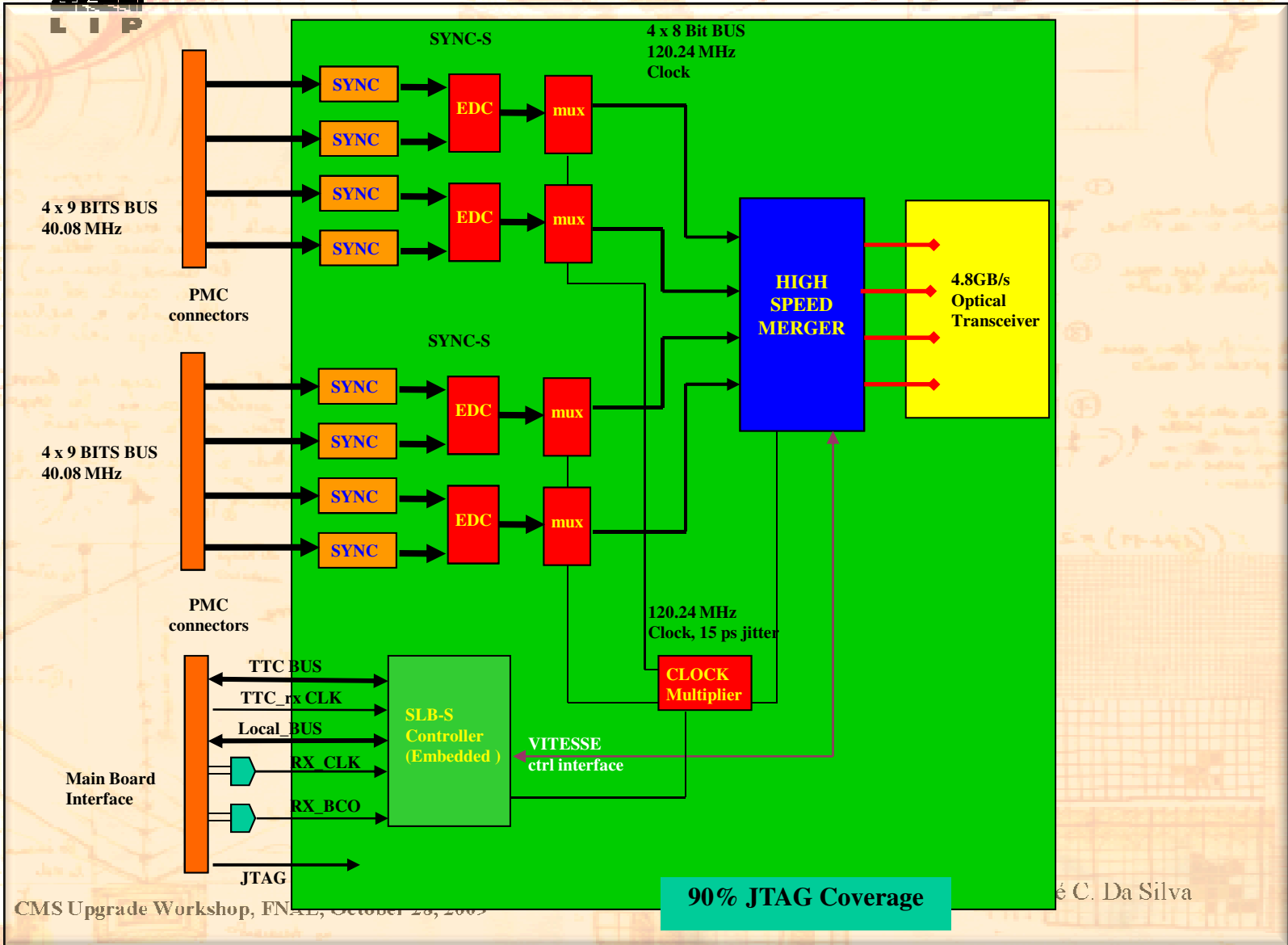


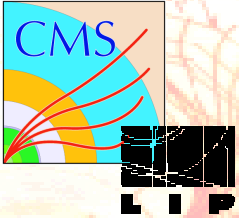
## SSLB details

- Maintain same connectivity and form factor
- Replace cables by optical links
  - Latency budget increases in most cases when using FPGAs
- High speed link, 850/1310 nm, commercial package
- PCB for both ECAL/HCAL and RCT (duplex)
- FPGA Transceivers, deeper FIFO and Full Orbit histogram per channel
  - Stratix II or IV (GX) or Virtex 4 or 5 (6 arriving)
  - SSLB (TX and RX)

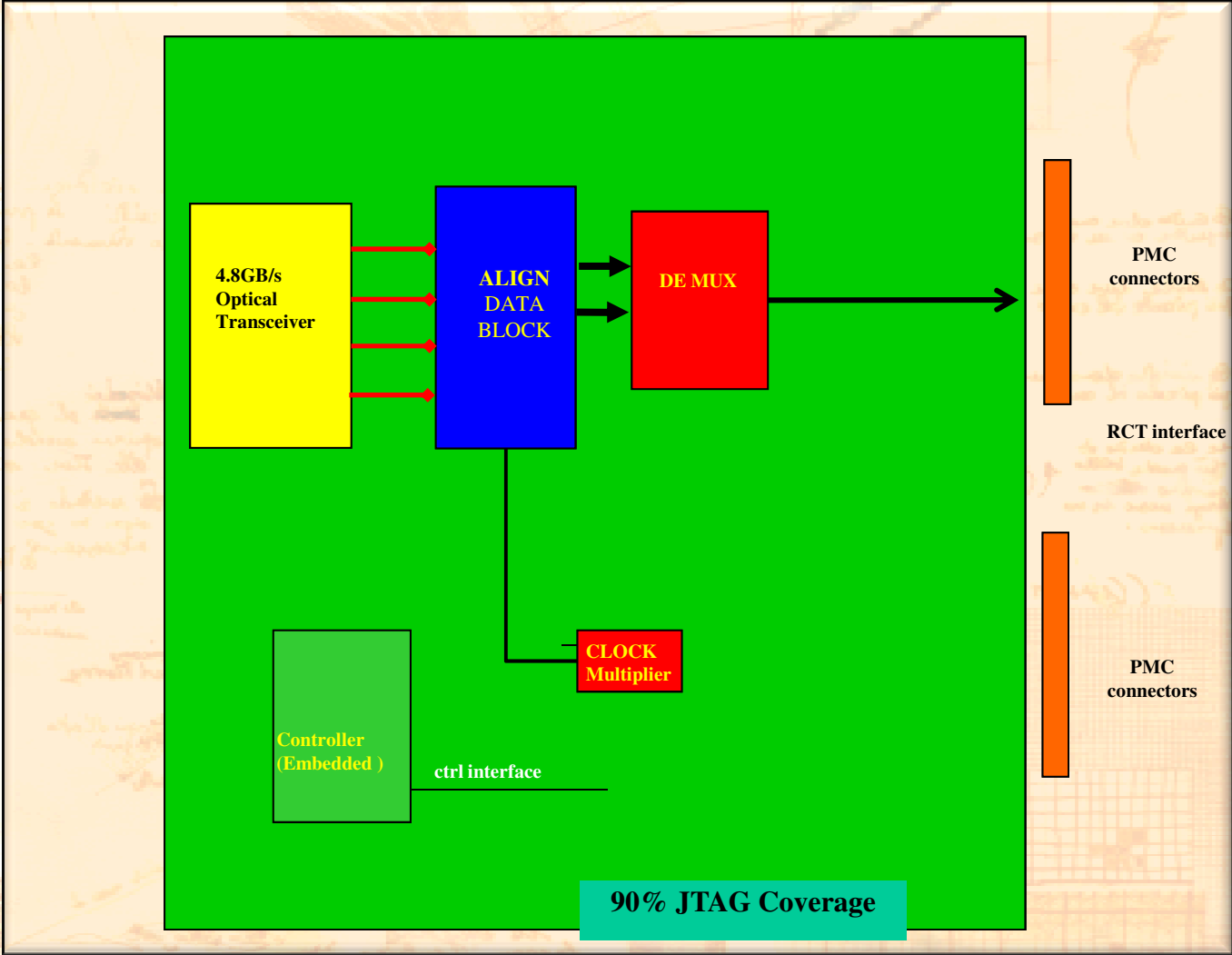


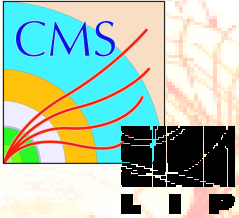
# SSLB TPG side



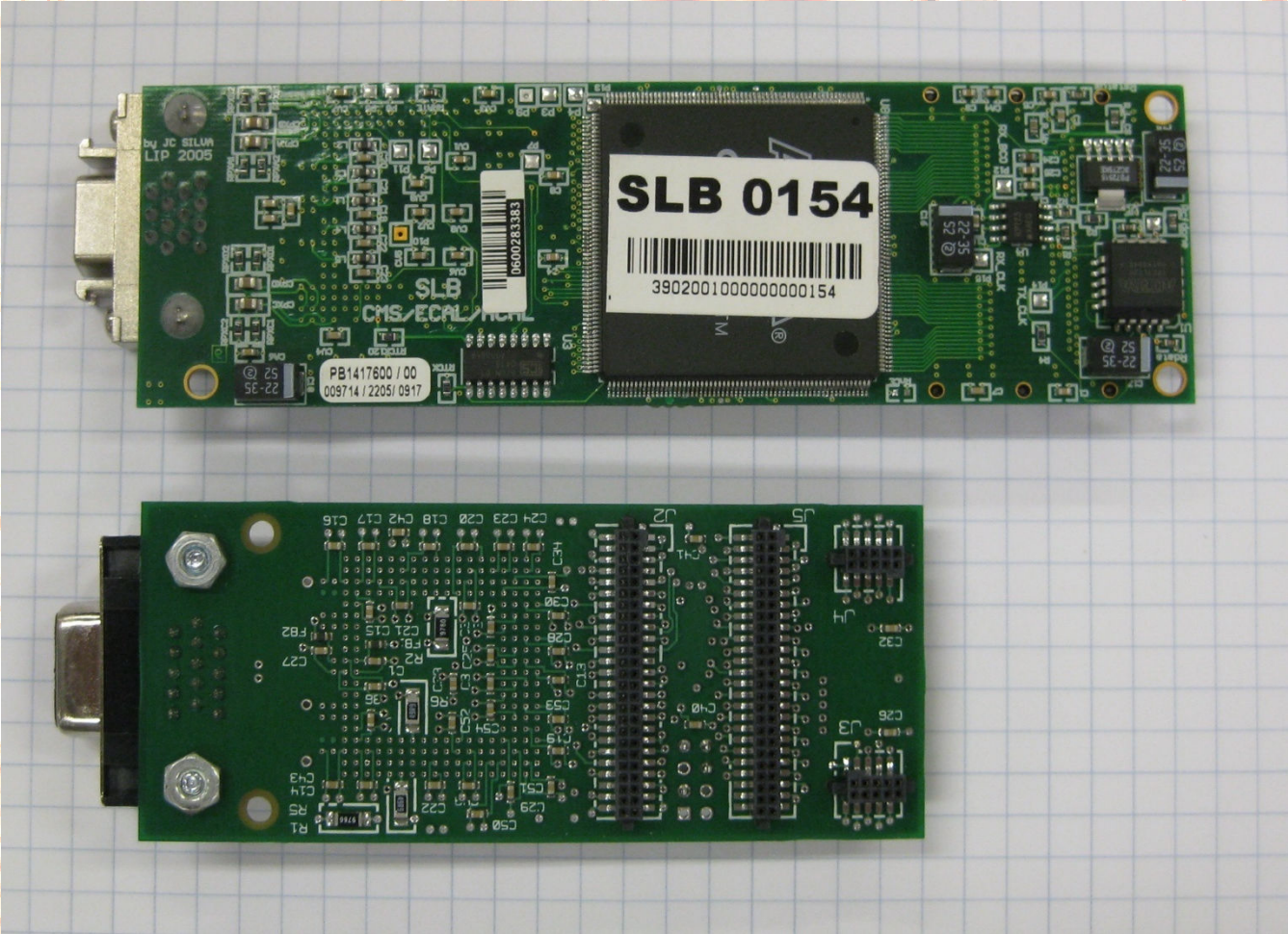


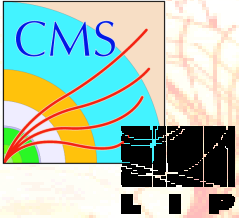
# SSLB RCT side



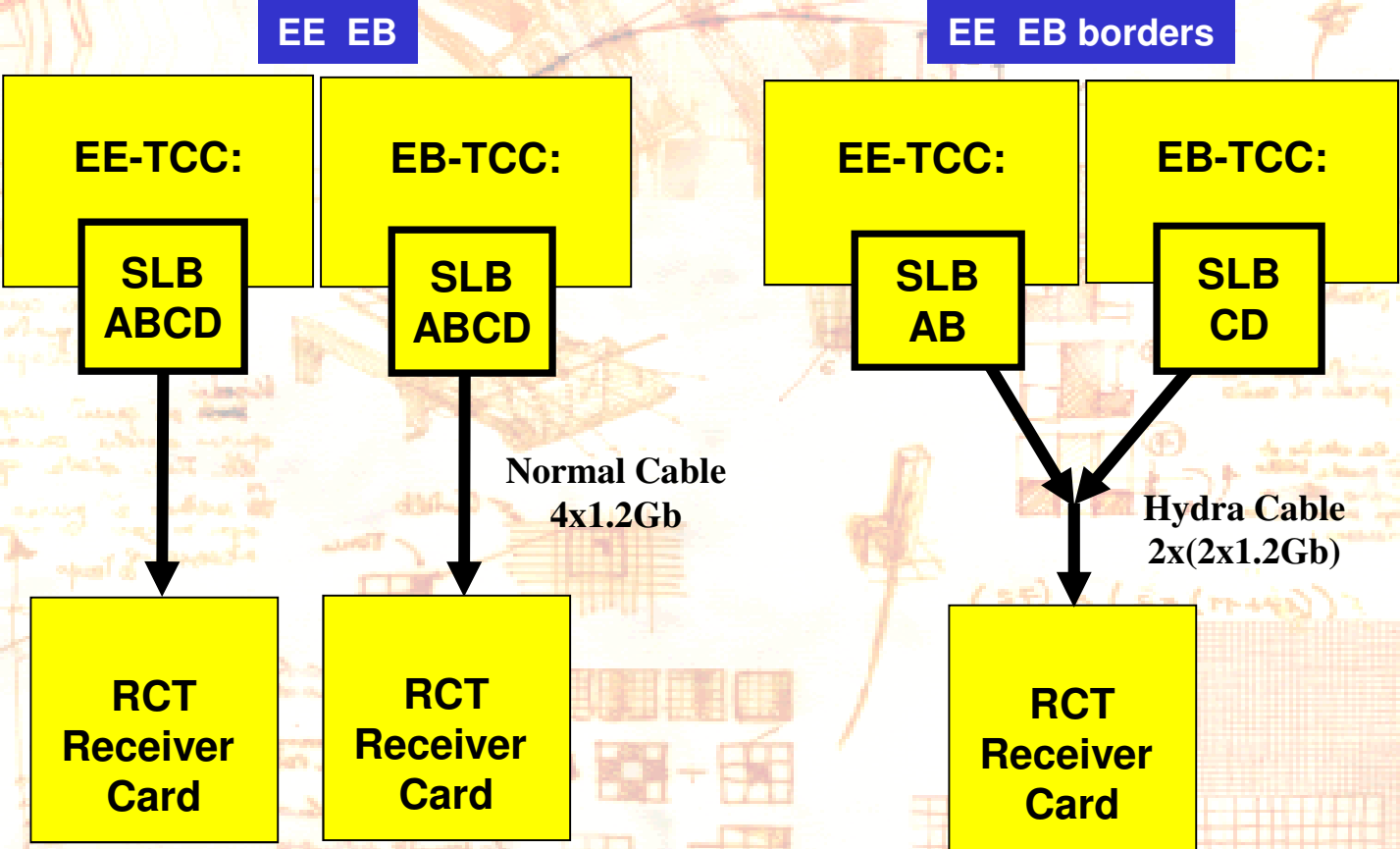


# SSLB PCB Preview





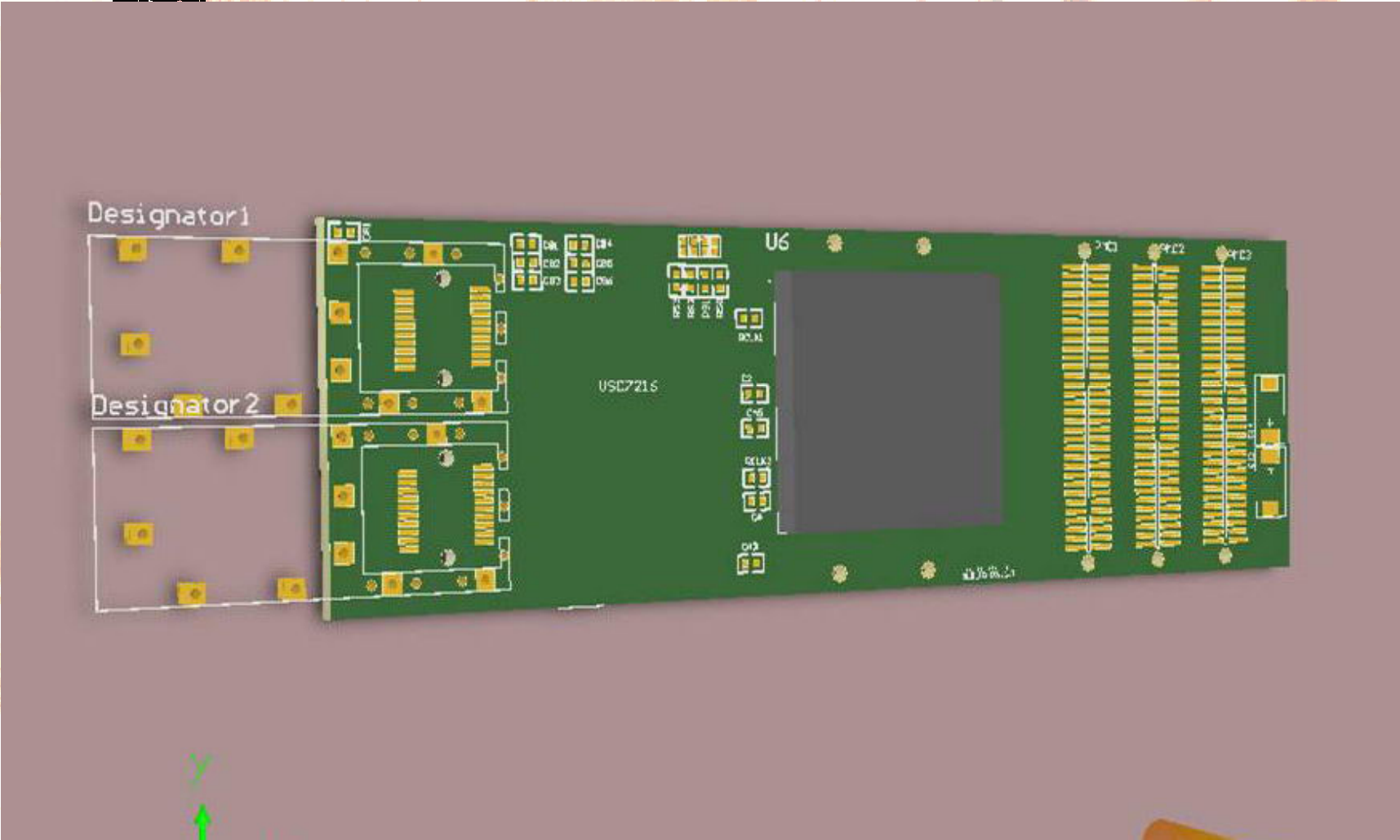
# SSLB borders







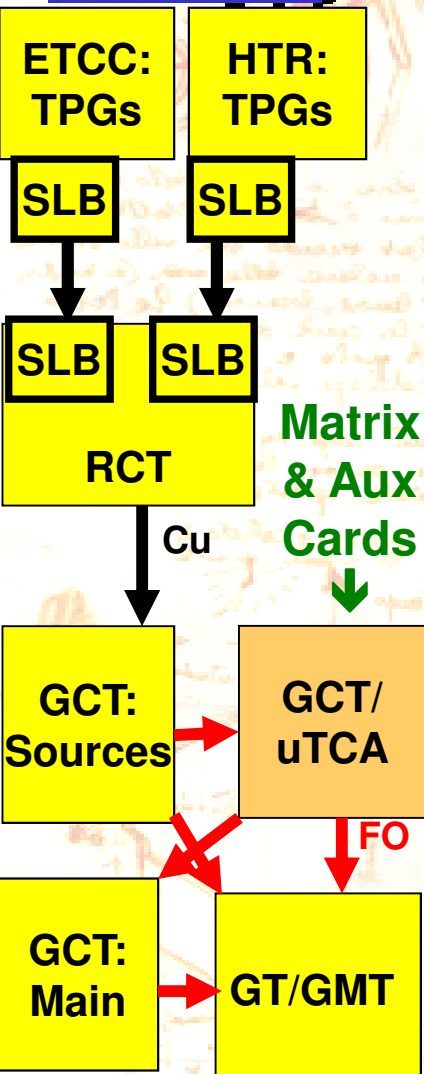
# SSLB PCB Preview



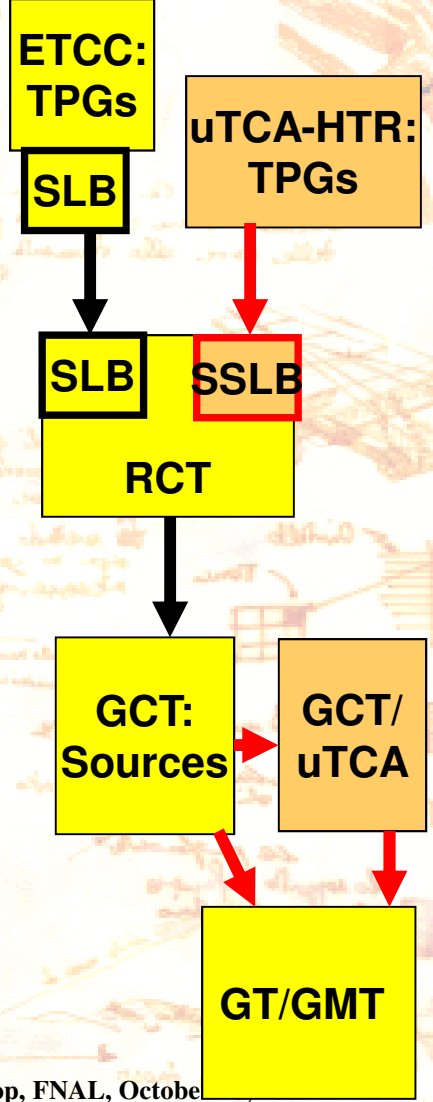


# Calorimeter Trigger Evolution

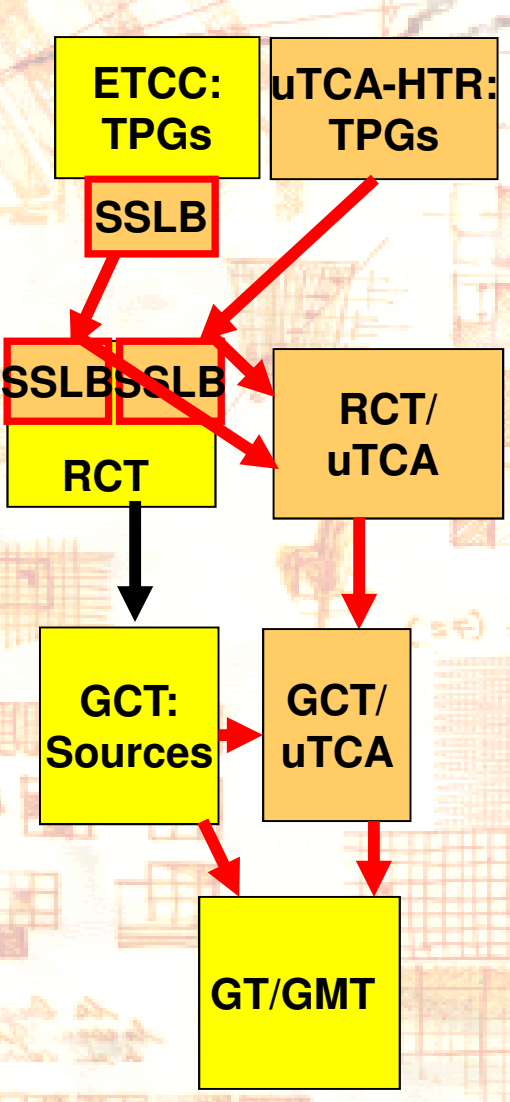
## Step 1 (2009)



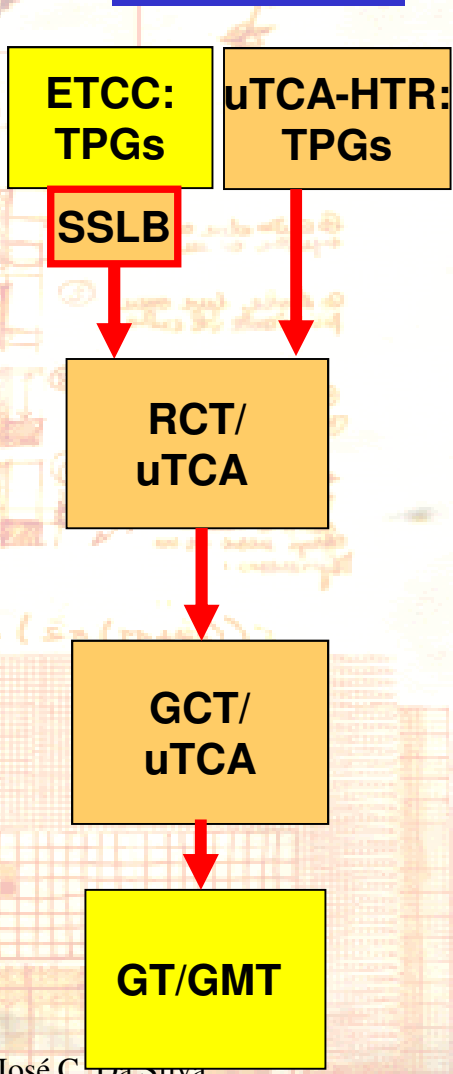
## Step 2 (2010-2011)



## Step 3 (>2011)



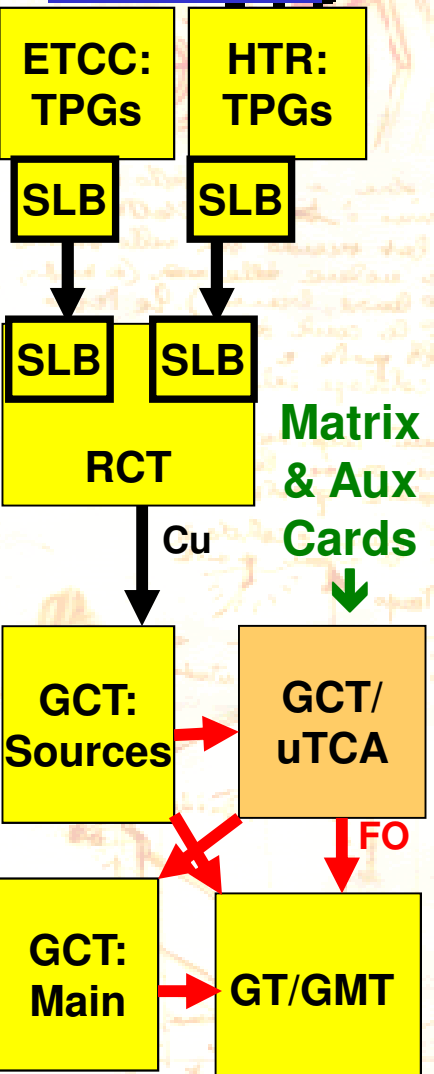
## Step 4 (>2012)



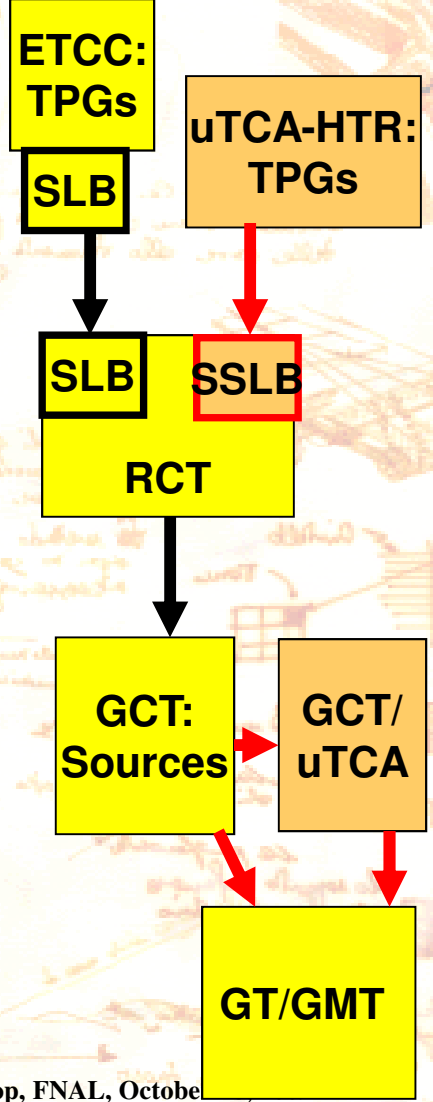


# Calorimeter Trigger Evolution II

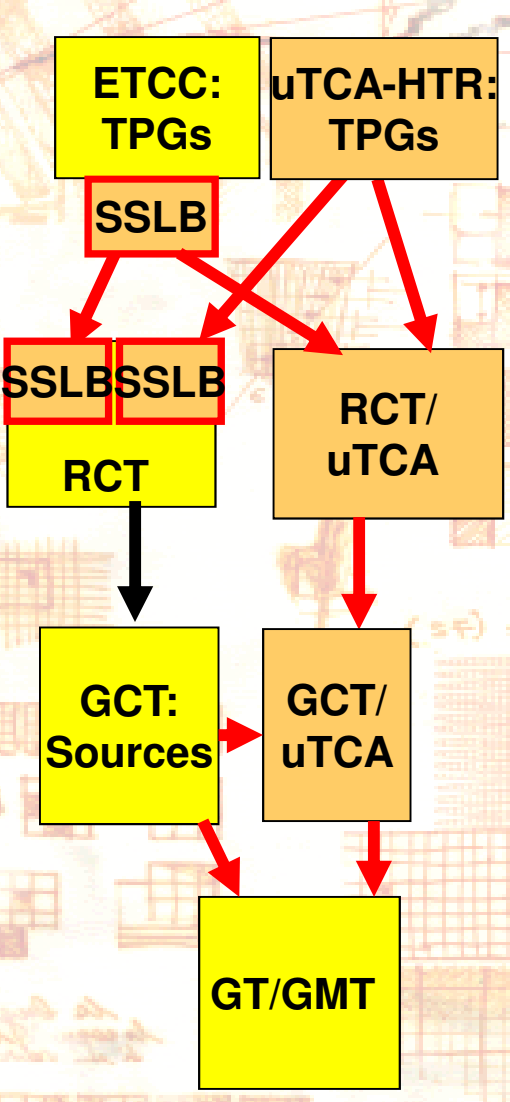
## Step 1 (2009)



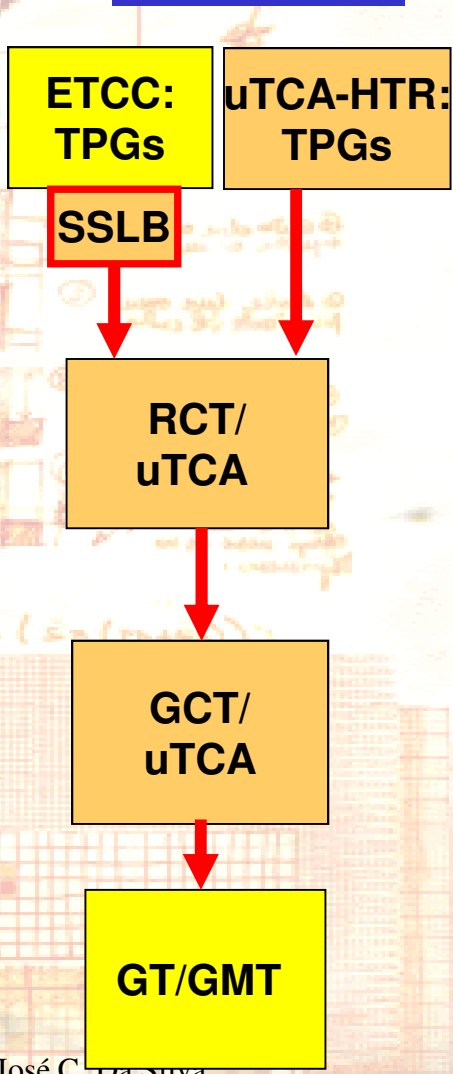
## Step 2 (2010-2011)

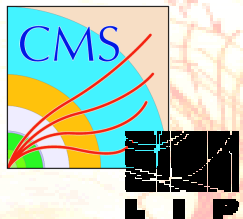


## Step 3 (>2011)



## Step 4 (>2012)





## Conclusions

- **Use a single design for the new SLB , with Optical Transceivers**
  - Both connectors footprints
- **Maintain modularity for compatibility with existing design**
- **LIP will take the responsibility of this design**