Monthly Status Review

LAT Testbed Status

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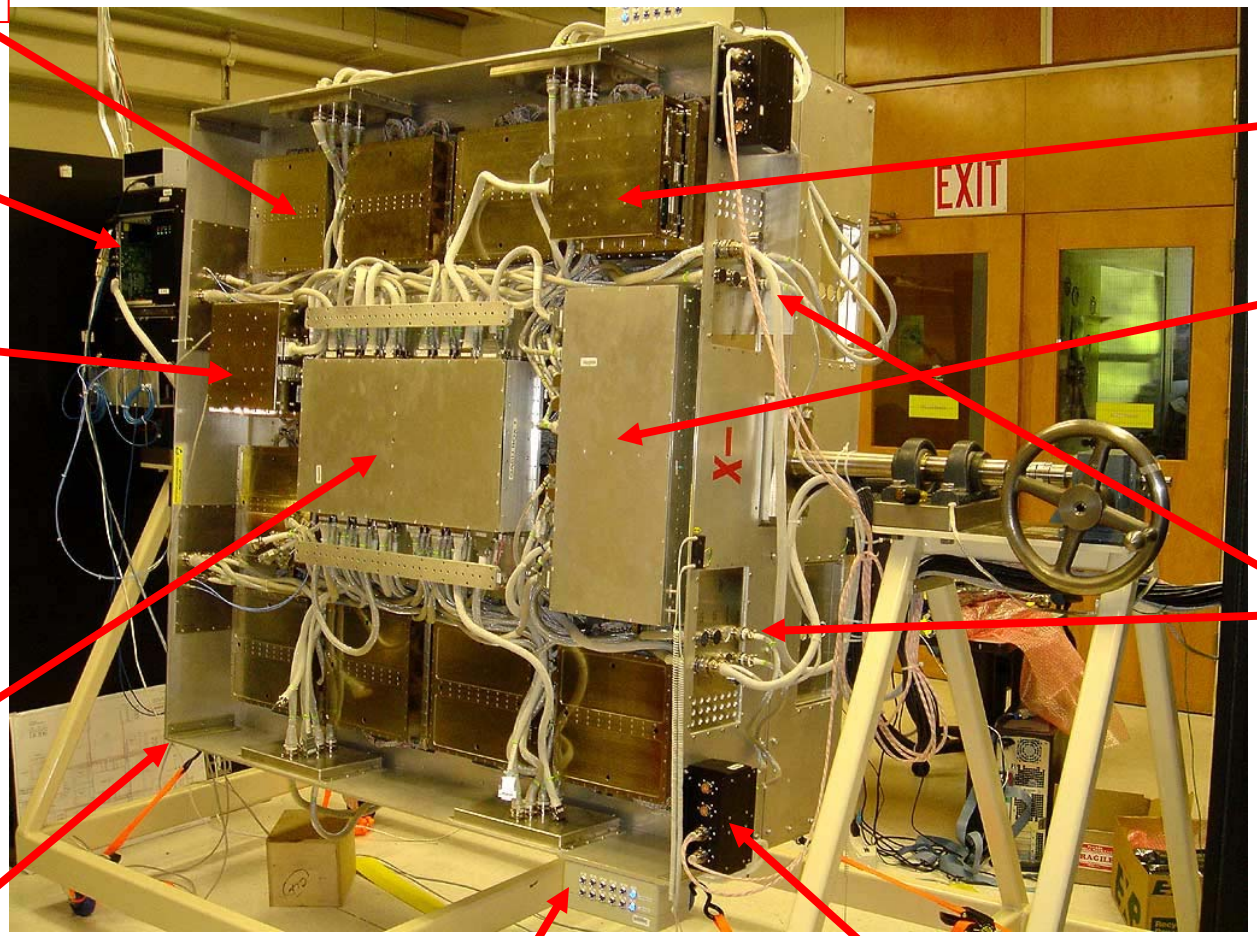
Overview

- The Testbed is a complete “flight-like” Trigger and Dataflow system with simulated front-end inputs.
- Purpose of the Testbed
  - Validate the Level 3 Filter
  - Validate Flight Software
  - Validate Trigger and Dataflow System
  - Eventually, passed to ISOC
  - Can be used to test on orbit scenarios
- The testbed is the *only* place where all parts of the T&DF system are assembled in a test environment
  - The last line of defense for catching system-level problems

The LAT Testbed (-z)



1 of16 TEMs

External Crate

SIU

GASU

RF Shield

EPU

PDU

Power Feeds

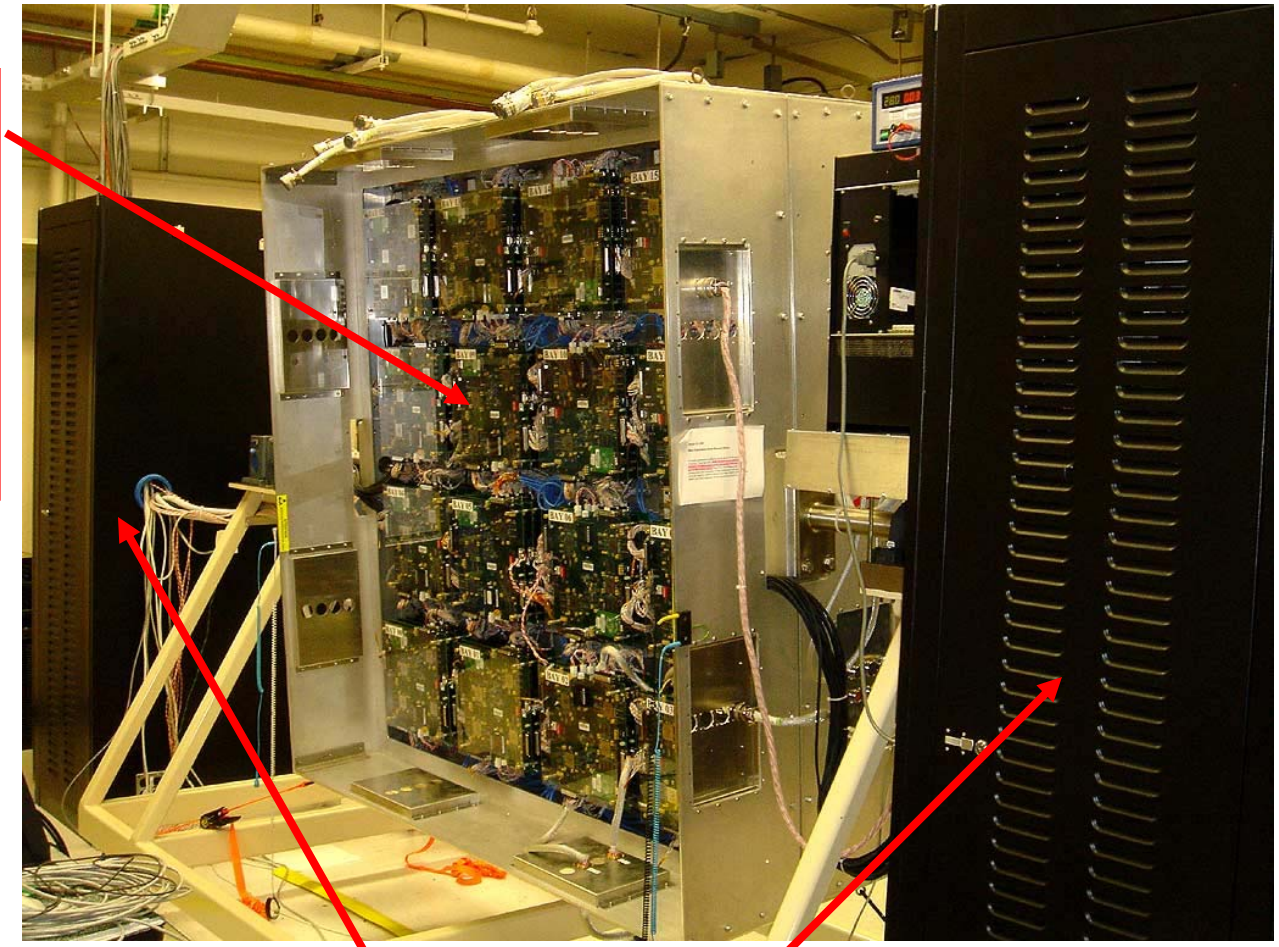
1 of 2 Heater Loads

1 of 2 Heater Controls

The LAT Testbed (+z)

16 TKR FES
16 CAL FES
8 ACD FES
1 Control FES

16 Tower Loads



11 FES Control PCs

Hardware Status

Component	Need	Have	Status
TEM	16 Updated	6 Updated 10 un-updated	4 Updated, awaiting testing 6 Awaiting update
SIU	2	1	Cold Spares to remain unpopulated (due to limited BAE Boards)
EPU	3	2	
GASU	1	1	To be upgraded
PDU	1	1	To be upgraded
FES	41 FES Boards	All	Functionality Verified
Tower Loads	16	All	Functionality Verified
T&DF Harness	121 cables, 20 varieties	All	Complete and verified
FES Harness	192 FES-TEM 24 FES-AEM	All FES-TEM 3 FES-TEM	21 FES-TEM cables queued, pending arrival of connectors

Schedule

- TEM upgrade to be completed in conjunction with PDU and GASU upgrades
- A sample of ACD-FES have been checked for length and connectivity, assembly of remainder is queued
- As hardware is upgraded
  - Critical to re-verify connectivity and data-path
    - FES → TEM → GASU → EPU/SIU/LATTE
    - Example: Use FES to tickle every trigger line in all 16 TEM every time a TEM is replaced.
  - More extensive regression test suite is desirable
    - Get this for free as a product of developing FES with the goal of testing the Level 3 Filter

Front-End Simulators

- New collaborators from ***The*** Ohio State University
- Developing a architecture for generating and processing simulated input
  - Creating FES input
    - Diagnostic Samples (trace-back)
    - GLEAM MC Samples
  - Organizing and moving the large files
  - Controlling the timing of the FES signals to T&DF
- This will allow comprehensive testing of the trigger system, data integrity and flow, as well as regression tests to verify low level connectivity
- Weekly (nominally) meeting to coordinate effort

Summary

- The LAT Testbed is the only place to verify the T&DF system in a test environment
- Testbed hardware to be fully upgraded in next few weeks
- The system is complete and has already proved itself useful as the only multi-tower teststand.
  - Example: A bug was discovered in the FPGA code that accounted for the relative rotation of the TEMs in odd numbered bays.
- Our priorities:
  - Test a vertical slice of the data path in the next week to continue the bootstrap process of debugging the FES and T&DF system
  - Continue to develop the tools to comprehensively test T&DF