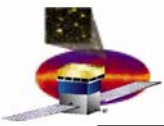


GLAST Large Area Telescope: I & T Peer Review

Introduction and Overview

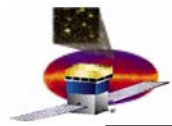
Elliott Bloom
SU-SLAC
Subsystem Manager

elliott@slac.stanford.edu
650-926-2469



Outline

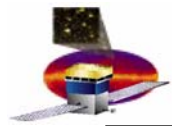
- Integration and Test Responsibilities
- Department Organization Chart
- RFA Closeouts
 - Findings and recommendations
 - Actions
- Applicable Requirements
- Drawing Status/overview



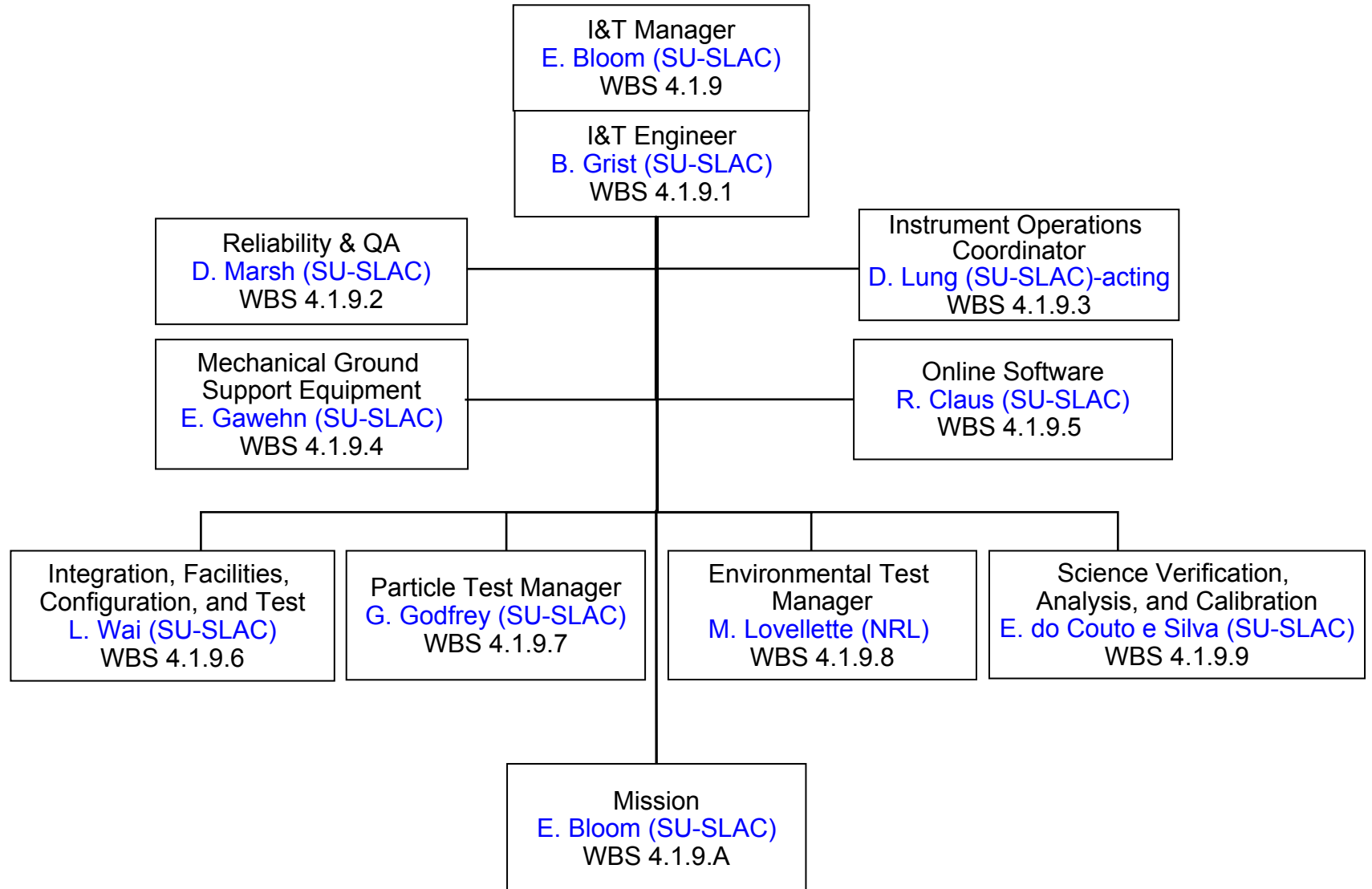
Integration and Test Responsibilities

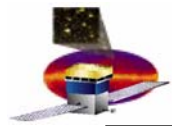
- **I & T “subsystem” is focal point of LAT integration, test and calibration activities.**
 - **I & T team plans, manages and execute activities.**
 - **ACD, ELX, CAL, Mechanical Systems, SAS, and TKR subsystem teams and other Collaboration members provide LAT hardware/software that is tested, integrated and then tested and calibrated by I&T.**
 - **The subsystems and other collaboration members also support Integration & Test & Calibration of the Calibration Unit and full LAT.**
 - **I & T Subsystem activities for entire mission.**
 - ***LAT integration planning and management.***
 - ***Mechanical integration and MGSE and EGSE development.***
 - ***Plan environmental tests and execute.***
 - ***Plan particle tests and execute.***
 - ***Particle beam and test equipment development.***
 - ***Ground verification and calibration of LAT.***
 - ***Ground science verification of LAT.***
 - **Support activities at Spacecraft Vendor and launch facility.**
 - **Commissioning of LAT in orbit -- deliver a working and calibrated instrument to IOC.**

**Fabrication
Phase**



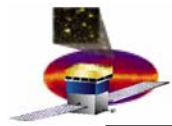
I&T Organization Chart





RFA Closeout (Completed)

- Findings, Recommendations, RFA responses:
 - Complete the reworked WBS with review and approval by project management by February 2002.
Action: The reworked WBS has been completed and approved. It is available through the LAT document system.
 - Complete the reworked cost and milestones with review and approval by project management by March 2002.
Action: New PMCS completed, and approved by LAT management.
 - Recommend subsystem baseline review as soon as possible after the work on items 1 and 2 are complete.
Action: System baselined at LAT delta Baseline review in early August 2002.
 - Write the integration and electronics integration plans and get them under configuration management by March 2002.
Action: I&T has completed a CDR level Integrate and Test Plan - LAT-MD-01376 and references therein, will be under configuration management by CDR.



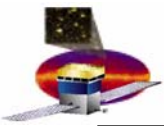
RFA Closeout (Completed) (Cont)

- Findings, Recommendations, RFA responses (Cont):
 - Write a baseline level plan for the airborne test by March 2002 and ensure that any requirements on the subsystems levied by this test are flowed to subsystem managers.

Action: The airborne test plan draft, LAT-TD-00550, has been reviewed by Systems Engineering and Subsystem Managers. It is referenced in the integration and test plan. The airplane test has been moved from being a required test to a test that may be used for risk mitigation. Tests of EM and proto-flight components with power on in a simulated airplane environment may be required. A plan to proceed to decision by November 1, 2003 has been prepared by I&T and reviewed by SE.
 - Rev 0 assembly traveler should be written and under configuration control before Qualification Unit A arrives.

Action: Draft 0 completed, LAT-TD-00856, and available for this review.
 - Provide an initial, top-level estimate of the cost/schedule impact of replacing a Tracker tower after complete instrument assembly. (This AI was originally AI-Mech-03).

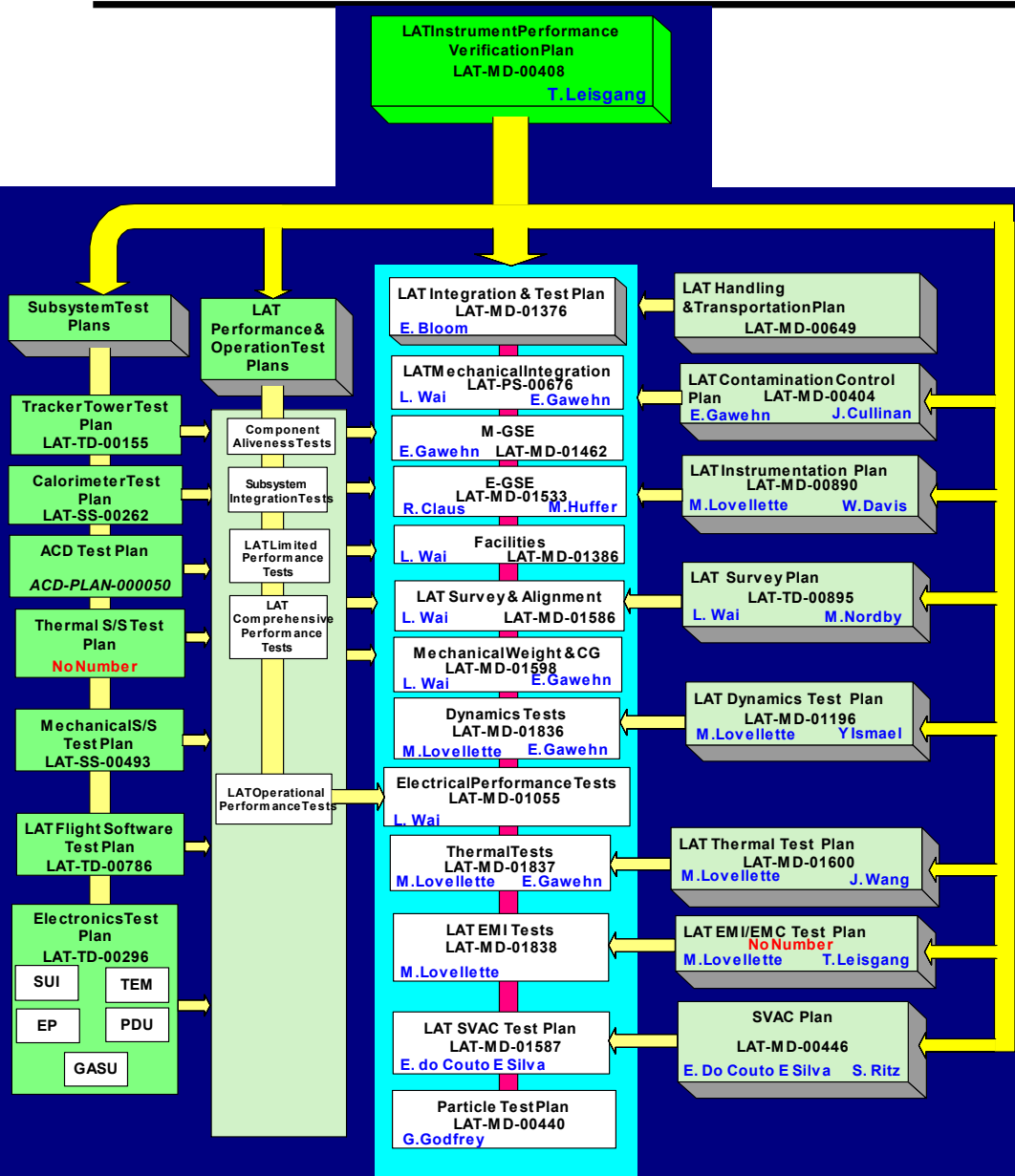
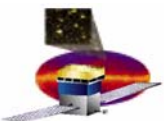
Action: Estimate based on 24/7 extrapolation of PMCS costs and schedule is available in RFA database.



Suggestion

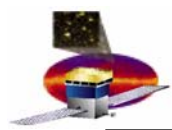
- Employ experienced I&T people to work on the CU and LAT I&T.
Action: See IFCT presentation for our flight hardware I&T plan.

LAT Functional Performance (SE and I&T)

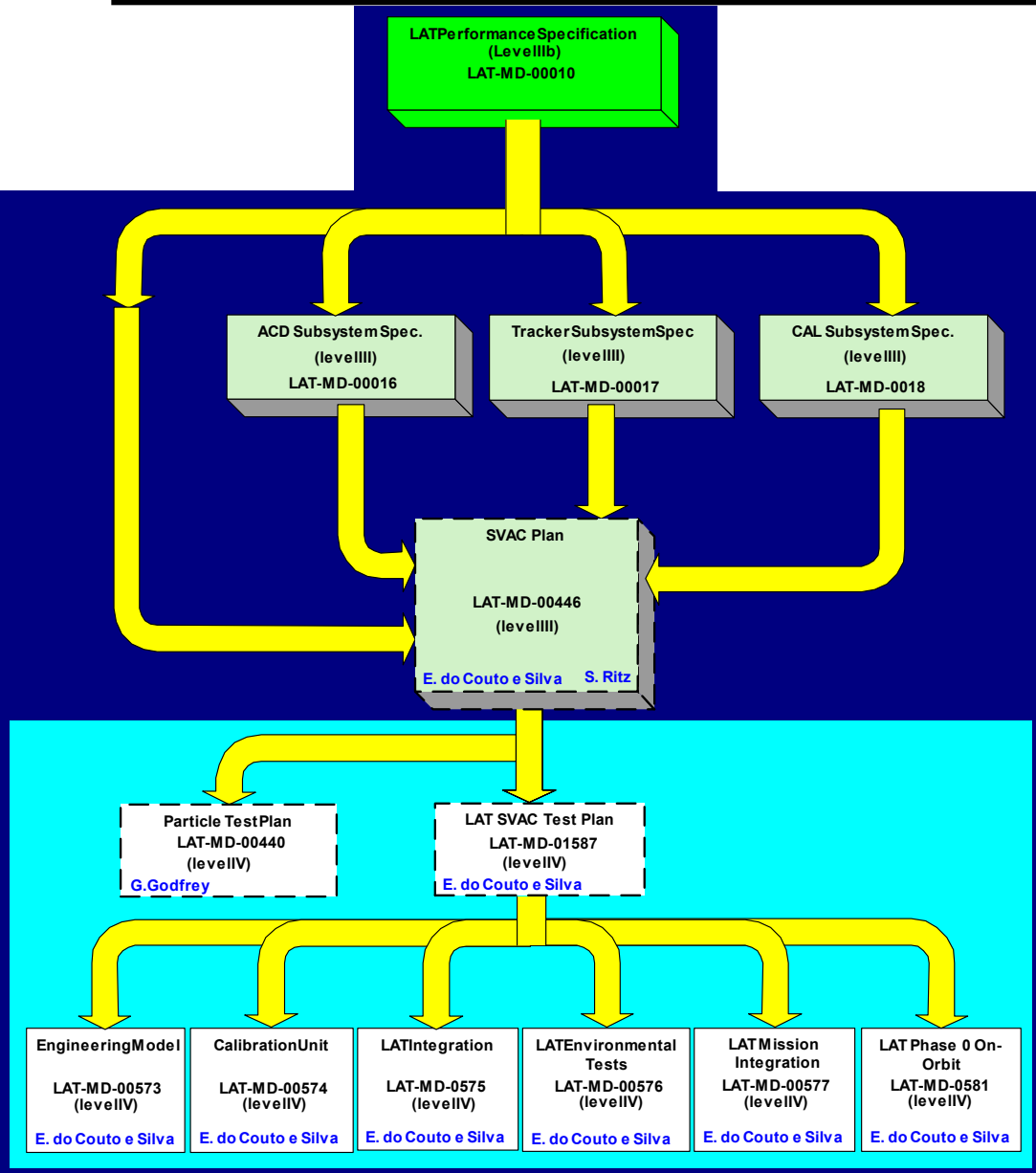


- Electrical Functional Tests
- Structural and Mechanical Tests
- EMC/EMI Tests
- Thermal Verification Tests
- Visual Inspection
- Instrument Monitoring
- End-to-end test (at ~ 35,000 ft in a jet airplane during transport to NRL for environmental tests) (TBR)

Produce a Working Instrument

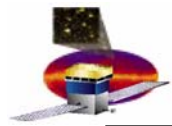


Science Performance (SE, IS, and I&T)



- Particle tests
- Calibration
- Science verification tests

Produce a Scientifically Working Instrument



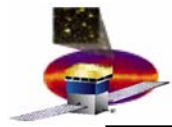
Drawing Status / Overview

- **Drawings Released so far:**
 - EM-Cal Rotation / Support Stand 31
 - Van de Graaff Support Stand 24
- **Drawing Sheet count to Release this week or before Peer Review**
 - Van de Graaff on Support Stand / Other
 - EM-Cal Rotation Assembly 5
 - Cal Rotation Interface Assembly 10
 - EM-Cal Proof Load Article 8
 - EM Single Bay Assembly 10
 - Calorimeter Lift Fixture 3

} = 36
- **Drawings to Release before CDR**
 - 1 x 4 Calibration Unit Lift Fixture 3
- **Estimated sheet count for drawings to be worked between Peer Review and CDR**
 - EM Single Bay Lift Fixture 3
 - CU X, Y, Theta Movement System 56
 - Grid Perimeter Ring (GPR) 4*
 - GPR to Grid Brackets 15*
 - LAT Tilt Over Stand 11
 - LAT Tilt Over Stand Pivot Support 10
 - ACD Integration Stand 11
 - Vibe Test Fixture 6*
 - Radiator Support 15

} = 131

*spacecraft-LAT interface specification required.



Drawing Status / Overview (Continued)

- **Items to be worked Post CDR**
 - **LAT Transport Container / Lift Fixture (significant work requires us to be well along on airplane test evaluation)**
 - **Acoustic Test SC Simulator (awaits August 03 Final Need Justifies Cost Decision)**
 - **Thermal Vac Support Kit (Includes LAT Perimeter Heat Exchanger and Vibe Test Fixture 90° Brackets)**
 - **ACD Lift Fixture, Integration Frame and Proof Test Article**
 - **CU Test/LAT/Observatory Integration Thermal – Humidity Control Cart**
 - **CU Transport Box**