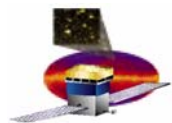**Gamma-ray Large Area Space Telescope**

GLAST Large Area Telescope: I&T Integration Readiness Review

Online Peer Review
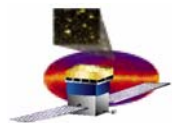## July 21, 2004

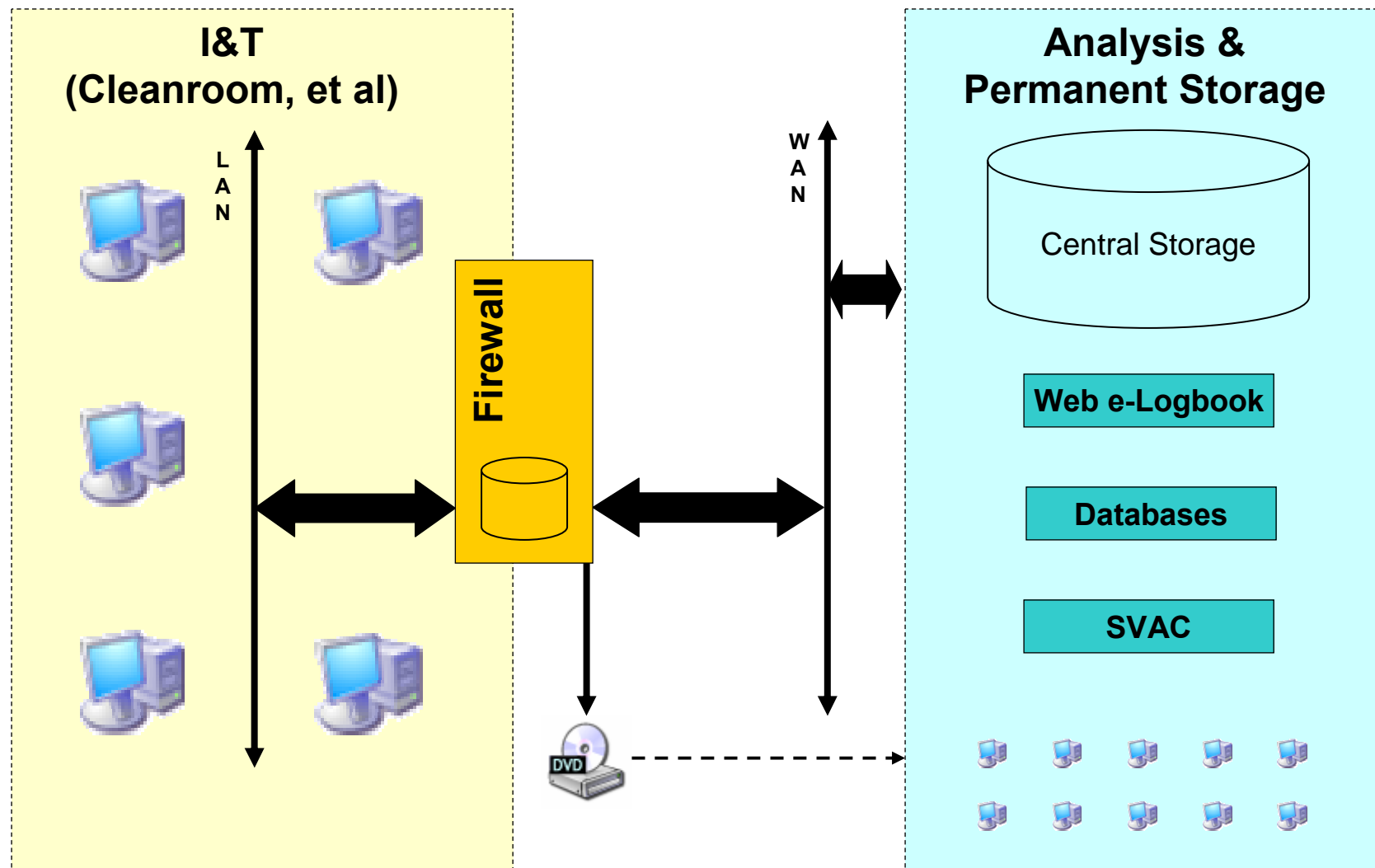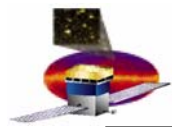## Core II

Jim Panetta
I&T Online
SLAC

Introduction

- **Data handling**
  - **Data persistence**
  - **Pipeline to SVAC**

- **Data products**

- **Data parsing**

- **Issue tracking**
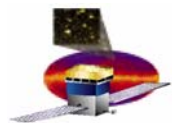 - **LATTE Issue tracker**

- **Trigger System**
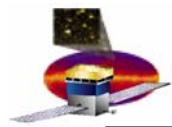
Persistent Data Transport

Data Export

- **Data must be tracked and transferred to permanent storage**

- **Export utility ensures data integrity**
  - **Export via LAN (Cleanroom Operations)**
    - **Direct export facility for run data**
      - **Temporary storage on Firewall DMZ**
    - **Database synchronization tools**
      - **Electronic logbook**
      - **Trending**

  - **Export to DVD±R (Remote operations)**
    - **Run files copied to DVD by shifters**
    - **LDF parser included on DVD**
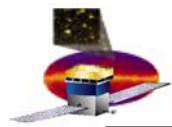   - **~20 GB/day → ~5 DVD (4.5 GB)**

Data Handling

- **Data Persistence / Handoff to SVAC**
  - **Utilize data pipeline infrastructure from SAS**
    - **Automated data processing and distribution**
    - **Highly configurable scripting**
    - **All steps logged and traceable**
    - **Web interface**
  - **Permanent storage on SLAC data farm**
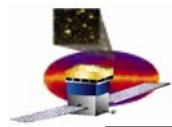 - **Database import to Oracle**

- **Currently in progress**

Data Products

- **Science data (FITS encapsulated LDF)**
  - **Includes Run Report data**
    - **Orientation, User, Instrument type, Particle type …**
- **Configuration data (XML)**
  - **HW schemas**
  - **HW settings**
- **Script test Reports (HTML)**
  - **Test Results**
  - **Plots**
  - **Calibration data**
- **Housekeeping (HSK) data (SQL compliant DB)**
  - **Alarms and Alerts**
  - **Trending**
- **Electronic Logbook database (SQL compliant DB)**
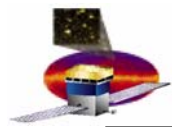 - **Run condition information**

Data parsing

- **LAT Data Format (LDF) data**
  - **Hierarchical binary data structure**
  - **Python and C++ parser**
    - **Object oriented design**
    - **Extensible**
  - **Deliverable to SAS**

- **LAT Configuration data (LATc)**
  - **Register representation of the entire LAT**
  - **Generated from / Converted to SchemaConfig XML**
  - **Parsing a responsibility of FSW**

- **Other products**
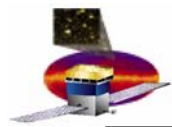 - **ACD software scalers**
  - **Similar items TBD**

LATTE Issue Tracker

- **Roundup**
  - **Free, Open Source**
  - **Web based**
  - **mySQL backend**
  - **Email communication**
  - **In active use**

- **Task Prioritizing**

- **History of progress**

- **Fast, Scalable**

- **Minimal admin overhead**

Trigger

- **Two trigger systems to support**
  - **MiniGLT**
    - **Simplified trigger system**
      - **VME card**
      - **One input supported (TEM / AEM)**
      - **Firmware emulation of trigger logic**
    - **Used in receiving tests (CAL / TKR / ELX)**
  - **GASU**
    - **Full flight trigger system**
      - **Separate hardware**
      - **Multiple inputs supported (16 TEM, AEM)**
      - **Firmware flight trigger logic**
      - **Complex architecture**
      - **Redundant system**
    - **Used in single tower and Grid based tests**

Trigger

- **Trigger set of classes defined by LAT-TD-03664**
- **Fully configurable, generalizable to both Mini-GLT and GASU**
- **Simple external interface:**
  - **Enable triggers**
  - **Disable triggers**
  - **Solicit triggers**
- **Rich internal features**
  - **Enable/disable individual LAT components**
  - **Differing paths depending on conditions**
  - **Prescaled triggers**
  - **Periodic trigger**
- **Now used by all subsystems, I&T and ELX**