GLAST Large Area Telescope: I&T Online

LAT Face-to-Face

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Overview

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Online Manager

SLAC
Objective (D. Horn):

- Determine road-map to prepare for System Test starting October 1
  - Full LAT in Building 33
  - Flight-like configuration (some EM ELX boxes left, e.g. SIU)
  - Flight-like FSW functionality
  - VSC
  - LATTE 5 *(want a different name! Espresso? CATL? TACL? CATTEL?)*
LAT Housekeeping

- Run LHK
  - Requires “small” subset of FSW
  - Probably need a special start-up file
  - Run-time parameter configuration?
  - Hardware configuration, i.e., real vs simulated 1553?
- Telemetry passed via VSC to LATTE (CATTE? Tele-LATTE? LECT?)
- Online to finalize and commission:
  - Decom process
  - Loading data into current value table (CVT)
  - Alarms and alerts
  - Archiving
  - Various clients of the CVT
- Develop operator-friendly monitoring displays
- Develop an archive playback capability

- Level of maturity of FSW, VSC and Online software is such that above can be exercised
- Should be able to make core pieces production quality in three weeks’ time
- FSW eager for Online to use the system and provide feedback
Commanding

- Started with a simulator
- Varying degrees of FSW needed
- Create generic tools
  - Start/stop LAT from/to powered off state
  - File uploads
  - Diagnostic tools...
- Update “surviving” scripts
  - Needs LCI, LATc, CFG and friends
  - Data taking script

- Level of maturity of FSW, VSC and Online is such that above can be exercised (commanding demonstrated 7/11)
- Mike: wean yourselves away from using the simulator
- Should be able to make core pieces production quality in three weeks’ time
- A generic command tester is needed
- Sergio/Shantha can provide Online with some example scripts to teach Online how to begin using the command database
- FSW eager for Online to use the system and provide feedback
Science Data Handling

- **FSW infrastructure to provide Science Data in CCSDS packets**
- **Perhaps have multiple sources**
  - Files, e.g. Monte Carlo, etc.
  - LAT
- **Packet handler**
  - **Job:**
    - Assembly
    - Time ordering
    - Elimination of duplicates
  - **Provided by JJ & Mike with help from Ric**
- **Decompression**
  - **Output format issue**
    - Easiest for existing script is LDF (augmented for new features)
    - Not optimal path, technically, nor perhaps resource-wise for FSW
    - Has implications for SAS and other off-line users
    - Current plan centered on LDF (as in block diagrams, etc.)
  - **Provided by FSW, wrappered (?) by ELX (Mike “working with Ric”)**
  - **Originally thought to be a Linux vs Windows platform issue, but JJ plans to provide the code “compilable with MSVS”**
Science Data Handling (cont.)

• Build system issues for Packet handler and Decompressor
  – Code management
  – How to transfer code base
  – Where do build system files live?
• If LDF is not provided to scripts:
  – Scripts surviving to System-Test need to change
  – Difficult to estimate size of job

✓ JJ expects about three weeks until a first order release can be ready from FSW
✓ Tony has concerns about using a stop-gap Science Data Interface solution to provide CCSDS packets to the VSC, but is too backed up to work on the real thing
✓ JJ sites two modes of operation: 1) streaming events, 2) stream of batches of events. The former is more apropos to I&T and System-Test. Compressed data will be in the second form. A packet of batched events will appear every 4 to 5 minutes.
✓ Mike suggested skipping the Decompression step for the first release since its effects are not visible to users. It can be added later (e.g., after October) as resources allow.
✓ Agreement was made that the augmented LDF API would survive to be the interface to the science data.
S/C Telemetry Handling

- 96 Analogs and binary channels managed by the spacecraft
- Unfortunately, this is probably one of the first things people will want to monitor
- Doesn’t involve FSW
- VSC provides source
  - Need to manage ITAR issues: LAT vs SA defined CCSDS packets
  - We need to be prepared to switch at observatory I&T
- LATTE (whatever) to handle data similarly to LAT housekeeping data
  - Develop operator-friendly monitoring displays

Mike considers the question of spacecraft telemetry part of “Phase 2”. The current plan calls for Amedeo to move over to the Online group after all parts of “Phase 1” are complete. He’ll take care of Phase 2 with Gregg Thayer. Phase 1 ETA is 3 weeks.
S/C Commanding

- Used to start up LAT
- Not clear to me whether this is needed earlier in time

- Spacecraft commanding is used to configure and use the VSC. What’s needed of this to operate the VSC is complete and functional. This is good enough for now.
Additional discussion

• Mike strongly urged Ric to start work on a Users’ Manual for the new LATTE
• JJ raised the question of having the Test Bed support calibration capabilities
  – “Quick” fix for Eric Siskind to make
  – OSU guys to develop code that produced charge injection FES files
  – Would like to be able to play real charge injection LDF files back through the FES
  – JJ suggested that Ed Bacho or Owen Saxton could shepherd this along, but doesn’t like another hit on his resources. Dick/JJ to decide how FSW is to best support the Calibration commissioning effort.
  – Dick wants more fresh blood in the loop
  – Dick okayed the Test Bed upgrade because the LAT as a single resource isn’t sufficiently sharable
  – Dick suggested that Eduardo provide leadership in being a key user of LAT calibration working with Online and FSW/OSU to ensure that the tools we have in place will meet our needs in System Test and on orbit, to include creating FES files and use the Test Bed to learn how to work the instrument. JJ/Dick’s idea is to get the users to start understanding the FSW/System architecture to help find holes and spread the knowledge base of what is in FSW. Calibration seems a good first candidate.
• Ric is concerned about resource demands:
  – ACD arrival at SLAC
  – Building 33 support