

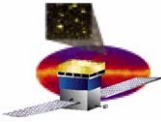
GLAST Large Area Telescope

**Instrument Flight Software
Flight Unit Design Review
16 September 2004**

Requirements

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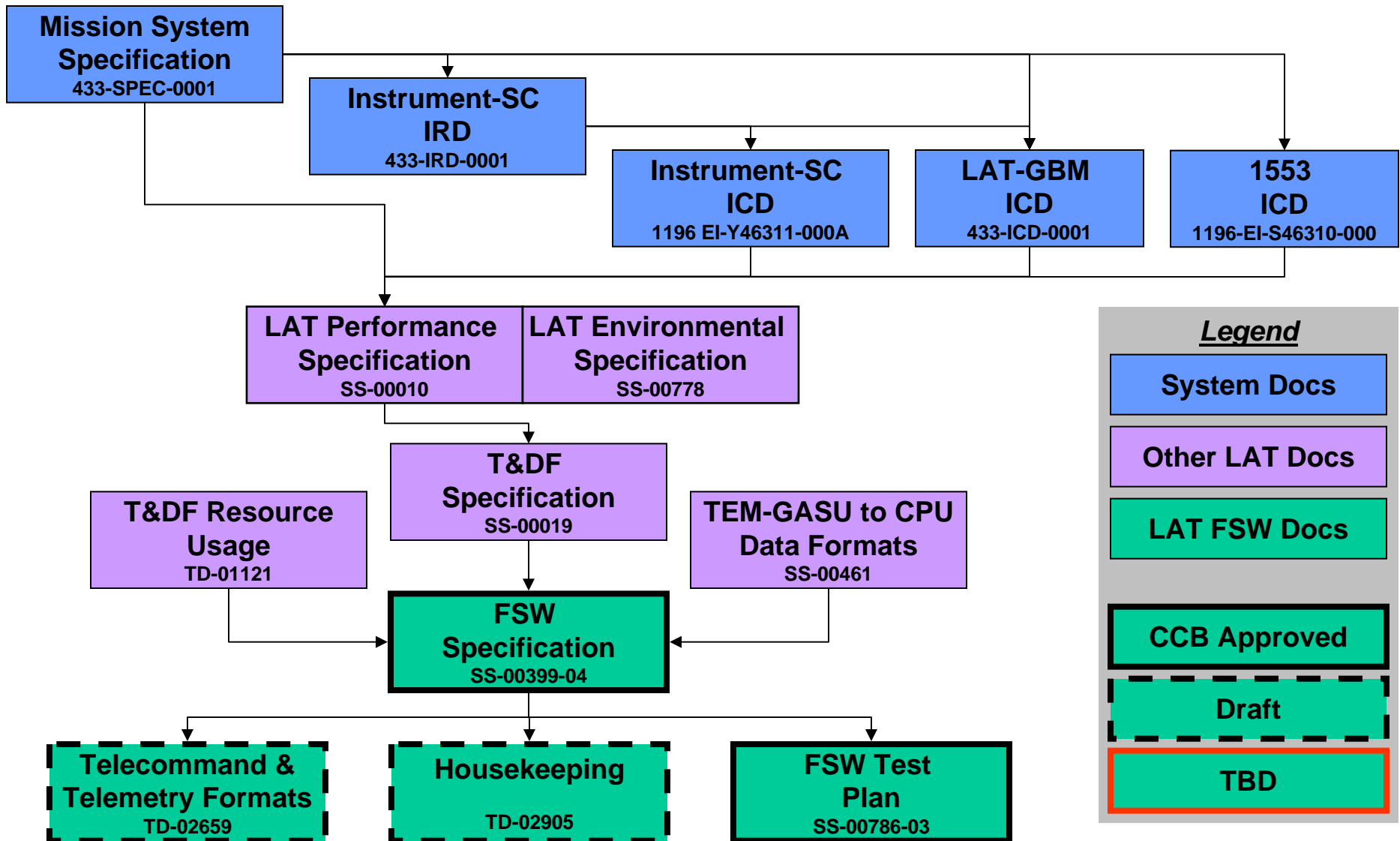


Requirements

- **Document status**
- **Significant requirement changes since EM2**
- **TBXs, open IV&V TIMs**
- **Requirements progress: Mapping to monthly demonstrations**



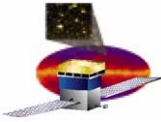
Document Tree & Status





Significant Requirement Changes since EM2

- **Specification update leading to EM2 was significant (~60 → ~200 requirements)**
- **Evolutionary updates since:**
 - **Reduced science data rate from 66 Mbps to 40 Mbps**
 - **Reduced autonomous responses for red limit violations to Alert Telemetry notification only (and only for a subset of red limit violations)**
 - **Added dwell telemetry requirement**
 - **Removed burst buffering requirement (misallocated, HW)**
 - **Added cosmic ray calibration requirements for TKR**
 - **Descoped requirement for autonomous reconfiguration after SAA**
 - **Enhanced boot, mode control requirements**
 - **Added requirements verification matrix**



TBXs and Open IV&V TIMs

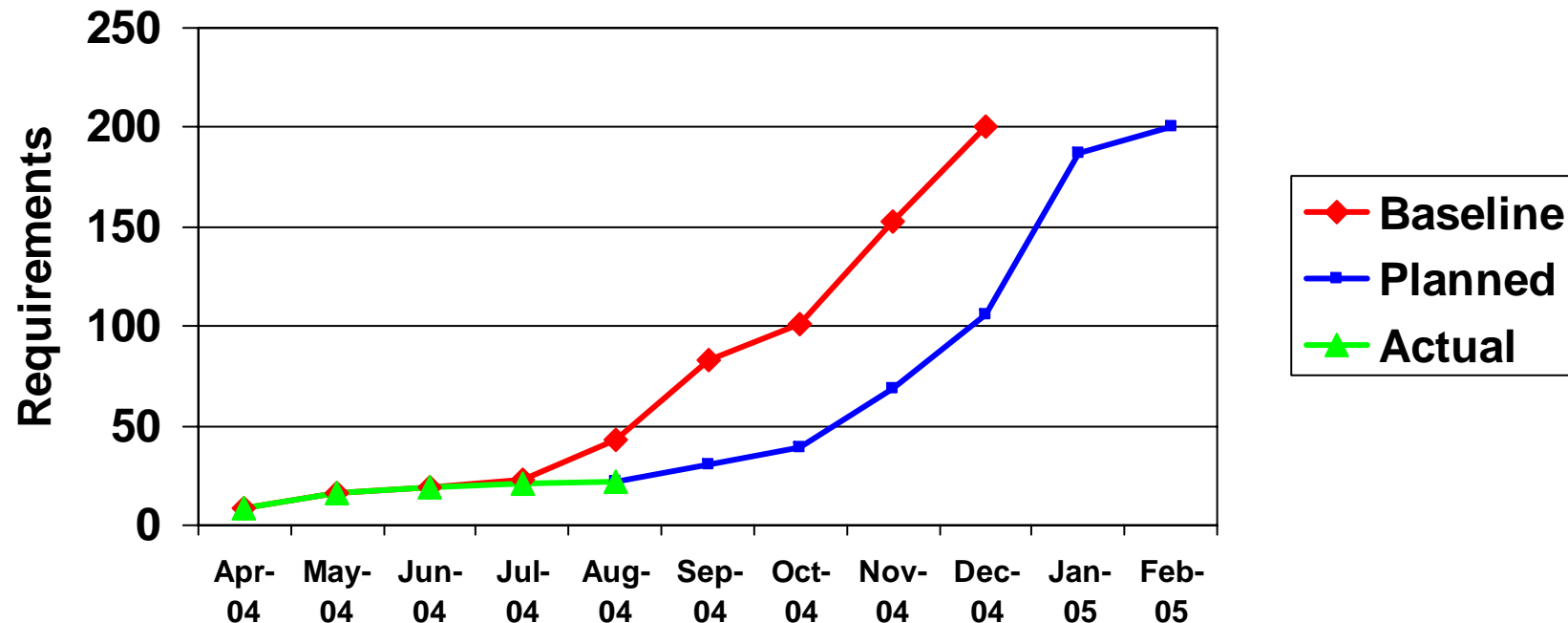
- Remaining TBXs
 - ACD current limits*
 - Configuration values for CAL, TKR Charge Injection Calibration*
 - TKR cosmic ray threshold*
 - Configuration values for ACD Trigger Mode*
 - Handful of TBRs for subsystem-provided diagnostic & monitoring requirements
 - Subsystems have identified all anticipated needs
 - LAT Engineering meeting to be held to clarify FSW requirement vs. implementation concerns
- IV&V
 - Recent telecons have closed all level 1 & 2 TIMs
 - ~10 Level 3 & 4 TIMs remaining open*

****Note: Most remaining TBXs and all open IV&V TIMs are parametric in nature, not limiting the ability of FSW development team to implement functions. All awaiting more detailed analysis by subsystems. Will be finalized well before qualification testing.***


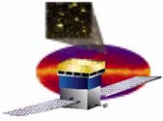


Requirements-to-Demo Mapping

Demo Status thru August



- ~10% requirements fully demonstrated as of August demo
- Additional 15% of requirements partially demonstrated
- Only fully demonstrated requirements shown in graph

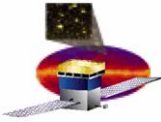


**Gamma-ray Large
Area Space
Telescope**



The image block contains the GLAST logo at the top, followed by the text 'Gamma-ray Large Area Space Telescope'. Below this is a large, colorful image of the cosmic microwave background radiation, showing a bright yellow and orange band across the center. At the bottom of the image are several small icons representing the international partners: France, Germany, Italy, Japan, Sweden, the United States, and NASA.

BACKUP



Requirements-to-Demo Mapping Data (1/3)

	Demo status (Actual/Planned/Baseline)										
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
5.2.1 Internal Interfaces [7]				0/0/1	0/0/4	x/4/5	x/4/7	x/5/7	x/5/7	x/7/7	x/7/7
5.2.2 SC Interfaces [6]					0/0/1	x/1/1	x/1/1	x/1/6	x/1/6	x/6/6	x/6/6
5.2.3 GBM Interfaces [1]					0/0/1	x/1/1	x/1/1	x/1/1	x/1/1	x/1/1	x/1/1
5.3.1 Boot [16]	7/7/7	7/7/7	7/7/7	7/7/7	7/7/7	x/7/15	x/15/15	x/15/16	x/15/16	x/16/16	x/16/16
5.3.2 Watchdog [1]									x/1/1	x/1/1	x/1/1
5.3.3 Command Processing [10]				2/2/0	2/2/0	x/2/8	x/2/8	x/8/10	x/8/10	x/10/10	x/10/10
5.3.4 Time Services [5]		1/1/1	1/1/1	1/1/1	1/1/1	x/1/5	x/1/5	x/5/5	x/5/5	x/5/5	x/5/5
5.3.5 Telemetry [10]			3/3/3	3/3/3	3/3/3	3/3/3	3/3/3	x/3/10	x/3/10	x/10/10	x/10/10

- **Actual:** Month by which the number of requirements shown have been demonstrated
- **Planned:** Based on current (as of 9/16/04) plan
- **Baseline:** Based on detailed demo-to-requirements mapping performed in June 2004



Requirements-to-Demo Mapping Data (2/3)

Demo status (Actual/Planned/Baseline)											
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
5.3.6 Deadtime [3]							x/0/3	x/0/3	x/0/3	x/3/3	x/3/3
5.3.7 File & Memory Mgmt. [21]	2/2/2	2/2/2	2/2/2	2/2/2	2/2/2	x/2/21	x/2/21	x/21/21	x/21/21	x/21/21	x/21/21
5.3.8 Event Monitoring & Delivery [10]								x/0/1	x/0/10	x/10/10	x/10/10
5.3.9 Event Filtering [3]							x/0/3	x/0/3	x/0/3	x/3/3	x/3/3
5.3.10 GRB Detection [6]								x/0/6	x/0/6	x/6/6	x/6/6
5.3.11 GRB Response [11]		2/2/2	2/2/2	2/2/2	2/2/2	2/2/2	x/2/4	x/2/11	x/2/11	x/11/11	x/11/11
5.3.12 Charge Injection Calibration [22]								x/0/22	x/22/22	x/22/22	x/22/22

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- **Baseline:** Based on detailed demo-to-requirements mapping performed in June 2004



Requirements-to-Demo Mapping Data (3/3)

Demo status (Actual/Planned/Baseline)											
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
5.3.13 Diagnostics [38]								x/0/1	x/0/38	x/33/38	x/38/38
5.3.14 Ancillary Data [4]		5/5/5	5/5/5	5/5/5	5/5/5	5/5/5	5/5/5	5/5/5	5/5/5	5/5/5	5/5/5
5.3.15 Mode Control [1]							x/0/1	x/0/1	x/0/1	x/0/1	x/1/1
5.3.16 Safety [4]							x/0/4	x/0/4	x/0/4	x/0/4	x/4/4
5.3.17 Configuration [3]				0/0/3	0/0/3	x/3/3	x/3/3	x/3/3	x/3/3	x/3/3	x/3/3
5.3.18 SAA Transit [3]							x/0/3	x/0/3	x/0/3	x/0/3	x/3/3
5.3.19 Thermal Control [15]					1/1/8	1/1/8	1/1/8	1/1/8	x/15/15	x/15/15	x/15/15

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