GLAST

The Gamma-ray Large Area Space Telescope

Mission Status
LAT IFC Meeting
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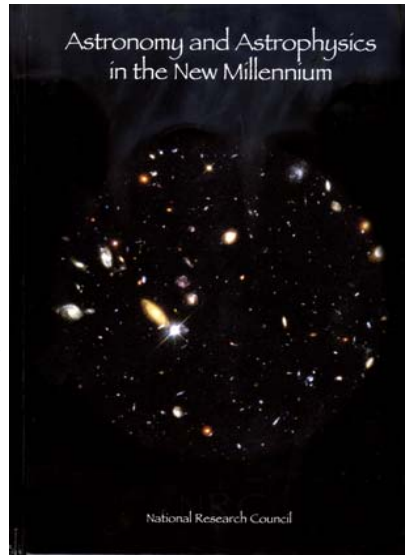
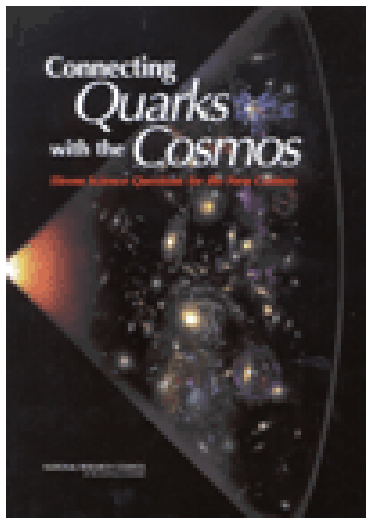
See:
http://www.glast.gsfc.nasa.gov
and links therein

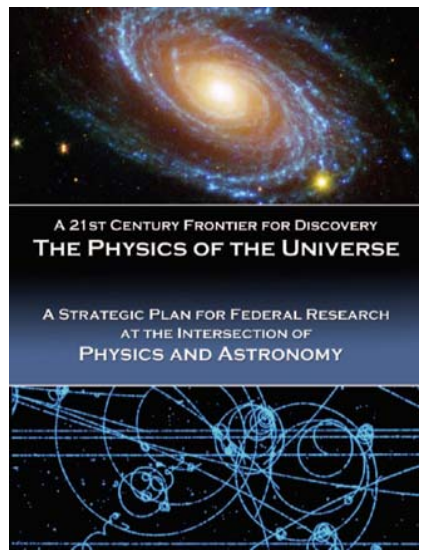
GLAST: Exploring the High-Energy Universe

- **A direct view into Nature's largest accelerators**
- **Gamma rays probe cosmological distances in a largely unexplored energy range**
- **Great potential for *Discovery***
  - GLAST top-ranked mission in its category by the National Academy of Sciences 2000 Decadal Survey (Taylor-McKee);
  - Featured in NAS "Connecting Quarks with the Cosmos" and the Physics of the Universe 2004 Strategic Plan

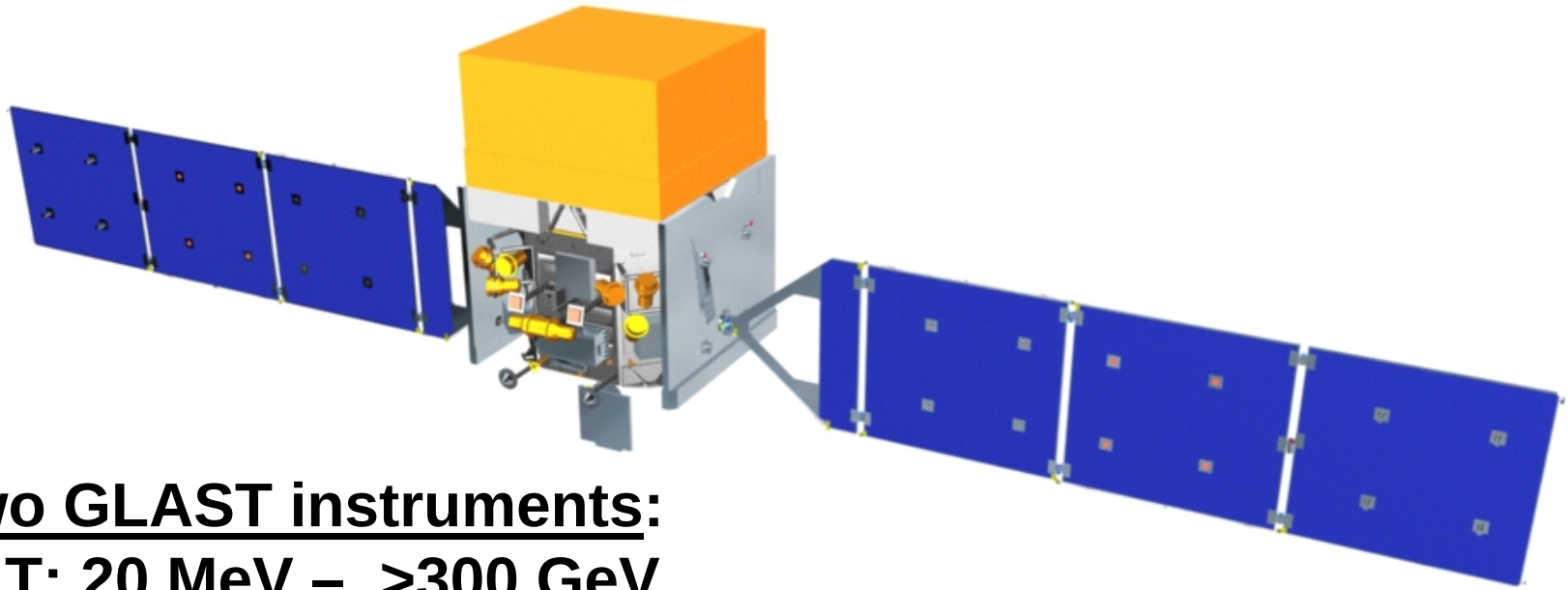




"…GLAST will focus on the most energetic objects and phenomena in the universe…it will also search for Dark Matter candidate particles."



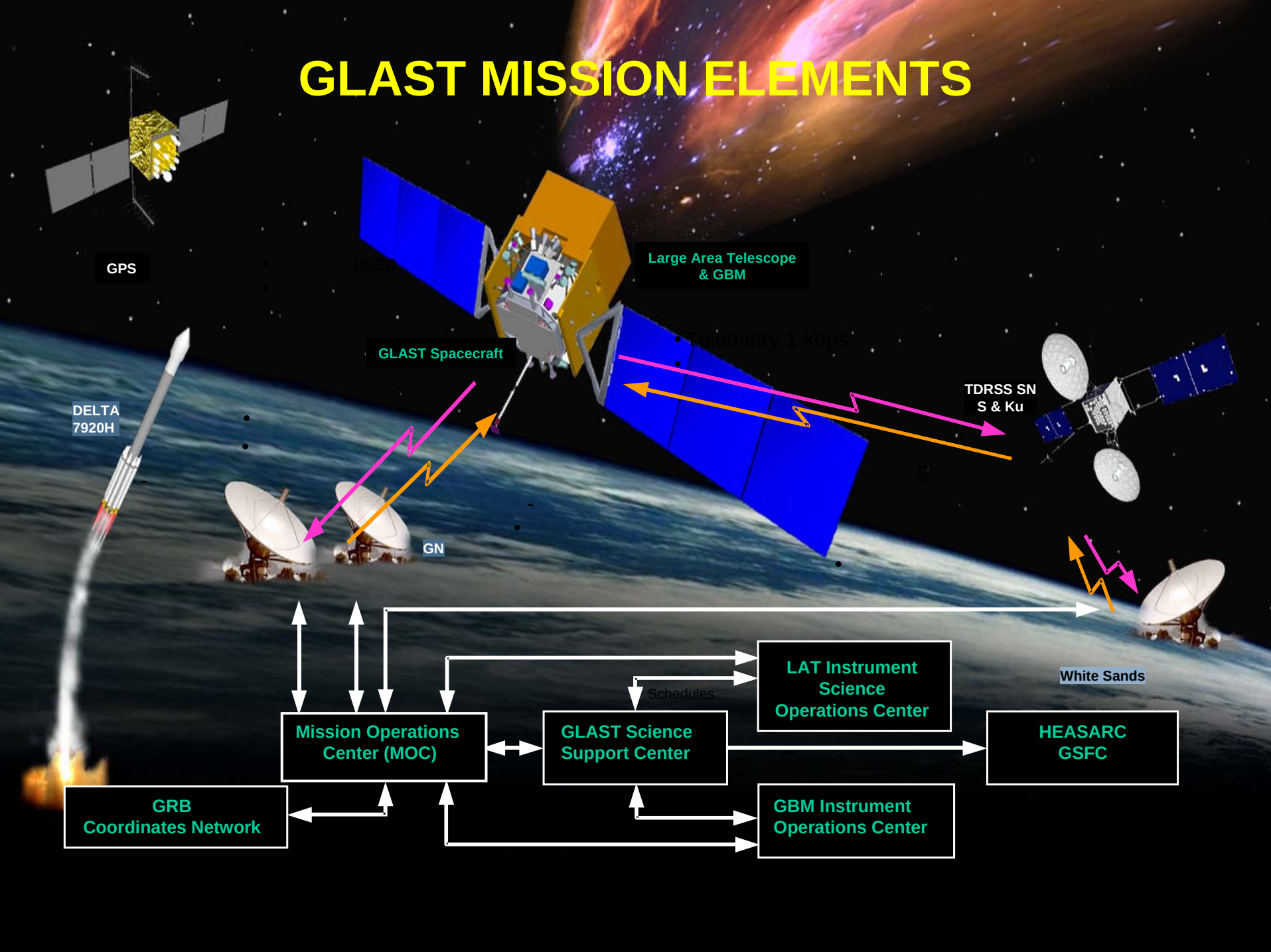
GLAST Observatory



<u>Two GLAST instruments</u>:
LAT: 20 MeV – >300 GeV
GBM: 10 keV – 25 MeV

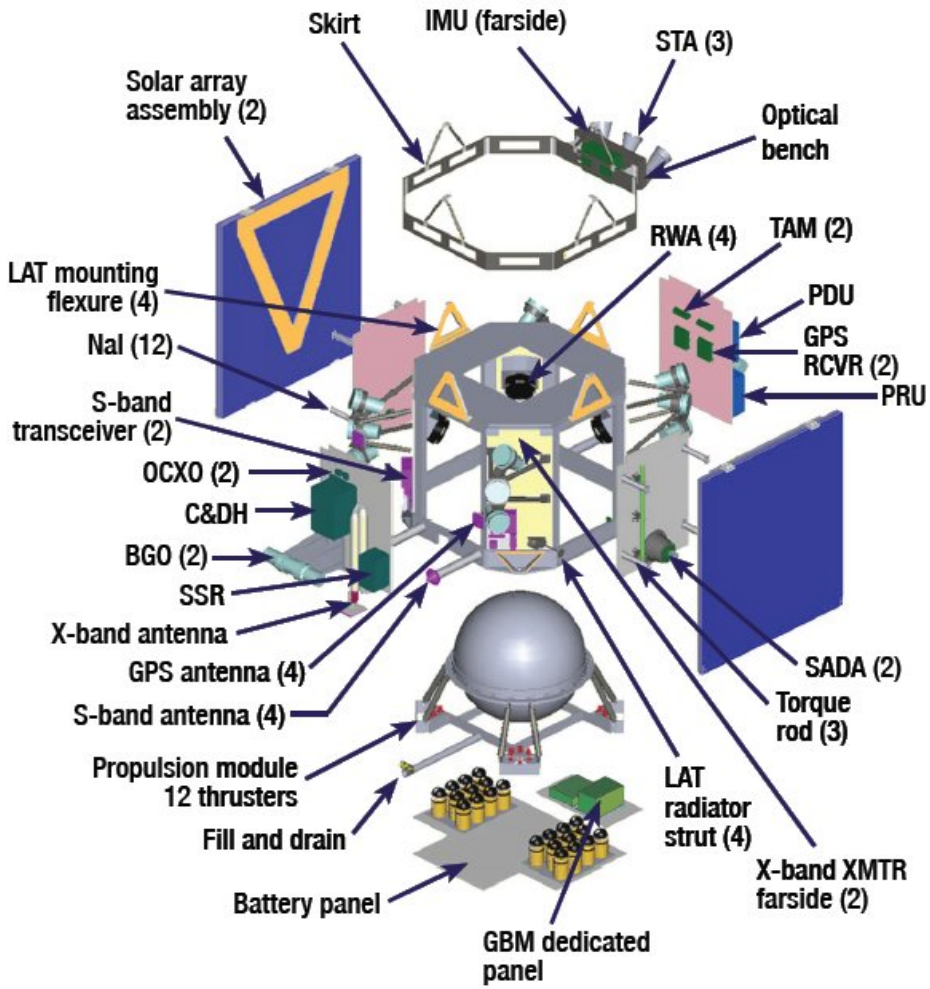
<u>Spacecraft</u>
General Dynamics C4 Systems (Spectrum Astro)

GLAST MISSION ELEMENTS



Spacecraft Status

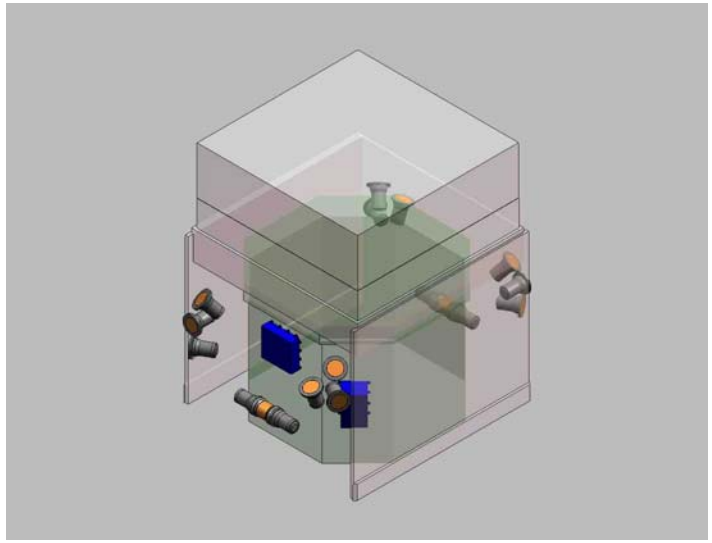
- Flight structure fabrication complete
- Mass models integrated
- Static, modal and sine structural qualification completed successfully
- Completing flight boxes, putting through qualification testing
- Spacecraft integration starts end of March



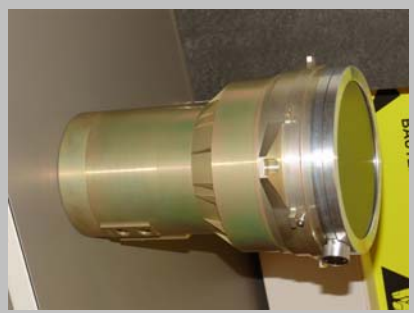
GBM Status

- Flight detectors and power supply in assembly in Germany

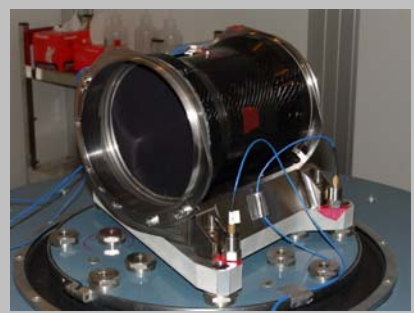
- Data Processing Unit in final stages of integration at SWRI, readying for environmental test



GLAST Burst Monitor Hardware



NaI qualification detector.



BGO qualification detector.

Science Mission Elements

- **Science Working Group (SWG)**
  - **Advises GLAST Mission on requirements**
  - **Membership includes four Interdisciplinary Scientists, instrument PIs and international instrument team representatives.**
  - **Bi-monthly telecons and ~bi-annual sit-down meetings, along with community science symposia.**
- **Users Committee (GUC)**
  - **Advises GLAST Mission and NASA HQ on Guest Observer program**
  - **Includes members from both the astrophysics and high-energy particle physics communities who are likely users of GLAST data, and Instrument PIs.**
- **GLAST Science Support Center (GSSC)**
  - **Supports guest observer program, provides training workshops, provides data and software to community, archives to HEASARC, joint software development with Instrument Teams, utilizing HEA standards. Located at Goddard.**

Engaging the Community

LAT Team and Mission Science Working Group have held ~annual joint science symposia on a wide variety of topics.

Last year:
GeV-TeV Astrophysics in the GLAST Era

This year:
The Galactic Center Region at September meeting

Observatory Status and plans for the GLAST era:

9:00	GLAST	15 min	Peter Michelson
	MAGIC	15 min	Eckart Lorenz
	HESS	15 min	Martin Tluczykont
	VERITAS	15 min	Simon Swordy

10:00—10:15 Break

	AS arrays	15 min	Gus Sinnis
	Neutrinos	15 min	Albrecht Karle

Observations, Results and looking forward to GLAST:

10:45	IR background issues	15 min	Vladimir Vassiliev
	Galactic sources (PSR1259- 63 etc)	30 min	Martin Tluczykont
	Galactic Center	15 min	Jim Buckley

11:45 – 1:30 Lunch

Continued:

1:30	AGN (TeV observations and prospects)	30 min	Frank Krennrich
	Dark Matter and tests of fundamental physics	30 min	Piero Ullio
	GeV/TeV obs of GRB	30 min	Peter Meszaros

3:00 – 3:30 Break

Particle Acceleration	30 min	Roger Blandford
Pulsars	30 min	Alice Harding

Discussion of plans, organisation, working together:

4:30 Discussion led by Rene Ong and Dave Thompson,

GLAST E/PO Program

- Sonoma State University leads GLAST E/PO (Lynn Cominsky, et al)
- Use the observations and scientific discoveries of the GLAST mission to improve the understanding and utilization of science and mathematics concepts for grades 9-12.
  - collaborates with the OSS SEU Education Forum, other SEU missions, and other partners in the OSS Support Network.
- Web based materials and printed materials (now in the hands of over 10,000 teachers)
- Educator training
  - Educator Ambassador program (over 3000 teachers trained in 20 states)
  - workshops for AAVSO and at national, regional meetings
  - minority outreach workshops
- GLAST Telescope Network: partners scientists with high-school students and amateurs.
- PBS Nova show on High Energy Astronomy and Black Holes (Tom Lucas)

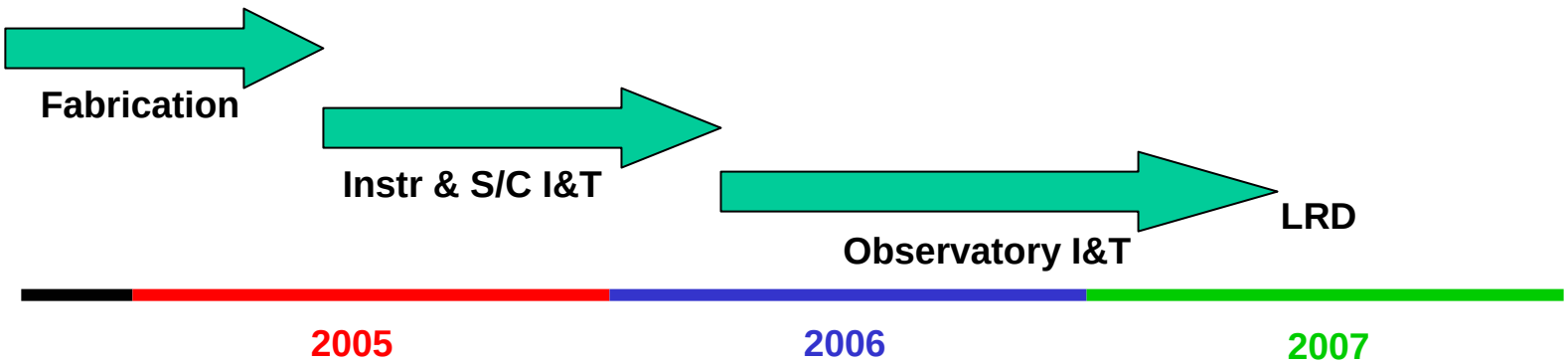
Operations Phases, Guest Observers, Data

- After the initial on-orbit checkout, verification, and calibrations, the first year of science operations will be an all-sky survey.
  - every region of the sky viewed for ~20 minutes every 3 hours
  - first year data used for detailed instrument characterization, refinement of the alignment, and key projects (source catalog, diffuse background models, etc.) needed by the community
  - data on transients will be released, with caveats
  - repoints for bright bursts and burst alerts enabled
  - extraordinary ToO's supported
  - workshops for guest observers on science tools and mission characteristics for proposal preparation

- Observing plan in subsequent years driven by guest observer proposal selections by peer review (default is sky survey mode). Public data released through the science support center (GSSC).

THE LOOK AHEAD

- The GLAST mission is well into the fabrication phase.
- LAT, GBM, and spacecraft assembly complete end of CY05.
- Delivery of the LAT and GBM instruments for observatory integration, spring of 2006.
- Observatory integration and test spring 2006 through 1st quarter CY07.
- Launch in mid-2007. Science Operations begin within 60 days



GLAST Project Organization

- Project Manager — K. Grady
- Deputy Project Manager — A. Vernacchio
- DPM/R — M. Seidleck
- Secretary — L. Barbour
- EPO Manager — L. Cominsky
- Project Scientist — S. Ritz
- Deputy Project Scientist — N. Gehrels
- Mission Scientist — J. McEnery
- Science Working Group
- Mission Manager — J. Leibee
  - Operations - T. Jennings
- Financial Mgr. — L. Tall
  - Res Analyst — A. Buckner
- Contract Officer — M. Allen
- PSM — W. Hensley
  - CM — S. Schneider
  - Schedules — M. Campbell
  - Proj Support — S. Thakker
  - Library — M. Rich
  - Data Mgmt/PS — B. Townsend
- MOGS Mgr. — K. Lehtonen
  - MOC Mgr. — D. Small
  - Systems Engineer — H. Dew
    - Systems: R. Cox, E. Canevari, B. Wagner
  - SSC Mgr. — J. Norris
    - Operations — R. Corbet
    - Data Archive & SW Support — D. Davis
    - User Support — D. Band
- Flt Software — E. Andrews
  - M. DeKlotz
  - D. Glenn
- Launch Services Mgr. — M. Goeser
  - F. Valdes (KSC)
- Observatory Mgr. — J. Bretthauer
- I&T Manager — J. Henegar
  - Systems — T. Jennings
- Systems Manager — J. Leibee
  - Mission Systems — N. Rioux
  - Systems: T. Ford, C. Connor, R. Garnett
- Instrument Sys Mgr. — T. Venator
  - Systems — M. Melton
  - LAT Instr Mgr — B. Graf
    - Elec, L. Fetter
  - GBM Instr Mgr — B. Browne
- Sys Assurance Mgr. — J. Lohr
  - Safety Mgr — D. Bogart
  - Safety Engr — J. Anderson
  - QE — T. Alvarez
  - Parts — T. Perry
  - S/W QE — D. Harmon
  - Reliability — T. Di Venti
  - LAT On-site — T. Shepherd
  - S/C On-site — M. Kunda

Power – D. Yun, E. Gaddy	CDH – J. Sonsino
ACS – E. Stoneking	Comm – P. Acosta, G. Humphrey
Propulsion – M. Underdown, J. Free	Thermal – T. McCarthy
Electrical – F. Blanchette, K. Wagner	Contamination – C. Lorentsen
Structures/Mechanism – P. Baird, C. Fransen, J. Young, M. Garrah	I&T – S. Clough

Kevin Grady
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February 16, 2005