

NASA Space Science Data

Michael Hauser
STScI

Oct 7 1999

NASA Data: Policy

- “....scientific data from NASA programs and missions will be made publicly available in usable form as quickly as possible.” (Science in Air & Space: NASA's Science Policy Guide, F. Cordova, 7/96)
 - increases return on investment
 - permits wider assessment of validity
 - stimulates new studies
 - facilitates broader public understanding

NASA Space Science Data Management Structure

<p><i>Planetary Data System</i></p> <ul style="list-style-type: none"> • <i>PDS Management Council</i> • <i>PDS Central Node (JPL)</i> • <i>Discipline Nodes</i> 			
	<p><i>Astrophysics</i></p> <ul style="list-style-type: none"> • <i>Astrophysics Data Centers Coordinating Council</i> • <i>Datatype-Based Data Centers</i> <ul style="list-style-type: none"> • <i>IRSA (IPAC)</i> • <i>MAST (STScI)</i> • <i>HEASARC (GSFC)</i> • <i>ADC (GSFC)</i> • <i>ADS (SAO)</i> • <i>Non-NASA Partners</i> 		
<p>NASA Science Themes: Planetary Exploration</p>	<p>Search for Origins</p>	<p>Structure and Evolution of the Universe</p>	<p><i>SEC Data System</i></p> <ul style="list-style-type: none"> • <i>SECDS Coordinating Council</i> • <i>Management Office</i> • <i>Service Groups</i> <ul style="list-style-type: none"> • <i>Solar Physics</i> • <i>Terrestrial Environment Imagery</i> • <i>In Situ Space Physics</i> • <i>Data Providers</i>

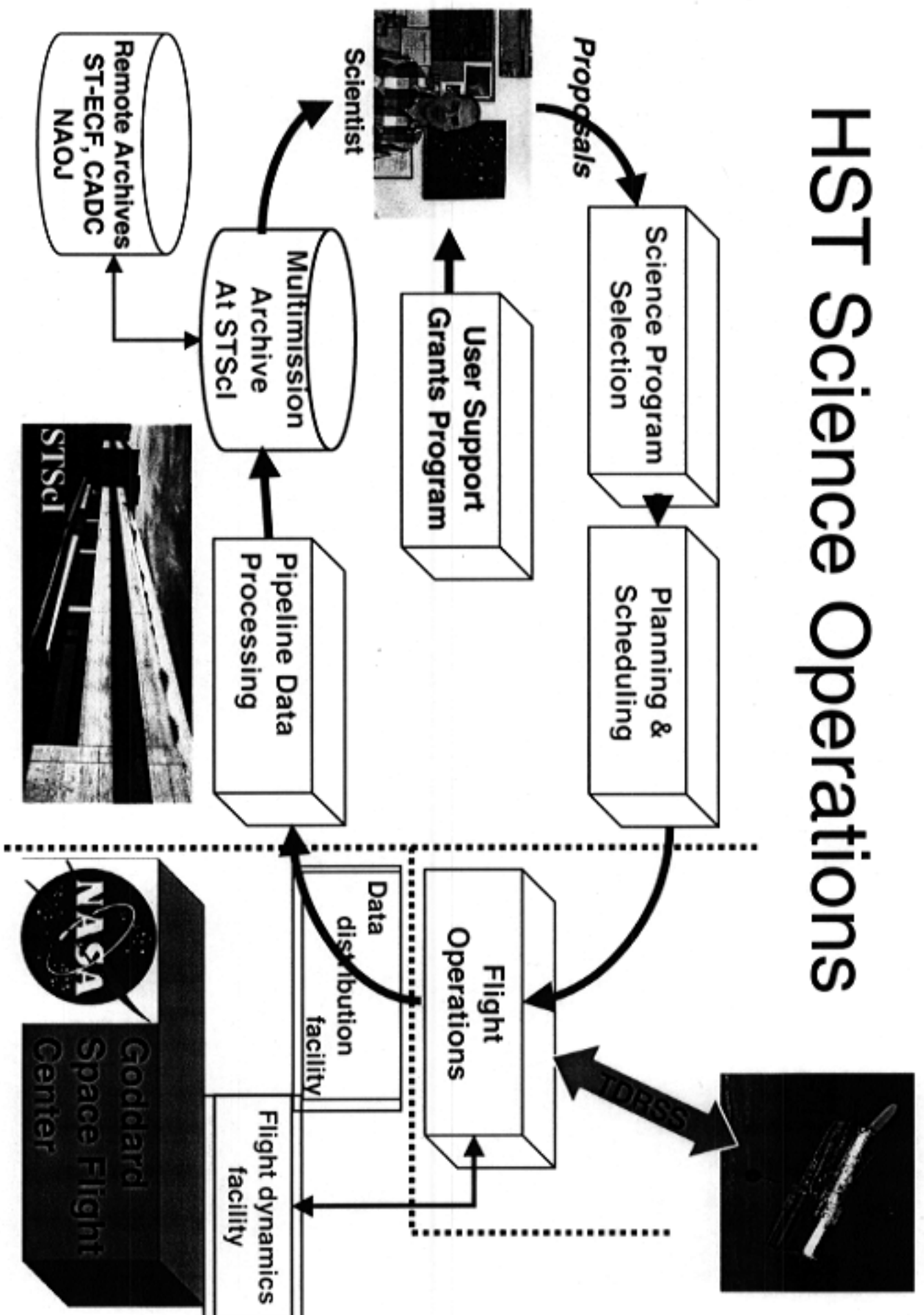
NASA Astrophysics Missions

- **Principal Investigator-class missions**
 - calibrated data sets and documentation
 - delivered to appropriate *discipline data center*
- **Observatory-class missions**
 - calibrated data sets and documentation
 - provided by *mission science center* to observers during proprietary period
 - calibrated data sets and documentation
 - publicly available after proprietary period
 - data sets supported by *discipline data center* after mission ends

Astrophysics Data Centers: Key Features

- **Standard data format (FITS)**
- **Common software environments (AIPS, IRAF, IDL) available for many platforms**
- **Sharing of software tools**
 - e.g., *ASDS* (asds.stsci.edu)
- **Distributed architecture, interoperability**
 - access data from multiple entry points
 - use data in multiple SW environments
 - access metadata and catalogs
 - access from publicly-defined http interfaces
 - e.g., *Astrobrowse* (heasarc.gsfc.nasa.gov/ab)

HST Science Operations





HST Data Processing

- **Data converted from telemetry format to FITS format**
- **Instrument data calibrated, instrumental signatures removed**
- **Calibrated data and ancillary information stored in Archive**
- **Processes monitored and controlled by flexible pipeline processor called OPUS**

HST Archive

● Users

- STScI staff (quality monitoring, calibration)
- Guaranteed Time Observers (GTO)
- General Observers (GO)
- Archival Researchers (AR)
- Public

● Access

- Data are protected (password) for authorized users (GTO, GO) during proprietary period. Unrestricted access thereafter.

● Dissemination

- ftp to user
- tape, CD-ROM (future)
- ftp to anonymous ftp site (public data)

NASA Data Systems: Acronyms

- **ADC: Astronomical Data Center**
- **ADS: Astrophysics Data System**
- **ALPS: Astronomical Image Processing System**
- **ASDS: Astronomical Software & Documentation Service**
- **FITS: Flexible Image Transport System**
- **GSFC: Goddard Space Flight Center**
- **HEASARC: High Energy Astrophysics Science Archive Research Center**
- **IDL: Interactive Data Language**
- **IPAC: Infrared Processing & Analysis Center**
- **IRAF: Image Reduction & Analysis Facility**
- **IRSA: InfraRed Science Archive**
- **JPL: Jet Propulsion Laboratory**
- **MAST: Multi-mission Archive at Space Telescope Science Institute**
- **PDS: Planetary Data System**
- **SAO: Smithsonian Astrophysics Observatory**
- **SECDS: Sun-Earth Connection Data System**
- **STScI: Space Telescope Science Institute**

HST on the Web

- STScI home page

- <http://www.stsci.edu/>

- HST Archive

- <http://archive.stsci.edu/>