

HST Mission Status Review

March 11, 2003

**Spacecraft Commanding and
Scheduling Branch (SSCB)**

Mary Galloway

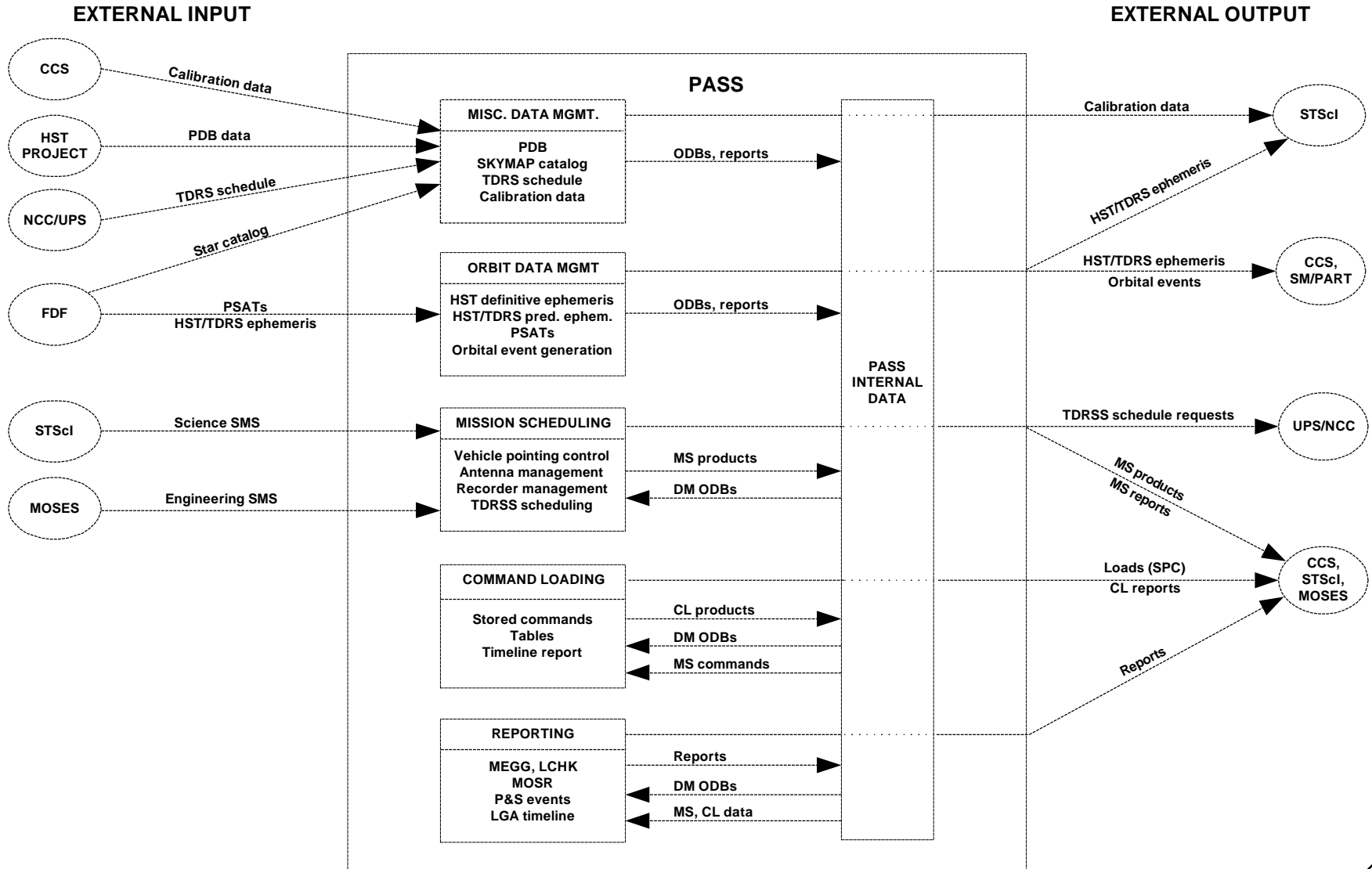
HST Applications: PASS, MEGG, FRSS

WBS: P0003.04.06.04 (Mission Scheduling Systems)

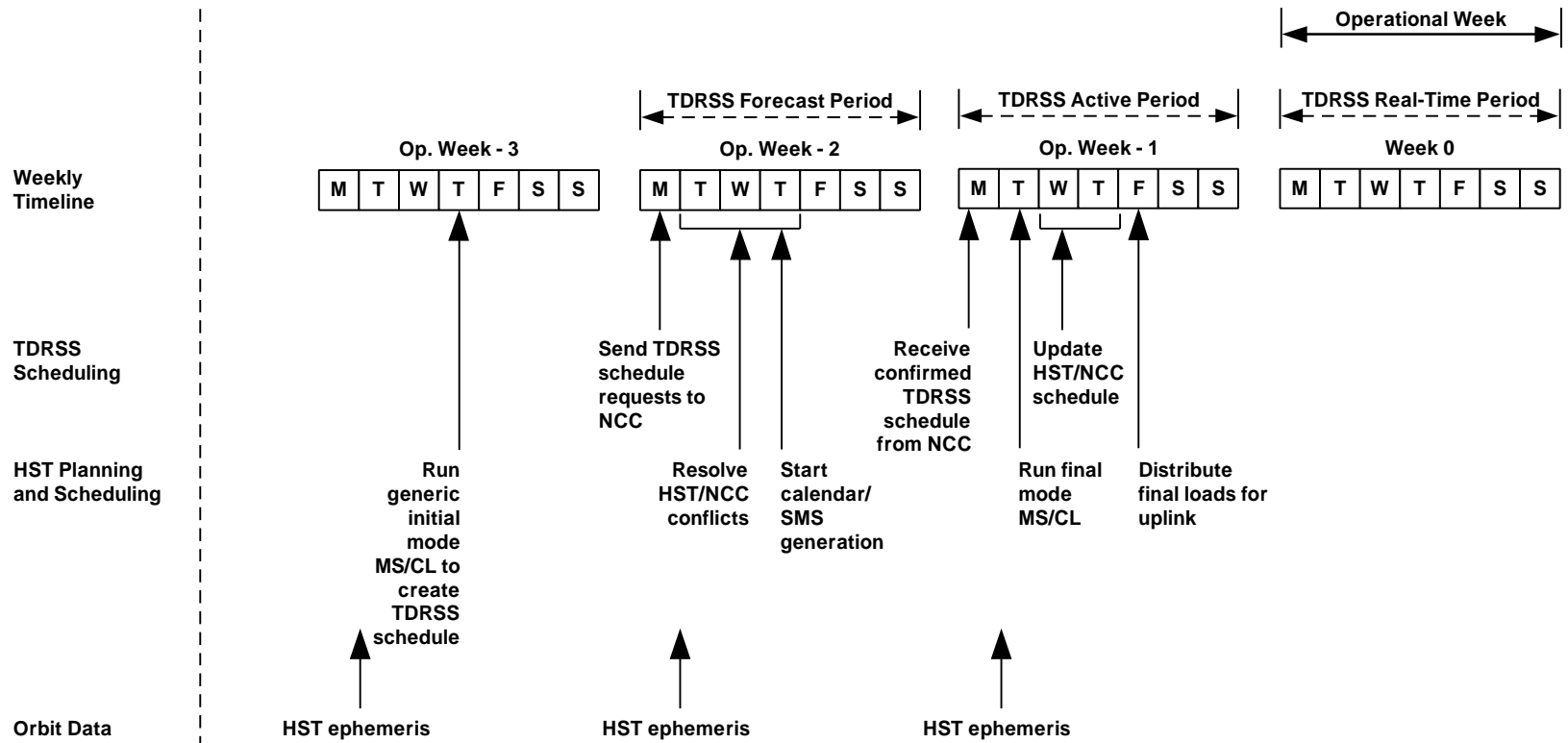
URL: *<http://pasbye.hst.nasa.gov/sepg/pnshome.htm>*

- **SSCB provides development, test, configuration management, system administration, and documentation support for the PASS, FRSS, and MEGG components of the HST planning and scheduling system**
 - **PASS: Payload Operations Control Center (POCC)
Applications Software Support**
 - **FRSS: Fixed-Head Star Tracker (FHST) Reference Star Selection**
 - **MEGG: Mission Event Graphics Generator**

- **PASS**
 - **Data management: Maintain operational data (e.g., project data base, orbit data, TDRS schedule, GSN schedules, SKYMAP catalog, calibration data)**
 - **Mission scheduling (MS): Accept, verify, and expand weekly science plan**
 - » **Compute occultation times for FHSTs and V1-axis**
 - » **Select FHST reference stars**
 - » **Manage antennas and solar arrays**
 - » **Manage science and engineering data recording**
 - » **Generate TDRS schedule requests**
 - » **Generate reports**
 - **Command loading (CL): Build stored command loads for NSSC-1 and HST486 processors**
 - **Ancillary reporting**
 - » **Verify communications commanding (load checks)**
 - » **Generate planning and scheduling events for CCS data warehouse**
 - » **Generate MOSR, LGA communications timeline, and power report**
- **FRSS: Provide FHST reference star selection software to NGSS for use in long-range planning**
- **MEGG: Generate MEGG timeline of weekly activities**



PASS Operations Timeline



MS / CL Weekly Operational Throughput and Performance

Area	Pre-V2K	Pre-SM2	Post-SM2	Post-SM3B
SMS statements	10,800	14,800	38,000	45,000
Slew	-	200	400	260
Table	20	20	9,000	15,300
Tapeuse	300	300	580	860
HST486				
Loads	10	10	10	9
Commands	10,500	11,000	12,000	10,300
NSSC-1				
Loads (ATP)	24	24	24	23
Loads (RTS)	700	700	50	37
Commands	11,000	12,000	17,000	26,500
MS performance	2.0 hr	1.0 hr	10 min	7.5 min (VMS) 7.5 min (UNIX DEV)
CL performance	2.5 hr	1.5 hr	10 min	13.0 min (VMS)

- **Port PASS and MEGG to UNIX (from ALPHA VMS)**
 - **Project started in late 2000 and consists of eight development builds; first five builds have been completed on schedule**
 - **Just completed Build 5 for mission scheduling and orbit processing, which included major ephemeris interface changes with FDF and CCS**
 - **Currently working on Builds 6 and 7 for command loader, final project data base processing, scheduling utility, and MOSR**
 - **In July 2003, scheduled to start VMS / UNIX parallel operations for major components of system**
- **Support new SMA services for second-generation TDRSs (H, I, J)**
 - **Final-mode acceptance of SMA services is operational and has been coordinated with CCS**
 - **Initial-mode generation of SMA services is in progress, to be delivered in Release 31.76 in April 2003**
- **Participate in SM4 data volume downlink working group**

- **Maintain software, documentation, and development computer environment**
 - **In last 2 years, many software maintenance efforts have been incorporated with UNIX port, especially in streamlining of data management areas and in modernization of ephemeris access package**
 - **Since January 2002, have made 6 software deliveries, for 77 problem reports, involving 1,867 modules**
 - **Recently completed maintenance efforts include FOT load checking, solar array off-nominal constraint changes, guide star separation angle correction, velocity aberration corrections, and expansion of internal array sizes**

- **Complete UNIX port**
 - **Build 8 for MEGG and LGA timeline**
 - **Development CM / build procedures and other tools**
- **Support Servicing Mission 4**
 - **Add new science instruments to MEGG**
 - **Add new science instrument events for data warehouse**
 - **Provide LGA scheduling tool for SM and safemode support**
- **Enhance TDRSS scheduling flexibility**
 - **Purpose**
 - » **Meet HST higher data volume demands**
 - » **Minimize transmitter cycles**
 - » **Reduce manual shortfall resolutions**
 - » **Adapt more readily to HST and TDRSS contingencies**

– Function

- » **Use attitude-independent views for initial-mode generic scheduling (rather than default pointing)**
 - » **Provide full NCC service duration trimming**
 - » **Use four TDRSs, with primary East-West pair and alternate East-West pair**
 - » **Provide flexibility across contacts for NCC to select views / SSA contacts (instead of PASS)**
- **Replace FOT's ICSHED report**
 - **Maintain software, documentation, and development computer environment**