



***Solar Terrestrial Relations Observatory (STEREO)
Pre-Phase-A Requirements Review***



Mission Operations

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Solar Terrestrial Relations Observatory (STEREO) Pre-Phase-A Requirements Review



Requirements

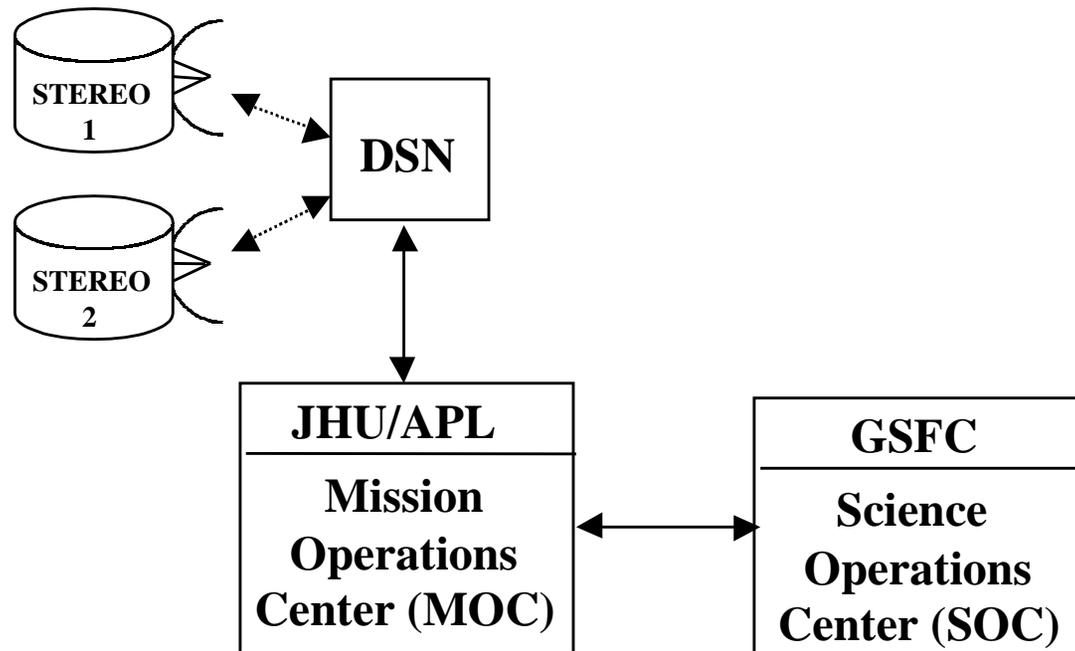
- Designed to support I&T, launch, and two years on orbit
- Plan, control, and assess the subsystem bus on both S/C
- Decoupled instrument operations
- One contact/day/vehicle
- Playback SSR data on each pass
- Support operations for two concurrent S/C
- Maintain MET correlation to UTC within 0.5 seconds and provide correlation data to SOC
- Support near real-time and bent-pipe instrument commanding, and provide bent-pipe telemetry to SOC for each pass



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Mission Operations System Architecture

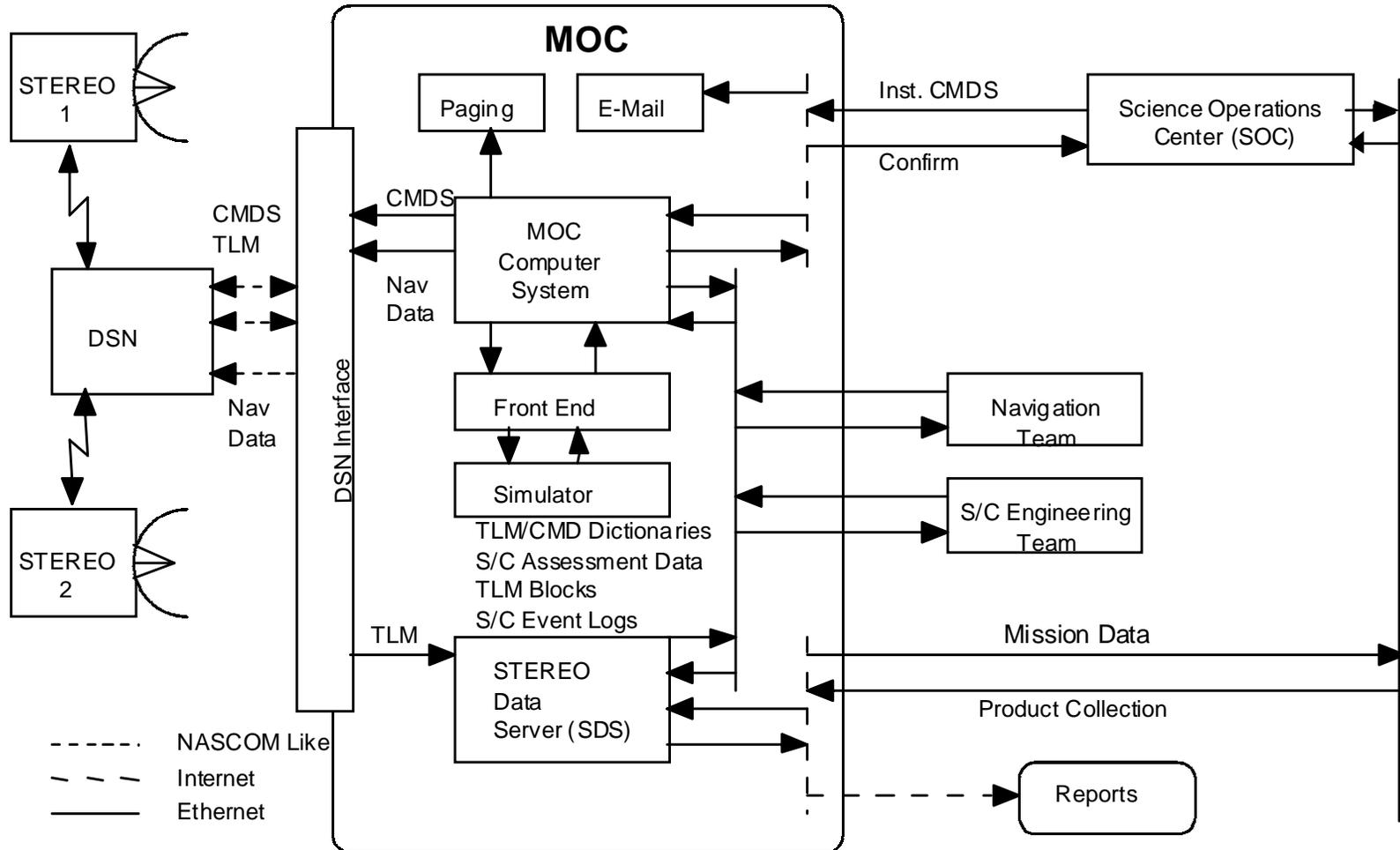




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Mission Operations Center Interfaces

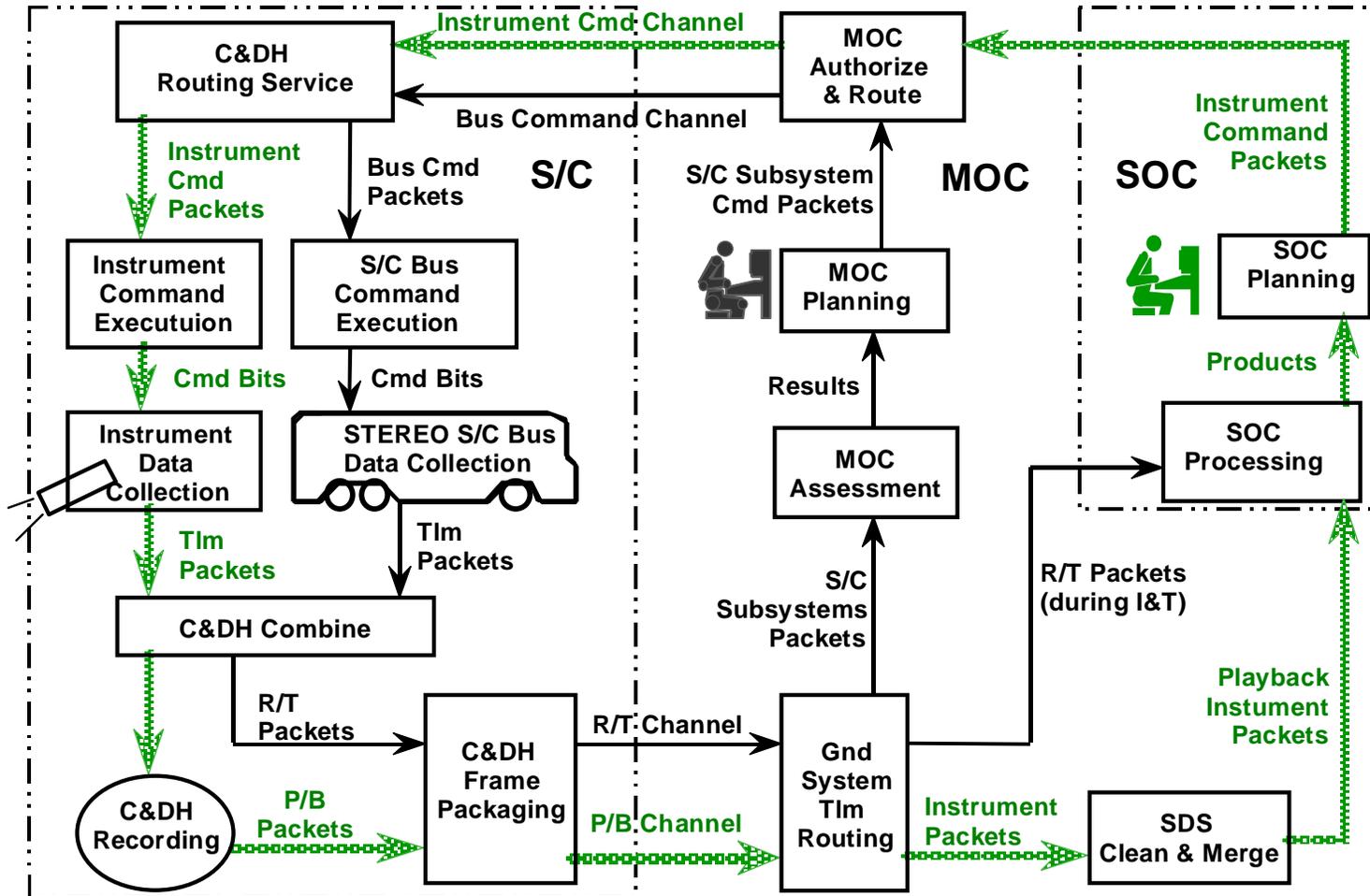




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Data Flow





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Tasks

- Operations Planning
 - Contact scheduling (NEAR)
 - Maintenance activity scheduling (TIMED)
 - Managing the uplinking of instrument commands (TIMED)
 - SSR management
 - Timekeeping management (NEAR)
 - Navigation management
 - Contact plan generation
- Operations control
- Performance assessment



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Daily Timeline

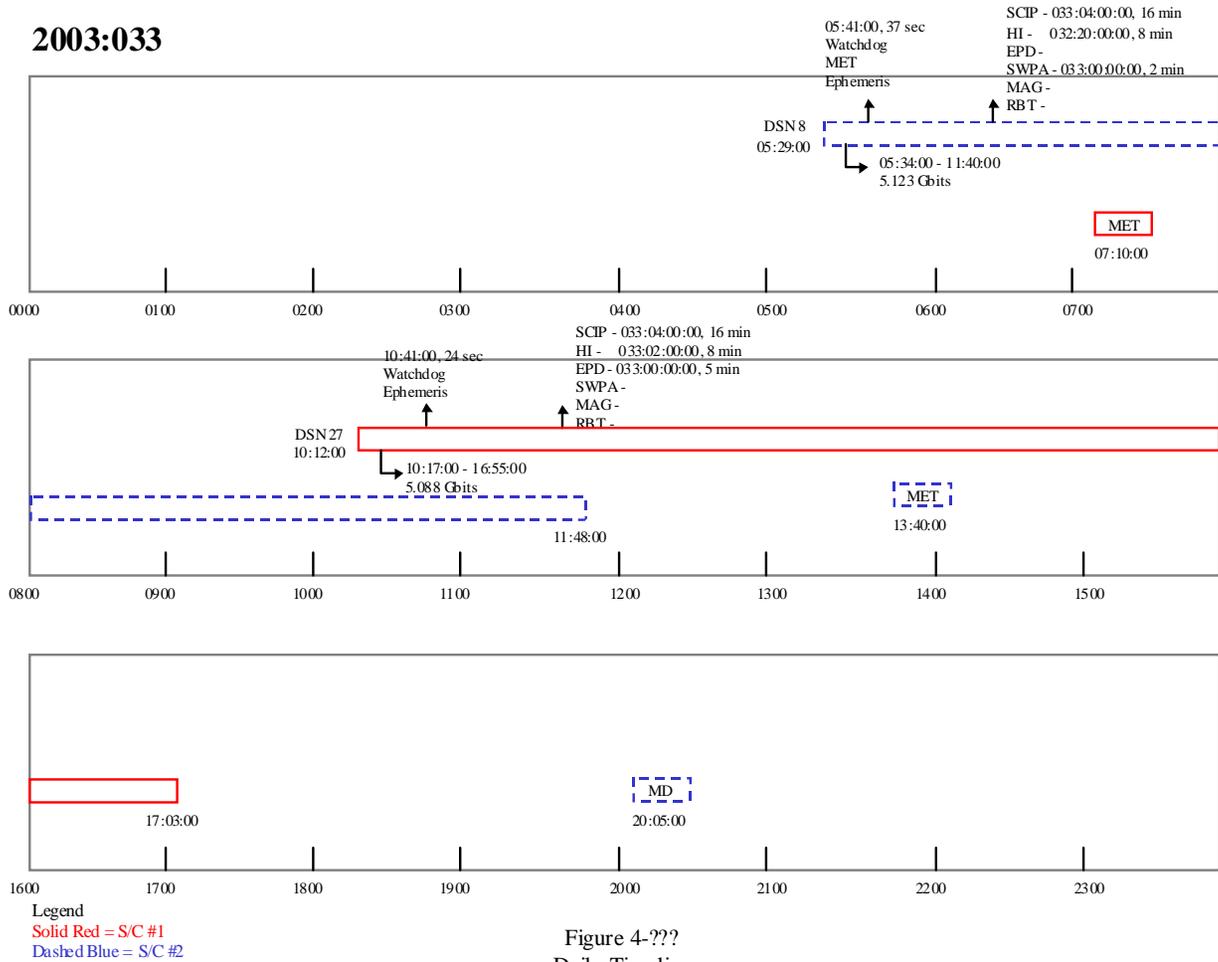


Figure 4-???
Daily Timeline



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DSN Support

- Program Service Level Agreement has been submitted
- Require one contact/day/vehicle using 34 m BWG antennas
- Navigation management of S/C to be done by JHU/APL



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Staffing

- Normal operations: Business hours, five days/week
- Seven staff total + support staff
 - Flight Manager
 - Spacecraft Specialists (4, 2/vehicle)
 - DSN Scheduler
 - System Maintenance Engineer
- Training
 - Prior to launch, Spacecraft Specialists will be part of I&T
 - After launch, use S/C Simulator for training new staff



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Autonomous Operations

Mission well suited for implementing various autonomous operations:

- S/C will have embedded autonomy (TIMED)
- Unattended contacts (TIMED)
- Use automated paging for alarms with supplemental email with detailed information (TIMED)
- Many routine operational tasks will be automated



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Design Drivers/Trade Studies

- Autonomous HGA pointing
- Lockheed Martin Space Mission Systems (CSOC) management of DSN