Payload Operations Center

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POC Operations Concept

- IMPACT POC will be at UCB for operations
  - Possibility of operating from APL for Commissioning & Emergencies
- IMPACT commands will normally originate or route through the POC
  - PLASTIC commands originate from the PLASTIC POC
  - For I&T we are investigating the possibility of commanding from other institutions. This may be desirable for commissioning and emergencies
  - Little or no routine commanding expected. Only occasional parameter adjustment.
- POC will be responsible for IMPACT state of health monitoring
  - Automated limit checking
  - Trending
  - Based on both real-time and playback data
- After commissioning, POC will be manned only during business hours as needed.
  - POC can page an Operator in the event of a problem
  - Log files will be reviewed at least once each business day
- Clean Level zero files will be downloaded automatically and distributed by the Data Analysis computers (not the POC)

POC Facilities

- POC consists of a PC class computer (running Windows 2000)
  - A second PC will be used for real-time science displays, but is not a key part of the POCC.
- POC connects to the MOC via open internet using SSH
  - As indicated in MOC-POC ICD
- Space has been reserved in the controlled access UCB Operations facility for the POC
- POC Security covered by IMPACT IT Security Plan

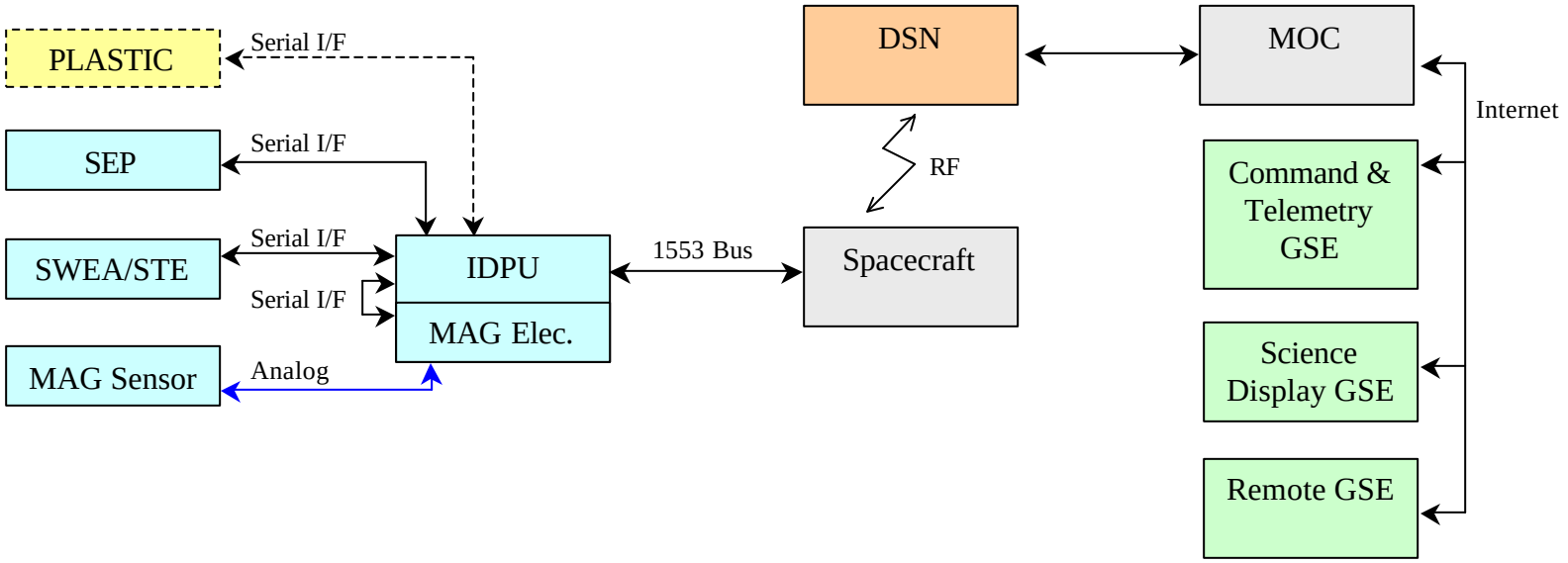
POC Requirements & Interface Definitions

- POC requirements covered by:
  - MOC/POC ICD
  - STEREO IMPACT GSE Requirements document
- POC interface to science GSE and GSE at other institutions uses the same MOC/POC interface
  - Normally hosted by the POC, but possibly by the MOC under special circumstances
- POC design is based on the HESSI GSE
  - Labwindows CVI User Interface
  - Database-driven command encoding and telemetry decoding / limit checking
  - STOL-like command scripting
- POC will not encode SEP commands
  - These will normally be provided pre-formatted into MOC/POC interface files (or forwarded real-time over a socket interface)

POC Design Overview

- The POC consists of the Command and Telemetry GSE at Berkeley
  - Same system used starting with bench testing (now) via the Spacecraft Emulator
  - Used during spacecraft I&T connected to the MOC
  - Becomes the POCC, connected to the MOC remotely
  - Interface based on the APL MOC/POC ICD
- The POC sends IMPACT commands
  - Script-based commanding
  - Formats IDPU & boom suite commands using command database
  - Can also forward commands from Co-I institutions (SEP)
    - Real-time or files
    - Same format as MOC/POC interface
- The POC displays and monitors (limit checks) state of health housekeeping data
- The POC forwards science data packets to science display GSEs or data analysis software
- PLASTIC has their own POC, developed at UNH
  - Can only send PLASTIC commands unless a special enable is sent from IMPACT POCC to allow PLASTIC to send system commands (like memory load)

IMPACT Mission Operations GSE Configuration



Commissioning

- Exact commissioning sequence still pending spacecraft constraints
  - Commission during phasing orbits is second priority to Spacecraft operations
- All instrument covers shall remain closed through at least L+1 Day to let the spacecraft out-gas
- We would like to get the IMPACT Boom out early
  - Good for Boom, contamination, science
  - Boom deployment heater must be on 30 minutes prior to deploy
- We would like MAG and SWEA on for deployment
  - Measure spacecraft magnetic and Electrostatic field
- Prior to deployment we need to check our IDPU, MAG, SWEA
  - IDPU and MAG can be brought up in a few hours
  - SWEA requires 1-2 days to get door open, High Voltage working
- SEPT, SIT doors will remain closed until Heliocentric orbit
  - Avoid sunlight on sensors
  - Can be partially checked out with doors closed
  - STE has the same constraint except that the door will be automatically re-closed when the spacecraft is off-pointing.

Commissioning, Continued

- **The remaining instruments can be powered up and checked out after the boom deploys**
  - **Total dedicated commissioning time about 5-7 days**
  - **Real-time telemetry is required during active commissioning**
  - **A somewhat enhanced telemetry rate is desirable**
  - **SIT HV is brought up over several days; this can be performed while other instruments are commissioned provided we get at least our normal telemetry rate**
  - **Other instrument performance adjustments may also be performed over the first few weeks of operation**

Normal Operations

- The Magnetometer requires periodic spacecraft rolls about the sun-spacecraft line to calibrate offsets
  - A few early on, followed by one every 6 months
  - The third axis offsets can be calibrated out statistically
- Occasional instrument parameter adjustments will be required, mostly early in the mission, less frequently as time goes on
  - Software loads are not planned but are possible
- For the most part the instruments just collect data
  - There is no observation schedule to coordinate
  - There are no campaigns required