ANITA flight software development and integration

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Outline

• Overview
• Current Status
• TV Test Software
• Engineering Flight Software
• Summary
Current Status

Doesn't Exist
Interface Only
Interface + Functionality
Fully 'working'
Current Status (II)

- Both SBS CR7 flight computers have a stripped version of Red Hat 9 installed.
- With libraries for:
  - SBS temps
  - Acromag
  - PlxLinux (SURF/TURF)
  - Whiteheat (for GPS)
- All code written in ansi C.
- Maintained in a CVS repository at Ohio State.
- Using Doxygen documentation system.
Palestine Test Overview

• Palestine will be the first time that so many pieces of the real flight hardware have been operated simultaneously:
  – Spaceworks Crate, SBS CR7, SURF, TURF, Acromag, GPS (x2), Housekeeping box, Sensors, Power box, Telemetry board (??), ...

• All components have had their software exercised individually (or in small groups).

• Assuming all the hardware works Palestine will offer an excellent opportunity to test and improve software in preparation for engineering flight.
Palestine TV Test Software

- We have simple software for the following hardware:
  - SURF
  - TURF
  - GPS (both ADU5 and G12)
    - via Whiteheat (the Red Hat 9 drivers slightly buggy)
  - Housekeeping
    - Acromag
      - Not tested with Housekeeping box and real sensors.
    - SBS on board temps (simple, works)
  - Other?
Palestine (breakdown)

- **Acqd**
  - Will use (initially) Ped's modified versions of Shige's Minnesota code.

- **Hkd**
  - One program to read out Acromag and SBS temps.
  - Separate relay control program (if relays are controlled by Acromag)

- **GPSd**
  - One program to set 1pps and read out G12.
  - One program to read out ADU12.

- **Other**
  - Maybe
Engineering Flight Software

• Must have:
  – Complete data path from antenna to ground
  – Autonomous software operation
  – Fully integrated:
    • Acqd, Triggerd, Eventd
    • Prioritizerd (minus the prioritizing)
    • LOSd, Cmdd, GPSd, Hkd
  – Telemetry is biggest addition to Palestine software
Summary

• Have working code for Palestine test
  – Test will be first large scale software workout
  – At Palestine all programs will be autonomous

• For engineering flight:
  – Software must be integrated
  – Particularly with telemetry