RAL Proposal

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SIMULATOR FUNCTIONS

- 1553 debugging using commercial s/w package

- Normal CDMS simulator mode
  - 1553 monitoring available
  - BC + BM

- Self-test mode using 'Instrument Simulator'
  - BC + RT
  - Useful for SCOS 2000 (or equivalent) testing in absence of instrument.

BASELINE SYSTEM COMPONENTS

- Mini-tower PC, NT4.0

- Systran Gold+PCI 1553 Card

- LOBT time card? - to be implemented in phase 2 if required

- Systran Gold Express32 : commercial package

- Labview software delivered as stand-alone executable

SYSTRAN 1553 Card

- DSP on-board, no host interactions within a subframe

- Bus-List table controls polling on 1553 bus to 1uS resolution

- Dual-port RAM

- Multi-function card can act as BC, BM and RT simultaneously

- BM contains elapsed time counter, could act as LOBT

- Counter has external input and sync output

- Counter used to time bus messages in BM mode

- Labview VIs provided

FIRST/Planck CDMS Simulator

BUS MONITOR SOFTWARE

- Commercial package: Systran Gold Express32

- Simple to use, windows program

- Demo version: http://www.systran.com/ftp/53/sw/gxwin32.exe

- Bus message timing to 1uS or ~8uS if combined with LOBT

- Sends test 1553 messages

- Single-shot or repetitive

- On-screen monitor displays and logging to disk

CDMS SIMULATOR SOFTWARE

- 'Written' using Labview, graphical programming

- Aids quick development and modification

- Labview drivers for 1553 card

- We are a hardware group (normally we would be building the DPU), with some software people.

- Extensive use of previous simulators on SOHO, MSG, Huygens, Smart1 etc.

- Labview has TCP/IP handling - may perform Router function?

- Labview will be used for Test Equipment Interface, with common CCSDS packet interface over TCP/IP.

- Stand-alone executable - does not required Labview licence

DEVELOPMENT PROGRAMME

- Propose two phases
- Phase 1:
    - Conform to implementation defined in Astrium study (eg polling table)
    - Use LOBT on 1553 card
    - Pre-delivery acceptance test at RAL
    - Deliver units to DPU/software developers only in May 2001 (2-4 units)

- Phase 2:
    - After Prime confirms implementation details in Sept 2001
    - Custom LOBT card if required
    - Deliveries to Users, early 2002

SUPPORT AND MAINTENANCE

- This is the most difficult area
  - Software delivery only would be preferred
  - If 'Black box' approach, would make all units identical, as per baseline.

- Support
  - DPU acceptance test with ESA, is this the formal CDMS sim acceptance?
  - Installation at users site, if required
  - Software bug fixes
  - Post delivery fixes carried out at RAL, by return or exchange of unit
  - Support only for stand-alone version, not users source code changes.

COSTS

- Software, Phase 1 and 2 deliveries

  – Stand-alone .exe and Labview source, provided free

- Hardware cost (baseline configuration only) ~£8k if RAL supplied

- Users will be charged for

  – Installation of baseline system

  – Exchange of failed hardware

  – Support visits to users site

- Specification changes may not be possible after May 2001; anything other than minor changes may have programme and cost impacts on ESA and instruments.