SpaceFibre Discussion

Glenn Rakow – NASA GSFC
SpaceWire Steering Committee Meeting
ESA-ESTEC Noordwijk, Netherlands
January 19, 2007
SpaceFibre Future Missions

- Currently NASA has no planned missions using SpaceFibre
  - Orion (CEV) has selected AS5643 (1394b)
    - No backup plan to AS5643 exists
- DOD has satellite missions with performance requirements that would require a data bus similar to SpaceFibre
  - Data rate in Gigabit range
- NASA has supplied money to develop SpaceFibre
  - 0.1 Full Time Equivalent (FTE) for FY07
Proposed Additional High-Level Requirements

• Compatible with AS5643/1 being developed for Orion (CEV)
  – Defines physical layer only
  – SAE Aerospace Standard
  – Active transformers for longer distances
  – S400 Copper Media Interface Characteristics over Extended Distances

• Compatible with speed options of AS5643
  – S100, S200, S300, S400, S800, S1600, S3200
  – Can allow option for alternative rates as well?
Trades

• The high level trade study presented at 2006 MAPLD
• Many lower level trades - examples:
  – Coding definition
  – Initialization sequence
    • Continuous bit stream?
    • Control code types
    • Definition flow control
    • How to synchronize state of receivers descrambler with the state of remote transmitter’s scrambler?
  • Power management
  • Speed negotiation
  • Etc.
  – Frame types
  – Frame size
  – Error detection coding
  – Error recovery
  – Scrambling polynomial
  – Etc.
Next Steps?

• Should we create separate working group for SpaceFibre to share ideas and develop concept?
  – Monthly?
  – Bi-weekly?
  – Proposed meeting time
    • 15:00 Europe/Amsterdam - 9:00 U.S./Eastern
  – U.S. Industry and other government agencies would like participate