Client Interview
7 October 2005

• Needs
  o A study that allows
    ▪ Convince a space craft system engineer to use LVDS designs for reconfigurable electronic systems
    ▪ Provide the documentation to allow the implementation stated above

• Specifications
  o The circuitry will be such that given
    ▪ 2 source
    ▪ 2 destination nodes
    ▪ Transmit from either source to either destination given a specific control signal is sent to switch the source node to another.
    ▪ Desirable – go to two destinations from one source – if we have time and energy.
  o Proof of concept to show that LVDS communication is a viable implementation method.
    ▪ We want to demonstrate with four nodes a system to compare differential, sequential communication verses single-ended, parallel communication.
    ▪ Power consumption
      ▪ Watts per bit
    ▪ Circuit board area – specifically on the communication (not to include the data source and destination modules within the area).
  o Constraints
    ▪ We need a total of 800 data bits per second (control bits means more bits per second)
    ▪ We have an unknown path delay.
      ▪ Robust – should function with different delays in the communication path
    ▪ No errors detected in the bit error rate test in 15 minutes of continuous operation
    ▪ All on one printed circuit board

• Deliverables
  o Reports
    ▪ Compare the two implementations (serial vs parallel) for power and area
    ▪ Describe a design flow using the Cadence Tools
    ▪ Report should have enough detail to pass on to someone else to duplicate the design
    ▪ BLUF: Proper documentation
  o Hardware
    ▪ Demo a working serial system meeting the specifications above.
    ▪ Instrument as necessary to demonstrate the specifications
      ▪ A way to report BERR
      ▪ A way to measure and report power consumption