Brief Report on VVS and FS Subsystems
January 26, 2011.

VVS (Variable Voltage Supply): (Team: Matthew Landavazo, Chris Yelton)

Taylor University was using the Linear Technology's LTC4642 serially controlled 16-bit DAC and LT1678 op amp to achieve a +/- 5V VVS.

DAC Datasheet:http://cds.linear.com/docs/Datasheet/26412fb.pdf

Applications:

- High Resolution Offset and Gain Adjustment
- Process Control and Industrial Automation
- Automatic Test Equipment
- Data Aquisition Systems

Op Amp Datasheet: http://cds.linear.com/docs/Datasheet/16789fs.pdf

Applications:

- Strain Gauge Amplifers
- Portable Microphones
- Battery-Powered Rail-to-Rail instrumentation
- Low Noise Signal Processing
- Microvolt Accuracy Threshold Detection
- Infared Detectors

Taylor University used the DAC in a configuration labelled “Typical Application” in the DAC datasheet on page 1. The op amp chosen was also straight off the datasheet as the recommended op amp to use. The op amps come in dual and quad packages, dual packages costing between five and six dollars. The DAC was more around 20 dollars. These two chips will implement an entire bipolar system and should meet our needs.

Other considerations however include using the built in 12-bit DACs of the proposed CPU. A metting between CPU and VVS groups will be held this week to determine if the CPU DAC will be suitable for our needs. We will also cover additional hardware in order to implement bi-polar operation.

FS (Fake Satellite) (Team: Matthew Landavazo, Alan Huynh)

Emulating the Satellite is going to require close collaboration with the CPU team and SPA teams. We speculate that an HCS12 based micro-controller will be plenty to emulate the satellite. Emulating fake instruments can be accomplished on the same board or if necessary using FPGA(s).

There are three things that need to be addressed before we can continue with the an emulation testbed.

- I2C bus clock speed
- Acquisition of possible emulation hardware/software from satellite team
- Purchase of a micro-controller.

If I recall correctly, you have asked about the I2C bus and we're awaiting reply. You have also asked about supply of possible testbed equipment for which we are also awaiting a reply.

As for the micro-controller we know that an HCS12 will more than handle our needs in our testbed. Also we will be familiar with the architecture since we used the DRAGON board in EE308 which used and HCS12. However the DRAGON board was a very full featured board and has a lot of functionality and features we most likely will not need.

I have found the following board from Wytec, the same company the produces the DRAGON board.

http://www.evbplus.com/9s12/minidragon+USB_9s12_hcs12.html Product Information

http://www.evbplus.com/purchase.html Ordering Information

Price for schools and students is $109. This evaluation board offers USB connectivity and the layout is ideal for connecting external hardware, so it's features are very basic. It features a large I/O pin availability as well as a small prototyping area. This should be ideal for our needs as it is very basic. If we couple this with itself or FPGA(s) we can test the SPA interface functionality using a logic analyser.