Port Card for Run IIb

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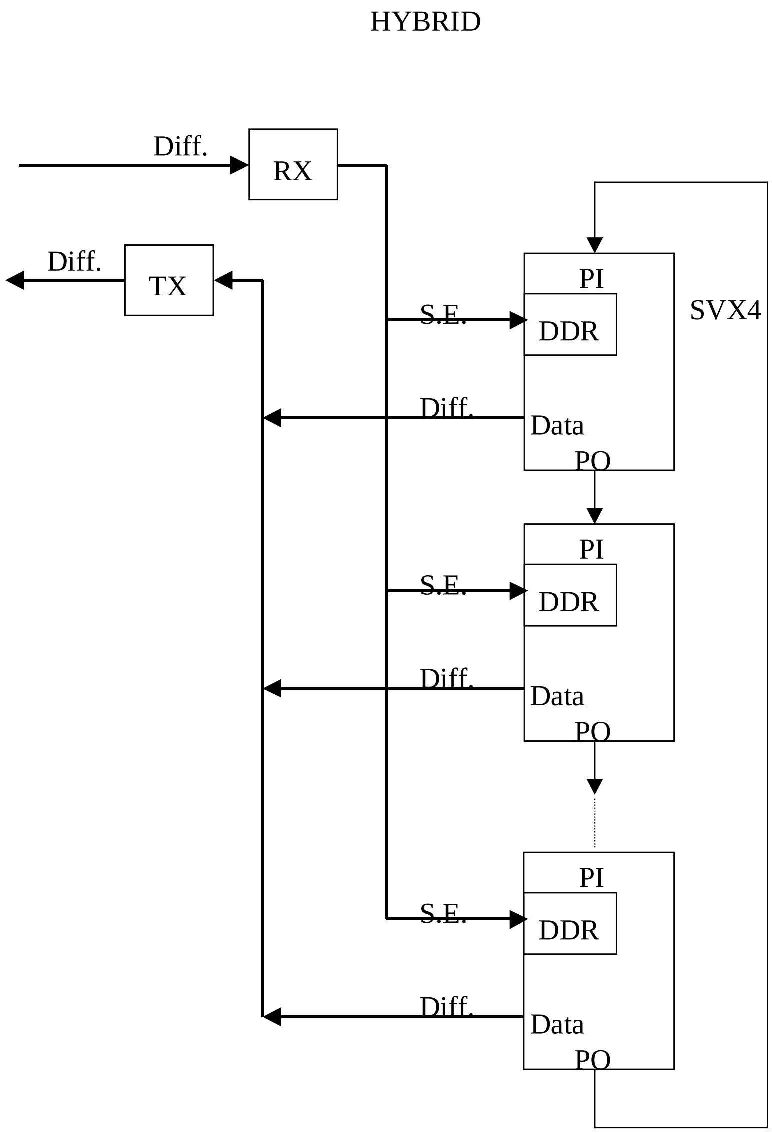
Objective:

- An upgrade where we use as much as possible tested technology.
- Simplicity.
- Can we design a system with no port card? Or a “high mass”, normal G10 board circuit?

Points:

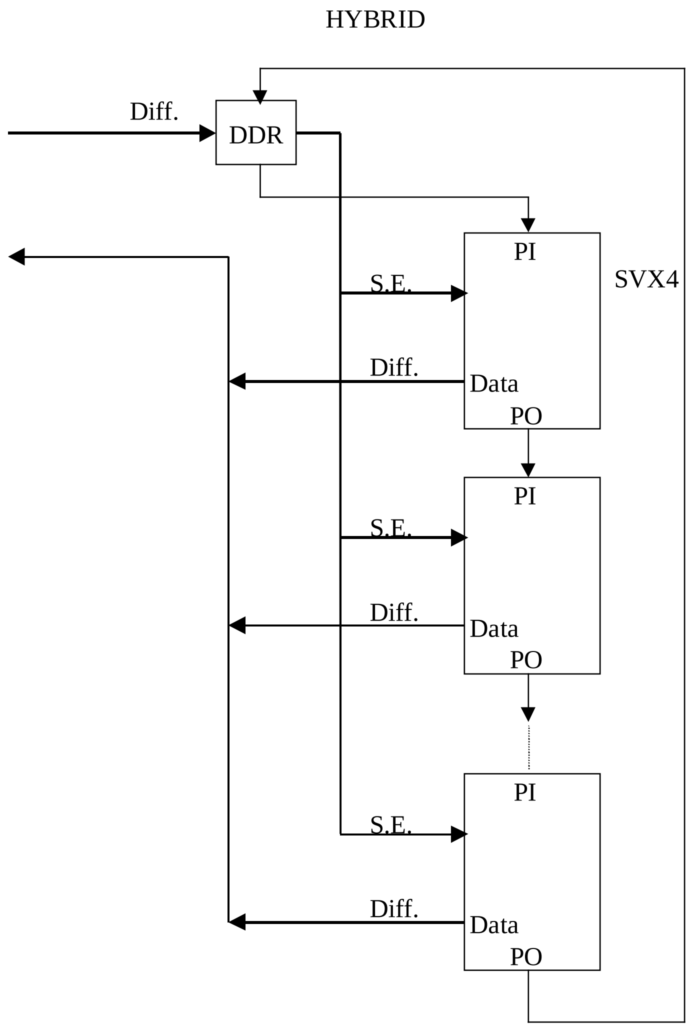
- Probably the DOIMs will be substantially damage after Run IIa. The ideas presented here consider that the DOIMs are not available and that the readout will be done by differential copper wires.
- Vince did some estimates about the physical area required to transmit data using copper cables in comparison with the fiber ribbon cable. Result: The new wedge would have one FIB cable and five new unjacketed data cables. The total area is 0.1304 sq. in. or 17% larger than the existing cable set. Question: can we use unjacketed data cables?
- The Port Card will be manufactured using G10 board and will be located where the Junction Cards presently are.

One proposal:



- In the scheme above the port card would just have the voltage regulators.
- A possible simplification is to move the RX and TX to the Port Card. In this case the DDR/SVX4 will need differential inputs.

Another proposal:



- The Port Card will have voltage regulators and a RX (to receive FIB commands) and a TX (to buffer the data).

Some wild guesses about the current requirements:

- Analog portion of the circuits: the power dissipation is ~ the same => from Honeywell (5.0V) to 0.25 μm (2.5V) the current doubles.
- The digital current decreases by 25%.

Component	**Present (5.0V)**		**New (2.5V)**	
	Analog	Digital	Analog	Digital
SVX	65	100 (rd)	130	75 (rd)
DDR	15	40	30	30
Transceiver		100		75
DOIM		400		0

Example:

Layer 4:

- Present: 1/5 receiver (20) + 1 DOIM (400) + 1 DDR (65) +
  + 14 SVXs (2310) = 2795mA
- Port Card with just voltage regulator (1st proposal):
  2 transceivers (120) + 1 DDR (60) + 14 SVXs (2870) = 3050 mA
- Port Card with transceiver (second proposal):
  1/5 receiver (15) + 1 transceivers (75) + 1 DDR (60) +
  + 14 SVXs (2870) = 3020mA

Layer 1:

- Present: 1145mA
- Port Card with just voltage regulator (1st proposal): 1.0 A
- Port Card with transceiver (second proposal): 950 mA