**PROs and CONs of single v multi PCB for MISM, NISM and AFOS**

**Background**

The MISM, NISM and AFOS all use a number of similar circuits built on Eurocards. It has been suggested that a single PCB board could be made that supported all three experiments, perhaps with different population or jumper selectable options.

This note examines the Pros and Cons of staying with the multiple Eurocards or building a single card, and gives some questionable relative merit points.

**Building a single card**

*Pros*

- Better power supply possible – no need for backplane connection. 10
- Better reliability – reduced number of connectors. 5
- Easier maintenance – one board fits all 2
- Reduced component count – less signal protection circuitry 1

*Cons*

- Considerable layout time (guestimate 1-2 man months). 10
- Higher risk, no gain until its all finished. 20
- Modifications difficult/expensive. 5
- Large board mounting may be difficult. 2
- Reduced flexibility for using modules in other systems. 5
- Complexity considerable to cope with ISA card of AFOS 5
- May increase spares required as one failed component may mean scrapping many 2
- Managing differences in experiments difficult 5

**Staying with Eurocards.**

*Pros*

- Already have a working system, mods can be done piece meal as required. 20
- Easy to manage differences between experiments. 10
- Standard Eurocard prototyping tools available 2

*Cons*

- Power supply impedance is high 10
- Connector count is high 5
- Maintenance requires some knowledge to identify faulty board 5
- Stock of spare boards 1

**Overall**

With the reasons and weightings above the argument comes out strongly in favour of retaining the Eurocard design.

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