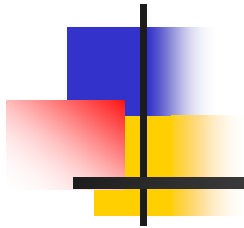# Sub-rack Packaging Options for the Controls RDR

Vince Pavlicek & Frank Lenkszus

FNAL   ANL

KISS

- Front End sub-rack with two sizes and 2 configurations.

- Mid level sub-rack with two sizes and 2 configurations. Typically collectors.

- A selection of functions implemented by modules that can be accommodated by the above sub-racks.

Front-end sub-rack

- ATCA shelf, 14 or 5 slot.

- All redundancy and HA features (possibility for a reduced HA option)

- Accepts ATCA or AMC carriers.

- Each node can perform any or all DAQ, control (fast or slow), monitoring or collection functions.

Front-end sub-rack includes

- Redundant (or not) shelf managers, processors, Ethernets, power entry modules, power supplies, fans.
- Backplane, usually star configuration.
- Cost = $xxxxx for 14 slot unit.

Mid-level sub-rack

- ATCA shelf, 14 or 5 slot.
- All redundancy and HA features
- Accepts ATCA or AMC carriers.
- Each node can perform any or all collection, DAQ, slow control, or monitoring functions.

Mid-level sub-rack includes

- Redundant shelf managers, processors, Ethernets, power entry modules, power supplies, fans.

- Backplane

  - Mesh for collector shelf

  - Star option for other functions.

- Cost = $xxxxx for 14 slot

Functions on Modules

- ATCA modules with IPMC or
- AMC modules with MMC on an ATCA carrier card.
- Some functions are available now and existing PMC modules should allow credible costing.

Functions

	ATCA	AMC	ATCA	AMC
	Chans	Chans	$	$
Fast ADC	4	N/A	$7,500	N/A
Slow ADC	128	8	$5,000	$2,500
Fast DAC	?	8		
Slow DAC	?	64		$2,500
Binary I/O monitoring	N/A	128	N/A	$2,500
Binary I/O Isolated	N/A	32	N/A	$3,500
Binary I/O w/ interrupts	N/A	32	N/A	$2,500
TDC	4	N/A		N/A
Waveform Recorder	4	N/A		N/A
Arbitrary Waveform Generator	4			
Thermocouples	?	8		
Cavity BPM	1	N/A		N/A
Button BPM	1	N/A		N/A
Timing Delay Generator		8		
Timing Event Receiver		1		
Motor Controller/Position Readback	?	1		
RS232	N/A	8	N/A	
Fast Serial	N/A	4	N/A	
Ethernet (1 Gbaud)	N/A	2	N/A	
Ethernet (10 Gbaud)	N/A	1	N/A	
DSPs	16	4		

Next week….

- Incorporate the results of this meeting.
- Complete the information on channel counts.
- Complete the cost estimates.
- "Correct" the 2007 cost by extrapolating back from the expected 2009 ATCA costs.

Functions on Modules

- ATCA modules with IPMC or
- AMC modules with MMC on an ATCA carrier card.
- Some functions are available now and existing PMC modules should allow credible costing.