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# MWA Correlator Hardware

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**MWA meeting, Canberra**  
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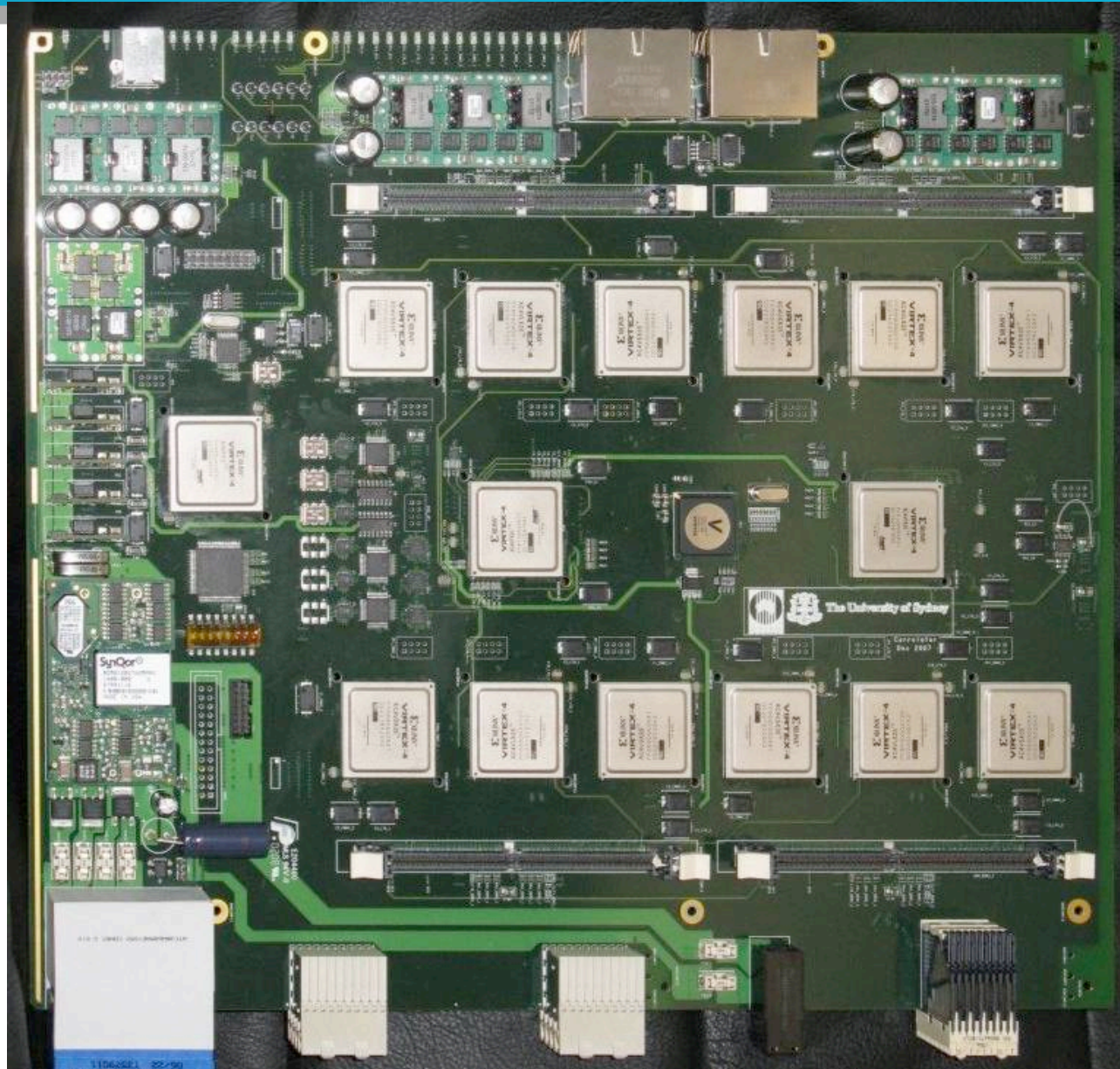


# PFB Board

- **Two version 1b boards built**
- **FPGAs, USB DRAM and LVDS links**
  - fully functional
- **Revision of Schematic started for version 2**
- **Loop back board built to test FX20 and FX60 Rocket I/O**
  - Majority of circuits tested at 3.125GHz
- **MWA RTM being manufactured at Haystack**

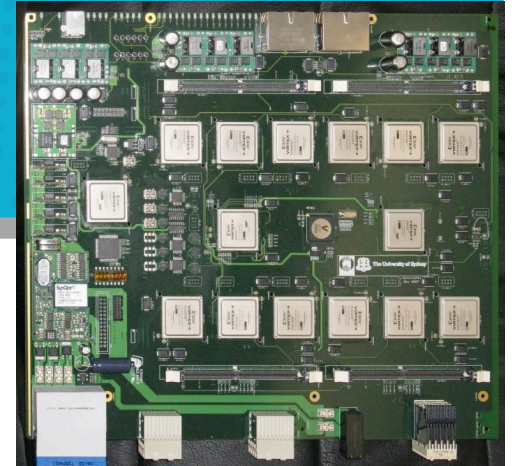


# Correlator Board



# Correlator Board

- **Four version 1 boards**
  - Minor components loaded
- **Two have all components**
  - Delivered to Haystack
  - Were working when sent but one had Ethernet problems
    - Faulty unit returned to Sydney
- **FPGAs, USB LVDS and Rocket I/O links tested**
  - fully functional
- **Revision of Schematic and Routing Finished**
- **RTM built and test**



# Control

- **Control firmware developed by Ludi de Souza**
- **Moved all complex tasks to external CPU**
- **Slot 1 firmware prototyped on XILINX development board.**
- **Slot 1 board design simplified**
  - Schematics modified
  - Board layout complete
  - Being manufactured now
- **Firmware stubs provide visibility of FPGA operation to CPU**
  - Faster debugging
- **This approach now adopted by MWA and SKAMP**
  - Common development

# Board Status

January 2008

	PFB board	SKAMP RTM	MWA RTM	Correlator	Correlator RTM	Slot 1	PFB Test jig
Schematic capture	X	X	X	X	X	X	X
Board layout	X	X	X	X	X	X	X
Board manufacture	X	X	X	X	X	Started	X
First prototype built	X	started	started	X	X		X
Powered up	X			X	X		
FPGAs programmed	X			X			
Ethernet functionality	X			X			
LVDS links tested	X			X			
Rocket I/O tested	working			X	X		
Version II board layout	started			X			X
V II Board manufacture							
Version II build							
Production ready					yes		

Number SKAMP	27	27		27	27	5
Number MWA (512T)	18		18	70	70	10

Version 1a boards	1			2	4	2
Version 1b (for PFB)	2	2	2			
Version 2	4			4		
SKAMP Production	26	26		26	24	4
MWA Production	14		16	68	69	8

**ICT Centre**

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Thank you

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# MWA PFB firmware

- **Will be based on SKAMP – working modules for**
  - Fine Filterbank
  - Cube Rotation
  - Data re-ordering to correlator
  - DRAM interface
- **Fine filterbank/cube rotation 1.6GHz for SKAMP**
  - 8bit data – 25.6Gb/s
- **MWA limited to same analogue bandwidth**
  - 5bit data – 16Gb/s
  - Reduces number of useable optical inputs from 16 to 12
  - Redesign by Roger – no change to hardware