May 2010

AmigaOne X1000 Update

The AmigaOne X1000 is not like other computers. It's based on a PowerPC CPU architecture, it includes Xena, a "Software Defined Silicon" co-processor, and above all it runs AmigaOS 4.

It is 25 years since the launch by US computer company Commodore of the Amiga A1000, a revolutionary machine that introduced multimedia and multi-tasking to the world. While AmigaOS has continued in development (making it possibly the longest developed and used desktop OS in the world) the hardware side has had a harder time of it since the demise of Amiga's old parent company, Commodore.

2010 is the year we come back. A-EON technology, in co-operation with a small group of mainly European companies, are creating a new high-end, prestige platform that will once more allow the Amiga Operating System to shine.

The X1000 ends the years of AmigaOS being relegated to a ghetto of outdated hardware — great as it was at the time, the world has moved on a long way since the days of Commodore. For the first time in many years, AmigaOS has a genuinely modern hardware platform.

AmigaOne X1000 specs:

- Dual-core 1.8GHz PowerISA™ v2.04+ CPU
- "Xena" 500MHz XMOS XS1-L1 128 SDS
- ATI Radeon R700 graphics card
- 2GB RAM
- 500GB Hard drive

- 22x DVD combo drive
- customised case, keyboard and mouse
- 7.1 channel HD audio

Ports and connectors:

- 4x DDR2 RAM slots
- 10x USB 2.0
- 1x Gigabit Ethernet
- 2x PCIe x16 slots (1x16 or 2x8)
- 2x PCIe x1 slots
- 1x Xorro slot
- 2x PCI legacy slots
- 2x RS232
- 4x SATA 2 connectors
- 1x IDE connector
- JTAG connector
- 1x Compact Flash

All specs are subject to change

Xena — Software Defined Silicon

Our hardware designers had a brilliant idea: "Why not add an XMOS chip?"

Once there were custom chips; for the AmigaOne X generation, we have customisable chips. XMOS calls it "Software Defined Silicon," we call it "Xena," a nod to the old custom chip names. It's the inheritor of the "transputer" concept, and it's something we're quite excited about.

Capable of eight concurrent real-time threads with shared memory space, at up to 500 MIPS, Xena gives the X1000 a very flexible, very expandable co-

processor. The uses are endless; control hardware, DSP functions, robotics, display — even SID chip and console emulators.

Xena is not simply strap-on extra adding an extra half GHz of processing power, it's a different kind of thing to a general purpose CPU altogether. It's an event-driven processor, which means it can respond immediately to events such as external signals, rather than having to wait on an interrupt. This makes it appropriate to true real-time functions. It has many input/output lines which are software configurable, making it ideal for ultra-low latency data sampling applications and extremely easy to turn into control hardware for… well, virtually anything. The I/O can also be configured to communicate with extra XMOS chips that can run the processor's code in a highly parallel fashion, and for serious power applications you can just keep on adding processors.

The Amiga has seen some truly ingenious hacks and add-ons; Xena can take this to a whole new level. It will take a while for the full possibilities to be realised, but we urge you to visit XMOS and discover more for yourselves.

Xorro — connecting Xena to the world

To accompany "Xena," we have "Xorro," a new slot using an industry-standard PCIe x8 form factor to give access to the "Xena" IO. This will be the route to Xena's IO lines, which are dynamically configurable as input, output, or bidirectional. "Xorro" will allow bridging Xena to external hardware for control purposes, to internal systems, or to other Xcore processors.

Xena has 64 of these configurable I/O lines. In the AmigaOne X1000 we have one quarter of these connected to the CPU local bus for direct communication with the system, whilst the other three-quarters are connected directly to pins on the Xorro slot for communication with the outside world. JTAG connection for control and debugging of the XMOS silicon is accessible both through the CPU's GPIO (General Purpose Input/Output) lines and the Xorro interface.

Hardware designed for the Xorro slot may be as simple as a few traces running from the slot lanes to an external connector with minimal or no voltage/level control. This is the kind of arrangement you'd expect for a board designed to use Xena for hardware control applications, where all the control logic is performed in software by Xena rather than in non-reusable custom ASIC hardware on the board, or using tricky programmable logic via an FPGA or similar. A more complicated board might include some hardware to deal with Xena's output — drivers for an IR transceiver for computer controlled RC applications, or pre-amp circuitry for networked audio. For really serious applications, you might have a Xorro board with an array of additional XMOS chips on, connected together to allow highly multi-threaded applications to run in parallel, in a similar fashion to the famous Transputer concept, the predecessor of the XMOS technology. Reference designs have been made with 256 cores, offering a theoretical processing power of over 100,000 MIPS.

…from http://www.a-eon.com/

X1000 FAQ 3 Excerpt

For more info and the full text of this FAQ, see amigaworld.net: http://amigaworld.net/modules/newbb/viewtopic.php?topic_id=30985&forum=42#550233

Q. What graphics card will be supplied with the A1-X1000 and what other cards will be supported. Does the PCI Express open up the option for more modern graphics cards with the latest ATI, nVidia and PhysX etc chipsets (Andy)?

A. PCI-e does indeed open up the

option of more modern graphics cards, but not without drivers. This is the hard part. ATI have become increasingly open-source friendly when it comes to releasing details of their hardware to allow drivers to be written, nVidia not so much. Over the long term, there will be changes to the way AmigaOS handles drivers that will make it considerably easier to bring new hardware to the platform as it is released. In the short term, we have specified a single hardware/driver combination that will ship with the X1000 as standard, based on the ATI R700 GPU.

Q. Will the A1-X1000 be able to make use of the dual core CPU from its first

release or will this feature be implemented later? (Multiple) For example, will it be able to run individual operating systems on each core simultaneously. The teaser website displayed the A1-X1000 CPU running both cores at 1.6GHz full load. Have you tested it any higher since and what is the maximum CPU rating?

A. In the initial A1-X1000 release, AmigaOS 4.1 will not make use of the second CPU core but this is something that the OS4 developers are planning for a subsequent update. Without a virtualizer, it will not be possible to run two OS's at the same time - there is more than just the CPU involved in that (memory for example, or any other system resource). To date all A1-X1000 motherboards have used CPU Samples and to avoid potential damage we have not run the CPU to its maximum rating. However watch this space…

And finally a question from Andy who works for E.ON (pronounced "ee on") in the UK.

Q. How do you actually pronounce A-EON?

A. We pronounce it "ay-on", with the "ay" similar to "ay" sound in "hay." (Technical note: the name is influenced by, but isn't actually, the traditional British spelling of 'eon', 'aeon'. It's also an anagram of "A-One", so the 'A' might stand for Amiga. Normally the word aeon is pronounced "ee-on" due to the transition from Greek 'aion' through latin 'aeon'. The original Koine Greek pronunciation would be something like "eye-on".)

May Calendar

May 3 — Amiga-By-The-Loop Chapter
    7:00 PM — Main Grand Prairie Library
    901 Conover Drive, Grand Prairie
	May 3 — MCCC Board of Director's Meeting
	    Approximately 9:15 PM — Location TBD
	
	May 29 — Newsletter Deadline — 7:00 AM

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